



SUBMITTAL No.: 01 35 29-001-C
SITE SPECIFIC HEALTH & SAFETY PLAN

PROJECT

HUDSON FALLS POWERHOUSE DECONSTRUCTION
HUDSON FALLS, WASHINGTON COUNTY, NY

CLIENT

NATIONAL GRID
300 ERIE BLVD WEST
SYRACUSE, NY 13202

ATTN: BRYAN CLEARY
SENIOR SAFETY SPECIALIST
BRYAN.CLEARY@NATIONALGRID.COM
(P): 518-560-9624

CONTRACTOR

L.M. SESSLER EXCAVATING AND WRECKING, INC.
1257 NY-96 WATERLOO, NY 13165

ATTN: GUS RIVERA
DIRECTOR OF HEALTH AND SAFETY
GRIVERA@SESSLERCOMPANIES.COM
(P): 518-577-9386

CONTRACTOR SCOPE OF WORK

SELECTIVE BUILDING DECONSTRUCTION & SITE RESTORATION

Original Submittal: July 28th, 2022
Revised Submittal 6: September 20, 2022

EMERGENCY INFORMATION

In case of an emergency, call **911
or Numbers listed below:**

- **Health Center on Broad Street Urgent Care**
100 Broad St, Glens Falls, NY 12801
(518) 792-2223
- **Glens Falls Hospital: Emergency Room**
100 Park St, Glens Falls, NY 12801
(518) 926-1000

EMERGENCY INFORMATION



Prepared by:

A handwritten signature in black ink, appearing to read "T. O'Rourke", written over a horizontal line.

Timothy M. O'Rourke, CIH
Project Certified Industrial Hygienist

Revision Summary

<i>Revision No.</i>	<i>Revision Date</i>	<i>Description of Changes</i>
Original	July 28 th , 2022	Original Site-Specific Health and Safety Plan
Revision 1	August 15 th , 2022	Incorporation of Arcadis & EPA Comments
Revision 2	August 24, 2022	Incorporation of Arcadis & EPA Comments
Revision 3	August 25, 2022	Incorporation of Arcadis Comments
Revision 4	August 29, 2022	Incorporation of Arcadis Comments
Revision 5	September 15, 2022	Incorporation of 9-13-22 EPA Comments
Revision 6	September 20, 2022	Incorporation of 9-20-22 EPA Comments

Preface

This document describes the anticipated protective measures necessary to ensure worker health and safety during the activities planned for this project. All employees and subcontractors associated with this project must read, understand and agree to follow the contents of this plan. If any activity or situation arises during the course of this project which is not covered in this plan, the employee or subcontractor responsible for that activity will inform the Sessler Wrecking Safety and Compliance Manager. An amendment covering the planned activity or situation will be added before completion of that activity.

LIST OF ACRONYMS

ANSI	American National Standards Institute
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CPR	Cardio-pulmonary resuscitation
CRZ	Contaminant reduction zone
dBA	Decibels, A-Scale
DOT	Department of Transportation
EPA	Environmental Protection Agency
EZ	Exclusion zone
GFCI	Ground fault circuit interrupter
HAZCOM	Hazard Communication
HAZWOPER	Hazardous Waste Operations and Emergency Response
HEPA	High efficiency particulate air (purifying filter)
IDLH	Immediately dangerous to life or health
JSA	Job safety analysis
LEL	Lower explosive limit
mg/m ³	Milligrams per cubic meter
MSDS	Material Safety Data Sheet
NIOSH	National Institute for Occupational Safety and Health
NFPA	National Fire Prevention Association
NYS	New York State
NYSDOH	New York State Department of Health
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated biphenyl
PEL	Permissible exposure limit
PFD	Personal flotation device
PID	Photoionization detector
PM	Project Manager
PPE	Personal protective equipment



ppm	Parts per million
SDS	Safety Data Sheets
SSHASP	Site Specific Health and Safety Plan
SCM	Safety and Compliance Manager
SZ	Support zone
TWA	time-weighted average
UEL	Upper explosive limit
VOC	Volatile Organic Compounds

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1. Introduction

This Site-Specific Health and Safety Plan (SSHASP) was developed by L.M. Sessler Excavating & Wrecking, Inc.; herein referred to as Sessler Wrecking, to establish guidelines and requirements for personnel safety during the implementation of the selective building deconstruction project at the former Powerhouse located in Hudson Falls, NY, herein referred to as the Site.

This SSHASP was developed to be used in conjunction with the Project Operations Plan (POP), Site Construction Plan (SCP), and the GE Environmental Monitoring and Protective Measures Work Plan (EMPM), submitted under separate cover. The POP provides an overall description of the project, and the SCP provides details for the means and methods for implementing the Powerhouse deconstruction. The EMPM describes proposed activities to further assess conditions within the GE Hudson Falls Site and potential mobilization, migration, and/or releases of HF Contaminants prior to, during, and following the Project. Where applicable, and to prevent redundancies, this SSHASP references the POP, SCP and EMPM.

This SSHASP outlines the responsibilities, training requirements, protective equipment, and standard operating procedures for any persons entering the Site. All work at the Site must be performed within compliance of this SSHASP. This plan specifies the onsite procedures during normal work activities and during emergency response events to minimize hazardous material exposures.

For Site Specific details on major job tasks and a way to identify hazards before they occur, Refer to Section 4.0 for an overview of Sessler Wrecking's Job Safety Analysis (JHA) program. The JHA's will focus on the relationship between the worker, the task, the tools, and the surrounding environment – such that the plan would be to identify any potentially uncontrollable hazards and the steps that Sessler Wrecking would implement to eliminate or reduce the likelihood of such hazards to occur to acceptable risk tolerances.

All personnel involved in the project will be properly trained to perform the work and respond to emergency conditions in a manner that is protective of human health, safety, and the environment. Personnel who have any questions or concerns regarding implementation of this plan are encouraged to request clarification from the Sessler Wrecking Site Safety Manager or/and 3rd Party Ambient Safety Manager.

Site personnel must follow the designated health and safety procedures, be alert to the hazards associated with working close to vehicles, equipment and in or around excavations, and above all else, always use common sense and exercise reasonable caution.

The level of protection and the procedures specified in this SSHASP represent the minimum health and safety requirements to be observed by all personnel engaged in site activities. Unknown conditions may exist and known conditions may change. Should an employee find themselves in a potentially hazardous situation, the employee will immediately discontinue the hazardous procedure(s) and either personally take appropriate preventative or corrective measures, or immediately notify the site superintendent of the nature of the hazard. In the event of any unsafe situation, the employee always has "stop work" authority.

The ultimate responsibility for the health and safety of the individual employee rests with the employee and his or her colleagues. Each employee is responsible for exercising the utmost care and good judgment in protecting his or her own health and safety and that of fellow employees. Should any employee observe a potentially unsafe condition or situation, it is the responsibility of that employee to immediately bring the observed condition to the attention of the appropriate health and safety personnel.

“Extenuating” circumstances such as budget or time constraints, equipment breakdown, changing or unexpected conditions, never justifies unsafe work practices or procedures. In fact, the opposite is true. Under stressful circumstances, all project personnel must be mindful of the potential to consciously or unconsciously compromise health and safety standards and be especially conscious of safety. All site personnel are expected to consider “Safety First” at all times.

This SSHASP will clearly present Sessler Wrecking’s policy concerning safety and health. If there are any questions about the safety program, ask. It is the intent of Sessler Wrecking that all employees are familiar with and understand all aspects of this program.

1.1 Program Purpose

The purpose of this Site-Specific Health and Safety Plan is to provide guidelines and establish procedures for the protection of Sessler Wrecking personnel, subcontractors, and visitors performing work at the Hudson Falls Powerhouse project, Hudson Falls, New York. This SSHASP provides a description of the potential chemical and physical hazards that exist or may arise during the course of this project. Appropriate controls are also included in this plan.

Sessler Wrecking personnel, and all subcontractors will comply with the applicable rules and regulations defined in the Site-Specific Health and Safety Plan. Any conflicts that exist between the Site-Specific Health and Safety Plan and the actual policies and procedures utilized should be brought to the attention of the Project Health and Safety Manager. This SSHASP Plan applies to all Sessler Wrecking employees, subcontractors, government representatives and visitors.

Over the course of this project, it may be necessary to revise this plan in order to account for changing or unanticipated site conditions. Any revisions made to the Site-Specific Health and Safety Plan must be made in writing, approved by the Project Safety and Health Manager and noted in the Record of Revisions (Page 2) of this Site-Specific Health and Safety Plan.

1.2 Statement of Safety and Health Policy

Sessler Wrecking believes there cannot be any compromise with the safety and health of our employees, visitors, subcontractors, and any other persons who may come under our supervision. The importance of employee Health and Safety is paramount. Sessler Wrecking believes that all accidents are preventable through knowledge and understanding of what causes these accidents. Consequently, Sessler Wrecking utilizes a behavioral based system which encourages the honest reporting of all Near Losses and Losses whereby we as a company may isolate the causes of incidents and thereby prevent them from occurring in the future.

All Sessler Wrecking Employees and subcontractors have the right, responsibility, and authority to stop work anytime they believe that the safety and/or wellbeing of individuals on site may be jeopardized.

Sessler Wrecking subcontractors and visitors are also required to take positive actions to avoid or correct potential hazards and to ensure that safe and healthful workplace conditions are maintained. Specialty subcontractors will work under this health and Safety Plan. However, their hazards associated with their work will be identified and controlled through use of a Job Safety Analysis.

1.2.1 Project Safety Goals

At Sessler Wrecking our most valued resources are our employees, our clients, and the communities we serve. We are dedicated to providing a safe and healthful environment for employees and clients, protecting the public, and preserving the company's properties and assets. Injuries can be prevented. To achieve an accident-free workplace, an organized and effective Safety Program must be carried out company-wide to make this policy work. Contractor and subcontractor's employees are expected to value safety and be responsible for their safety as well as the safety of others. All on-site personnel must take the time to study and understand Sessler Wrecking's safety policies and procedures.

The Safety and compliance Manager is expected to provide clear safety expectations and provide positive and negative feedback for safe and unsafe behavior. Peers are expected to intervene upon an unsafe behavior and provide positive feedback for safe behavior.

The goal of the Sessler Wrecking Health and Safety Program is zero accidents; therefore, accident/incident prevention continues to be of paramount importance to the company. To this end, safety takes precedence over expediency. Sessler Wrecking is committed to compliance with client health, safety, and environmental requirements as well as to applicable regulations.

Sessler Wrecking's Safety Performance goals for this project are as follows:

- Establish a safety culture conducive to the prevention of accidents and injury,
- Full comply with all applicable health and safety regulations,
- Maintain a Total Recordable Incident Rate of zero.

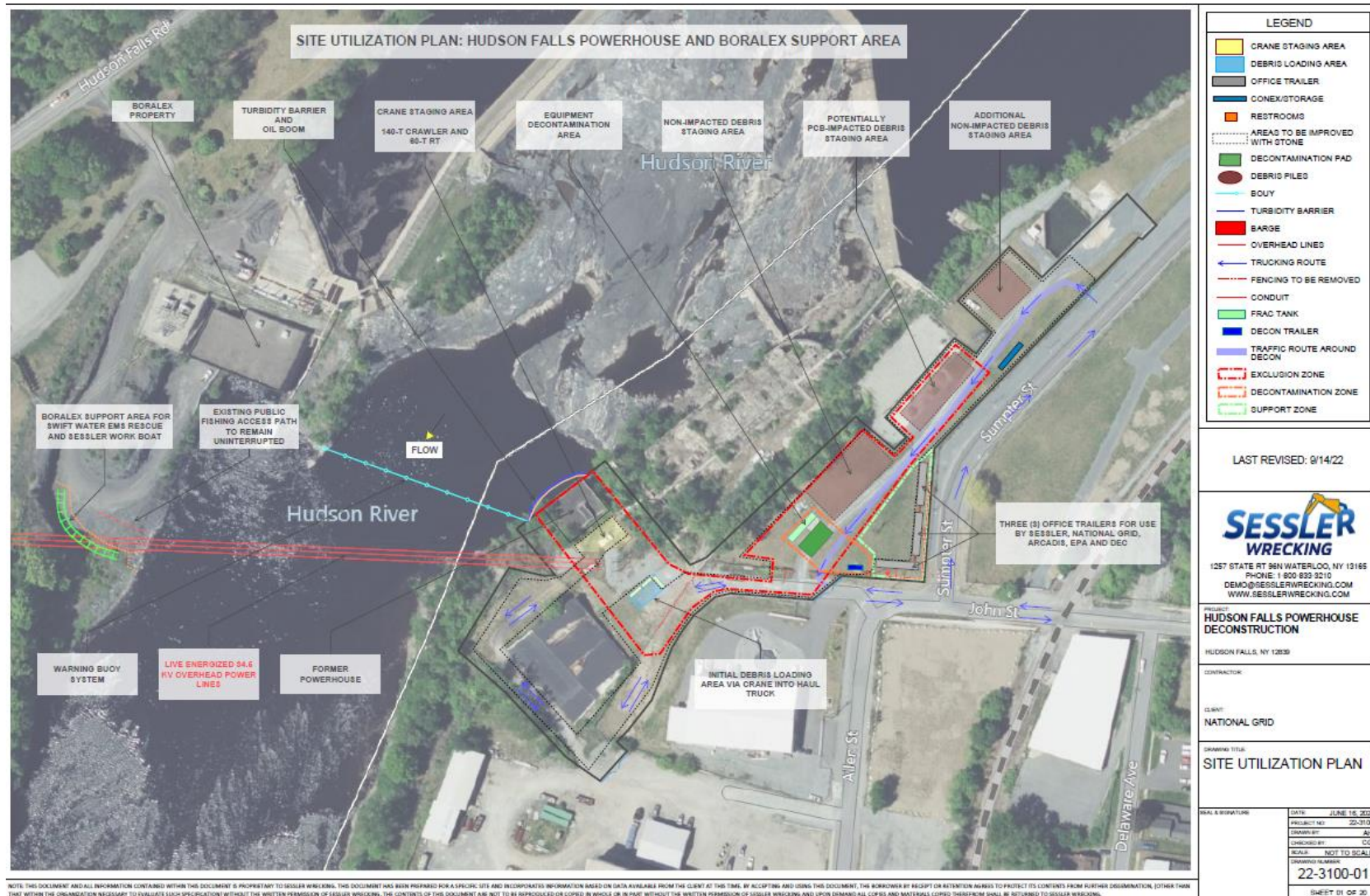
1.3 Program Objective

The primary objective of this Site-Specific Health and Safety Plan is to ensure the wellbeing of all field personnel, visitors and the community surrounding the site. To assure compliance with the objective, all project staff shall acknowledge and adhere to the policies and procedures established in this Site-Specific Health and Safety Plan. Accordingly, all Sessler Wrecking project personnel shall be briefed on the contents of this SSHASP during pre-work orientation training and sign the Plan Acceptance Form (Appendix J) to certify they have read, understand, and agree to abide by its provisions. Copies of Plan Acceptance Forms will be maintained on-site by the Safety and Compliance Manager.

1.4 Site Plan

Figure 1-1 provides a Site Plan showing site layout and locations of the powerhouse, staging areas, decontamination areas, etc.

Figure 1-1 Site Plan



1.5 References

Sessler Wrecking SSHASP was written to be in compliance with local regulatory requirements and provide directives to managers, supervisors, and employees about their responsibilities in the operations and management of Sessler Wrecking facilities as related to the indicated general safety requirements that apply. This SSHASP is in accordance with, were applicable, OSHA 29 CFR 1926 Subpart C – General Safety and Health Provisions along with the following Regulatory requirements.

- U.S. Department of Labor, Occupational Safety and Health Administration, Occupational Safety & Health Standards, 29 CFR Part 1910 & 1926, especially 29 CFR Part 1926.65 - Hazardous Waste Operations and Emergency Response
- NIOSH/OSHA/USCG/US EPA, Occupational Safety and Health Guidance Manual for Hazardous Waste Sites Activities, October 1995.
- 29 CFR 1904, Recording and Reporting Occupational Injuries and Illnesses.
- 29 CFR 1910, Occupational Safety and Health Standards.
- 29 CFR 1926, Safety and Health Regulations for Construction.
- The American National Standards Institute (ANSI) published a standard.
- American Society for Testing and Materials (ASTM).
- National Fire Protection Association (NFPA).
- 2020 Existing Building Code of New York State
- 40 CFR 261.3, 264, and 265, Resource Conservation and Recovery Act (RCRA).
- 49 CFR 171.8, Transportation, Definitions and Abbreviations.
- 6 NYCRR 371, Identification and Listing of Hazardous Wastes.
- 6 NYCRR 375, Environmental Remediation Programs.
- 12 NYCRR 23, Protection in Construction, Demolition, and Excavation Operations.
- 12 NYCRR 56, Asbestos.
- 12 NYCRR 57, High Voltage Proximity.
- 12 NYCRR 59, Workplace Safety and Loss Prevention Program.
- 12 NYCRR 61, Occupational Licensing and Certification.
- 16 NYCRR 753, Protection of Underground Facilities.
- 17 NYCRR 32, Oil Spill Prevention and Control – Actions to be Taken in Case of Discharge.
- United States Coast Guard (USCG) requirements.
- Sessler Wrecking, Project Operations Plan, September 2022.



- Sessler Wrecking, Site Construction Plan, September 2022
- Sessler Wrecking, Critical Lift Plans, September 2022.

2. Safety and Health Organization / Responsibilities

Sessler Wrecking will utilize a team of industry leading competent persons to implement the selective demolition plan in accordance with OSHA 1926.850, 1926.860, 1926.65, as well as the Powerhouse Deconstruction Design Report, Specifications, and Drawings, as developed by Arcadis US. All site personnel will be trained in accordance with 29 CFR 1910 and 1926.65.

Please refer to Tables 2-1 & 2-2 below for key Sessler Wrecking & Client Personnel.

2.1 Senior Project Manager

- Responsible for coordinating, organizing, and tracking the flow of project related information.
- Project scheduling and coordination with the Project Superintendent(s).
- Support Corporate Health & Safety Director on making sure that the project is in compliance with Company and Client specific requirements.

2.2 Site Superintendent

- Understanding and navigating the needs of the Project Manager, as well as specific Client needs, while simultaneously pushing the safety and quality of work forward to achieve scheduling milestones.
- Conduct daily site inspections, prior to the start of work and throughout the day as needed, to detect hazards from weakened/deteriorated floors walls and/or loose material.
- Overall safety of the project with support from the Director of Health & Safety.
- Manage field crew from entry to senior levels, ranging from equipment operators, laborers, and subcontractors.
- Forecast project schedule, material, labor, and equipment demands.
- Attend and participate in Client required project meetings.
- Prioritize demolition phases and tasks, and problem solving if issues arise.
- Implement work objectives and ensure that work production follows specified quality standards.

2.3 Foreman

- Working with Superintendent(s) to coordinate daily tasks according to priorities and plans, making changes when necessary due to weather, supply, delivery, and/or personnel.
- Delegating individual responsibilities and projects to crew members and contractors.
- Emphasizing safe use of tools, machinery, and equipment.
- Resolving conflicts and/or miscommunications quickly and amicably.

- Regularly reporting project status to supervisors and other site personnel.

2.4 Project Certified Industrial Hygienist (CIH)

The CIH is responsible for the development of the Site-Specific Health and Safety Plan. The CIH experienced in developing and implementing safety programs, developing employee exposure assessment and air monitoring programs, developing and implementing of personal protective equipment and respiratory protection programs.

Specific responsibilities of the CIH include:

- Development and implementation of the SSHASP. Updating the SSHASP if site conditions, or operations change.
- Being available for consultation with the site management and safety personnel as needed.

2.5 Safety and Compliance Manager (Sessler Wrecking and 3rd Party)

Sessler Wrecking will provide both in-house and third-party H&S personnel for this project. The third-party Safety & Health Manager is Mr. Joe Melino of Ambient Environmental. The third-party Electrically Qualified Supervisor is Mr. Frank McKeon of Ambient Environmental.

- Ensure compliance with Health and Safety Plan (HASP) throughout project duration.
- Scheduling and conducting safety meetings and safety training programs as required by Laws and Regulations, Contractor's HASP, and good safety practices.
- Ascertaining via personal inspection that safety Laws and Regulations and safety program requirements are enforced. Make inspections not less than once per work shift to ensure that machines, tools, and equipment are in a safe operating condition; And that all work areas are free of hazards to the extent practicable. Implement necessary and timely corrective actions to eliminate unsafe acts and unsafe conditions.

2.6 Assistant Project Manager

- Assists in vigorously communicating, supporting, and enforcing corporate safety efforts.
- Assists in all phasing of the project: contracts, change orders, quality control, staffing, invoicing, safety, and budget management.
- Assists in ensuring that the means and methods of the project maximizes production, assures quality, minimizes costs, and promotes safety.

2.7 Operator

- Operates heavy equipment in compliance with the company operating safety policies and procedures to perform demolition, excavating, loading, grading, backfilling, etc.

- Conducts routine equipment inspections and preventative maintenance on equipment; Maintains accurate records.
- As Sessler Wrecking structures throughout the implementation of demolition processes and communicates areas of concern to the Sessler Wrecking Competent person (i.e., demolition expert).

2.8 Laborer

- Works in maintaining a clean, safe, and efficient construction site while also supporting overall project goals.
- Safely operate hand and power tools, as well as spot operators of heavy machinery.
- Performing maintenance on all tools, machinery, and equipment to ensure that they are in good working order.
- Assists heavily with site preparation, maintenance, and restoration.

2.9 Summary of Project Personnel



Table 2-1 - Summary of Project Personnel

Name	Title	Office Phone	Cell Phone	Email
USEPA - Lead Agency				
David Rosoff	On-Scene Coordinator-Primary	- -	908.420.4465	rosoff.david@epa.gov
Gary Klawinski	Project Director	518.407.0400	518.514.8571	Klawinski.gary.epa.gov
National Grid				
Steven DiLella	Project Manager	585.520.5192	585.520.5192	steven.dilella@nationalgrid.com
Bryan Cleary	Senior Safety Specialist	- -	518.560.9624	bryan.cleary@nationalgrid.com
General Electric				
Robert Gibson	Senior Project Manager	518.388.7505	518.527.3418	bob.gibson@ge.com
Laurie Scheuing	Project Manager	- -	518.429.4505	laurie.scheuing@ge.com
Boralex Hydro (Northern Electric Power Co., Inc.) - Adjacent Property Owner				
Erik Bergman	Manager of Hydro Operations	518.480.3962	518.744.0502	erik.bergman@boralex.com
Arcadis - Consulting Support for National Grid				
Terry Young	Deconstruction Design Technical Lead / Project Coordinator	315.671.9478	315.663.8769	terry.young2@arcadis.com
John Brussel	Project Manager/Principal Engineer	315.671.9442	315.317.8105	john.brussel@arcadis.com
Tom Carey	Construction Supervisor	- -	716.523.9634	thomas.carey@arcadis.com
Lawrence (Carey) Healy	Project Environmental Engineer-Submittals Review/Engr	315.671.9338	315.335.9493	lawrence.healy@arcadis.com
Scott Sanders	Construction Supervisor – Env. Protective Measures		570.852.9571	scott.sanders@arcadis.com
Zachary Evans	P.E. Project Construction Manager		570-852-9571	Zachary.Evans@arcadis.com
L.M. Sessler Excavating and Wrecking, Inc. (Sessler Wrecking)				
Jeff Sessler	Company Sponsor	- -	315.719.8112	Jeff@SesslerWrecking.com
Chadd General	Director of Building Demolition, Senior Project Manager – Onsite Periodically	- -	585.545.9730	CGeneral@SesslerWrecking.com
Dan Skinner	Site Superintendent – Onsite Full-Time	- -	315.415.8637	DSkinner@SesslerWrecking.com
Kevin Sessler	General Superintendent – Onsite Backup		315.719.2522	Kevins@seesslerwrecking.com
Gustabo Rivera	Director of Health and Safety	- -	518.577.9386	GRivera@SesslerCompanies.com
Penny Hanshaw	Safety and Compliance Manager – Onsite Full-Time	- -	315.269.7406	PHanshaw@SesslerCompanies.com
Timothy O'Rourke	Project Certified Industrial Hygienist		607.427.4714	torourke@orourkeinc.com



Site-Specific Health and Safety Plan
Hudson Falls Powerhouse Deconstruction
Hudson Falls, NY

Dean Landreville	Safety and Compliance Manager – Onsite Backup	- -	518.605.5498	DLandreville@SesslerCompanies.com
Alaina Hickey	Assistant Project Manager – Onsite Full-Time	- -	315.406.9214	AHickey@SesslerWrecking.com
Frank McKeon	3rd Party Qualified Electrical Spotter		518.424.1861	Frankm@ambient-env.com
Joe Resciniti	3rd Party Safety Manager		518.892.5219	Joe.Resciniti@gmail.com
Joseph Melino	3rd Party Safety Manager		919.649.3131	Joseph.Melino@gmail.com

3. Site Description

The abandoned former Powerhouse is located along the Hudson River in the Village of Hudson Falls, Washington County, New York and roughly 500-ft west of the intersection at John Street and Sumpter Street. The National Grid property (where the Powerhouse is located) is bordered by the Hudson River to the west, commercial property to the south, and General Electric Company (GE) property to the north and east. For the purpose of this document, “the Site” consists of the National Grid property, as well as the adjoining GE and commercial properties where demolition and associated support activities will be conducted. The Powerhouse was constructed around 1907 into steep banks on the eastern shore of the Hudson River, with top of bank immediately behind (east of) the Powerhouse at approximately 70-ft above the Hudson River.

The former Powerhouse is located on a NYSDEC Superfund Site and adjacent to the US EPA Superfund Site (Hudson River). The decommissioning of the former Powerhouse is being implemented under a US EPA Administrative Order.

Chemical contaminants at the site include PCSs in soil and PCBs / DNAPL in rock that the powerhouse is constructed on.

The approximately 3,200-sf former Powerhouse was structurally condemned in October of 2020 due to significant deterioration of structural systems of which includes the following:

- Two (2) stories that contained hydroelectric supporting equipment.
- Roofing system with variable pitch approximately 8 to 10-ft above the eastern-most land side grade:
 - The roof system is reinforced concrete with perimeter parapet walls that extend approximately 2 to 3.5-ft above the top of roof surface – the existing flashing at the parapet wall- and elevator (hoist) support shaft-roof interface contains non-friable ACM which will be abated per NYSDOL Code Rule 56 (cited as 12 NYCRR Part 56).
 - The elevator (hoist) support shaft extends approximately 8-ft above the roof deck at the east side of the structure, of which contains non-friable ACM roof flashing that would require abatement as mentioned above.
- Western wall height from top of parapet to top of slab on grade is approximately 52.5-ft.
- The first and only elevated reinforced concrete floor being approximately 17-ft below grade on the east side.
- The ‘main floor’ (i.e., ground floor or slab on grade) is approximately 42-ft below-grade on the east side, and about 14-ft above the ordinary high-water mark in the Hudson River.
- The three (3) abandoned penstock outfall archways lie below the ground floor slab-on-grade – of which can be observed from the river, the center-top of the open archway is approximately 45-ft below-grade on the east side.

Access between the various floors was historically through a single stairwell located along the east wall. The drone video footage revealed that the wooden stairs within the stairwell have

collapsed. The exterior walls of the Powerhouse are constructed of brick and masonry above the ground floor concrete slab. The wall thickness varies around the perimeter of the building, from approximately 8-inches to 20-inches.

Significant deterioration such as missing bricks, mortar, and vertical cracks are visible throughout the structure, particularly on the riverside. Additional vertical cracks and areas missing brick and mortar are visible from inside the building. A large opening through the wall is present in the southwest corner at the first (upper) floor. Darkened areas, stains, and mold growth are visible on the inside. Along the east wall, layers of brick have collapsed and are visible on the main (lower) floor.

Window openings in the structure are covered with translucent panels on the exterior. The exterior brick walls of the building serve as load bearing walls for the roof and first floor and provide lateral stability. Additionally, the roof and first floor beams (which span in an east/west direction) are supported by a primary beam at each floor level (roof and first floor) that spans in a north/south direction. These primary beams are supported on the exterior north and south walls, two interior steel columns, and likely the interior brick masonry stairwell.

The main floor level includes a bridge crane, with crane “runway beams” oriented in a north/south direction and supported by the northern and southern exterior walls. The runway beams are also supported by the west exterior wall via brick pilasters, and by the two main interior steel columns through load bearing brackets.

The ground floor (i.e., ‘main floor’) is a concrete slab constructed over three concrete arches that form outlet channels from the former hydroelectric turbines to the Hudson River. According to historical architectural drawings, the concrete slab and arches were constructed directly over the bedrock subgrade.

3.1 Project Description / Scope of Work

The scope of the project is to safely deconstruct the above grade portion of the former Powerhouse to the top of the foundation with the following major work sequences:

- Submittal Preparation and Review
- Pre-Deconstruction Activities/Mobilization
- Powerhouse ACM Removal
- Remaining Powerhouse Structure Removal
- Electrical and Mechanical Equipment Removal
- Handling, Segregation, Containerization, Transportation, and Off-Site Disposal of Demolition Materials
- Post-Deconstruction Hudson River Underwater Video Reconnaissance
- Debris Recovery from the Hudson River

- Post-Debris Recovery Hudson River Underwater Video Reconnaissance
- Work Area Air Monitoring
- Additional Environmental Monitoring
- Site Restoration and Demobilization

The Project Operations Plan and Site Construction Plan, submitted under separate cover, provides additional detail on the scope of work. The requirements of the site-specific Health and Safety Plan (HASP) will be in effect from initial site mobilization through final demobilization.

3.2 Primary Areas of Safety Concern

Sessler Wrecking has identified the following general awareness hazardous that may be encountered during implementation of the Scope of Work. Site hazards that potentially could be encountered during these activities include chemical hazards, physical hazards, and biological hazards.

- Driving safety
- Weather safety
- Erosion and sedimentation controls
- Environmental site controls
- Pinch points and struck by hazards
- Heavy equipment movement onsite
- Tree felling and loading of tree debris
- Working from heights
- Working with potentially PCB impacted materials (**reference JHA for hazards and control measures**)
- Working with potentially DNAPL impacted materials
- Chemical safety
- Working adjacent to 34.5 kV overhead electric lines, poles, and guy wires
- Working on and adjacent to the Hudson River, including flow monitoring
- Working adjacent to a live and exposed combined sewer overflow pipe
- Working with multiple cranes and potential critical pick scenarios
- Working on uneven and sloped surfaces
- Falling debris during building demolition
- Potential for premature building collapse due to deteriorated state
- Diving operations to recover debris from Hudson River

- Personnel working from man / crane baskets.

Refer to other Sections within this SSHASP for mitigation and control procedures to address the above primary areas of concern.

4. Hazard Analysis

In accordance with the OSHA 29 CFR 1926 Subpart T – Demolition, 29 CFR 1926 Subpart D - Occupational Health and Environmental Controls, 29 CFR 1926 Subpart K – Electrical, 29 CFR 1926 Subpart M – Fall Protection, 29 CFR 1926 Subpart P – Excavations, 29 CFR 1926 Subpart Z - Toxic and Hazardous Substances, 1926 Subpart CC - Cranes and Derricks in Construction, NFPA 70, 12 NYCRR Part 56 – Asbestos, and other local regulatory requirements,

- This program is to provide guidelines for identifying, assessing, and controlling workplace hazards.
- To ensure the potential hazards of new processes and materials are identified before they are introduced into the workplace. To identify the jobs/tasks which require risk assessment.

4.1 Key Responsibilities

As specified within this program Sessler Wrecking foreman, supervisor, or project manager must assess a work site and identify existing or potential hazards before work begins at the work site or prior to the start of a new work site.

Sessler Wrecking Site Safety Manager or/and 3rd Party Ambient Safety Manager

The Sessler Wrecking Site Safety Manager or/and 3rd Party Ambient Safety Manager is responsible for developing and maintaining the General Safety Requirements program. These procedures are kept in the Sessler Wrecking Site Safety Manager or/and 3rd Party Ambient Safety Manager's office.

Site Manager

Responsible for the implementation and maintenance of the plan for their site and ensuring all assets are made available for compliance with the plan.

Employees

- All shall be familiar with this procedure and the local workplace General Safety Requirements program.
- Follow all requirements, report unsafe conditions, and follow all posted requirements.
- Shall use the safeguards, safety appliances and personal protective equipment while following all safe work practices and procedures for the workplace.
- enclosed place of employment, worksite, or work-related area except in an area designated for smoking.

4.2 Procedures

The hazard identification process should be used for routine and non-routine activities as well as new processes, changes in operation, products, or services as applicable.

The Sessler Wrecking Site Safety Manager or/and 3rd Party Ambient Safety Manager shall conduct a baseline worksite hazard assessment which is a formal process in place to identify the various tasks that are to be performed and the accompanying identified potential hazards.

The results are included in a report of the results of the hazard assessment and the methods used to control or eliminate the hazards identified. The hazard assessment report must be signed and have the date on it.

Inputs into the baseline hazard identification include, but are not limited to:

- Scope of work
- Legal and other requirements
- Previous incidents and non-conformances
- Sources of energy, contaminants and other environmental conditions that can cause injury
- Walk through of work environment
- Hazards identifications (as examples) are to include:
 - Working Alone
 - Thermal Exposure
 - Isolation of Energy
 - Hearing Protection
 - Musculoskeletal Disorders
 - Bloodborne Pathogens
 - Confined Spaces
 - Driving
 - General Safety Precautions
 - And any other established policy or procedure by Sessler Wrecking or its clients
 - Any other site-specific work scope
- Formal policies are in place to identify potential hazards by the use of JSA, JHA, FLRA, work permits, site, or company audits, daily or pre-job hazard assessments, worksite inspections, toolbox meetings, incident notices, safety observations and incident investigations.

All identified hazards are then assessed for risk and risk controls are assigned within the worksite hazard assessments for that specific hazard.

- Affected employees and/or subcontractors are actively involved and participate in the hazard identification process.

- Employees must be actively involved in the hazard identification process. If subcontractors are performing work at the location, they should be included. Identified hazards must be reviewed with all affected employees.
- Unsafe hazards must be reported immediately and addressed by the supervisor. The supervisor discusses Wrecking the worksite hazard assessments with employees at the respective work location during the employee's documented orientation.
- When the Formal Hazard Identification and Risk Assessments Process is Used
- Hazard assessments should be performed before work begins to formally identify and assess hazards. A Job Hazard Analysis (JHA), or Job Safety Analysis (JSA), should be developed for all routine tasks. Copies of JSAs can be found in Appendix B.
- Formal workplace inspections should be performed on a regular basis. Hazard assessments and JHAs/JSAs should be updated whenever changes occur to processes, equipment, and/or facilities.
- The respective supervisor or project manager advises Sessler Wrecking Site Safety Manager or/and 3rd Party Ambient Safety Manager when additional hazards are introduced into the workplace in order to revise planning and assessment needs.
- Hazards are classified and ranked according to risk. Sessler Wrecking has established a formal system for classifying and ranking hazards according to risk. Risk may be determined by analyzing the probability of the hazard causing harm, the frequency the hazard is encountered, and the potential consequences of impact with the hazard.
- The risk level of the hazard is recorded with the associated work task within the site specific HSE plan for the job site.

5. Training Requirements

Documentation of training requirements will be kept on-site by the Safety and Compliance Manager and furnished to regulatory agencies upon request.

5.1 Hazardous Waste Operations Training

As specified in 29 CFR 1910.120(e) and 29 CFR 1926.65(e), general site workers (such as equipment operators, general laborers and supervisory personnel) engaged in hazardous substance removal or other activities which expose or potentially expose workers to hazardous substances and health hazards shall receive a minimum of 40 hours of instruction off the site, and a minimum of three days actual field experience under the direct supervision of a trained, experienced supervisor. Supervisors shall have an additional 8 hours of instruction as required by OSHA.

All site personnel must receive 8 hours of refresher training annually and have had refresher training within the last 12 months. All employees and subcontractors shall provide certificates of successful training to the Safety and Compliance Manager before initiation of work. All training shall meet the requirements of 29 CFR 1910.120 and 29 CFR 1910.65.

All employees, subcontractors, and visitors entering a contamination reduction zone, or an exclusion zone are required to have the above training. Hazardous Waste Operations training is not required for employees, subcontractors, Engineer representatives and visitors working in the support zone.

5.2 Crane Operation

All crane operators will possess a Certificate of Competence and NYS Crane Operators license issued by NYS Department of labor.

5.3 Asbestos Awareness and Compliance

Employees performing asbestos abatement will be trained in accordance with US EPA and NYSDOL and hold current NYSDOL license for asbestos handlers and/or supervisors.

5.4 Lead

Employees performing lead operations will be trained in accordance with OSHA Lead in Construction Standard, 29 CFR 1910.26.

5.5 Site-Specific Training

5.5.1 Initial Site Training

Prior to the commencement of onsite field activities an initial site-specific training session shall be conducted by the Safety and Compliance Manager. All site personnel (including employees, subcontractors, Engineer representatives and visitors) shall receive site-specific training in the form of an onsite briefing to ensure that all personnel are familiar with requirements and responsibilities for maintaining a safe and healthful work environment.

The Safety and Compliance Manager shall be responsible for keeping a record of all training periods. During the site-specific training, employees shall be instructed on the following topics:

- Review of the Site Operations (Work) Plan and Scope of work,
- Employee and Supervisor personnel responsibilities, including those for reporting all accidents,
- Content and implementation of the Site-Specific Health and Safety Plan,
- Site hazards and controls, including asbestos & PCB awareness training,
- Levels of personal protective equipment for various tasks,
- Action levels for upgrading PPE,
- Emergency response and incident reporting,
- Swift water rescue plan and procedures.
- Procedures for reporting and correcting unsafe conditions or work practices,

5.5.2 Daily Safety Meeting

Two safety meetings will be conducted daily by the Safety and Compliance Manager. The Safety and compliance manager will keep a record of all training periods. The purpose of the meeting is to coordinate daily activities and review relevant safety hazards and controls.

Documentation of daily safety meetings will be kept on-site by the Safety and Compliance Manger and furnished to regulatory agencies upon request.

6. Medical Surveillance Requirements

A baseline physical examination must be conducted on all who may enter a contamination reduction or exclusion zone. Medical monitoring will also be conducted any time an employee becomes injured or ill from site exposure or any time there is suspected excessive chemical exposure that would be medically detectable. Documentation that on-site personnel have met the medical surveillance requirements of 29 CFR 1910.120 and the Site-Specific Health and Safety Plan will be kept on-site by the Safety and Compliance Manager.

Specifically, the medical examinations are required for:

- All personnel entering exclusion or contamination reduction zones or performing work which requires a respirator.

Medical surveillance shall be administered by an occupational physician. Content of the medical examinations shall be the responsibility of the physician but must meet the requirements of 29 CFR 1910.120(f) (3). Additionally, asbestos worker's medical exams will be the requirements of 29 CFR 1910.1001.

6.1 Physicians Written Opinion

Before work begins, each employee shall submit a copy of the physician's written opinion about the employees' ability to perform hazardous waste site work and wear a respirator. The opinion shall address the employee's ability to perform hazardous remediation work and include the following:

- The physicians recommended limitations upon the employee's assigned work and/or PPE usage.
- The physician's opinion about increased risk to the employee's health resulting from work,
- A statement that the employee has been informed of the results of the examination.

7. Personal Protective Equipment

The purpose of Personal Protective Equipment (PPE) is to shield or insulate individuals from the chemical and physical hazards that may be encountered during various work activities. The level of PPE required for each work task will be based upon the hazard/risk analysis associated with that task. The components of the PPE ensembles for each level of protection will be selected and/or modified based on site-specific conditions, including heat and cold stress potential and safety hazards. Onsite personnel will be provided with the appropriate PPE ensembles to perform the tasks they are assigned.

7.1 Levels of Protection

Each activity conducted onsite may present different hazards and therefore require different levels of PPE. The basic levels of protection are D, Modified D, C, B, and A.

7.1.1 Level D

Level D is the minimal protection level when respiratory or skin protection is not required. Level D protection includes:

- Hard hat
- Eye protection (safety glasses, goggles, or face shield)
- Hearing protection (as needed)
- Work boots (steel toe/shank)
- High Visibility reflective work vests

7.1.2 Modified Level D

Modified level D may be required when directly handling contaminated wastes, soils, or water. Modified level D protection includes:

- Hard hat
- Eye protection (safety glasses, goggles, or face shield)
- Hearing protection (as needed)
- Work boots (steel toe/shank)
- Latex / PVC Over boots
- Nitrile gloves (when handling contaminated wastes, soils, or water)
- Disposable, hooded, Tyvek or equivalent
- Hi visibility reflective work vests

7.1.3 Level C

Level C will be used when toxic substances and/or concentrations are known and criteria for using air-purifying respirators can be met. This level of protection includes:

- Air purifying respirator equipped with filter cartridges approved by NIOSH for Asbestos (for asbestos abatement)
- Air purifying respirator equipped with filter cartridges approved by NIOSH for organic vapors (for sump cleaning)
- Tyvek Coverall with hood and foot
- Work Gloves
- Boots - chemical resistant, steel shank, or disposable latex /PVC over steel toe boots

Level C protection will be used during asbestos abatement and torch cutting operations and if air concentrations exceed action levels set forth in this SSHASP.

7.2 Initial Level of PPE Required

Table 7-1 gives a listing of the PPE requirements for various work locations and tasks and the additional requirements should upgrade be necessary. PPE will be upgraded should air concentrations measured at the work zone exceed action levels set forth in this Site-Specific Health and Safety Plan.

Table 7-1- Initial PPE Requirements

<i>Work Task</i>	<i>Initial Level of Protection</i>	<i>Protective Equipment</i>
General Site Activities <ul style="list-style-type: none"> • Mobilization / Demobilization • Soil Erosion Control • Clearing & Grubbing • Crane Operation • Excavator Operation • Haul Truck Operation • Remote Operation of Demolition Equipment • Site Restoration 	D	<ul style="list-style-type: none"> • Hard hat • Eye protection • Hearing protection, as necessary • Work boots • Work gloves • High visibility reflective work vests
Contaminated Material Activities <ul style="list-style-type: none"> • Debris Cleanup • Other activities where contact with contaminated materials is expected 	Modified D	<ul style="list-style-type: none"> • Hard hat • Eye protection • Hearing protection, as necessary • Work boots • Over boots • Chemical resistant gloves (nitrile) • Tyvek coverall • High visibility reflective work vests
Asbestos Abatement	Level C	<ul style="list-style-type: none"> • Hard hat • Eye protection • Hearing protection, as necessary • Work boots • Over boots • Chemical resistant gloves (nitrile) • Tyvek coverall • High visibility reflective work vests • ½ Face APR
Equipment Removal <ul style="list-style-type: none"> • When Torch cutting lead containing painted steel or steel with unknow lead content 	Level C	<ul style="list-style-type: none"> • Hard hat • Eye protection • Hearing protection, as necessary • Work boots • Over boots • Burn Gloves / Coat • Tyvek coverall • Full face PAPR

7.3 PPE Program Effectiveness Monitoring

The Safety and Compliance Manager shall continually monitor the PPE program to ensure its effectiveness. All PPE will be inspected by the Safety and Compliance Manager upon arrival to the site to ensure that the items have not been damaged and are in good working order. Once inspected, all PPE will be stored in a dedicated area to ensure that it does not become damaged or contaminated before use. All PPE, except respirators, will be disposed of once used following personnel decontamination procedures. The storage, inspection and maintenance, cleaning, and onsite fit testing of all respirators will follow the procedures outlined in Section 7.5 of this Site-Specific Health and Safety Plan.

7.4 Protective Clothing / Equipment Criteria

Personal protective equipment can reduce the possibility of contact with hazardous materials, but it should be used in conjunction with proper site entry protocols and other safety considerations. No single combination of protective apparel and equipment is capable of protecting against all hazards. The use of protective apparel and equipment can create significant worker hazards (e.g., heat stress, physical & psychological stress, impaired vision, mobility, and communications.) For any given situation, apparel will be selected to provide a level of protection commensurate with the degree of hazard. Over protection, as well as under protection, can be hazardous and will be avoided.

7.4.1 Hand Protection

When necessary, chemical resistant gloves will be used to protect workers from chemical contamination. Disposable gloves will be used to reduce decontamination needs.

Work gloves will be worn during general site work.

7.4.2 Clothing

When level C upgrade is required, DuPont Tyvek, or equivalent coveralls will be used when contact with liquid or wet materials is expected.

7.4.3 Eye and Face Protection

All employees will wear ANSI Z87 approved eye protection (e.g., safety glasses, goggles, face shield, etc.) at all times while in the exclusion or contamination reduction zone. Face shield and chemical splash proof goggles will be worn during periods when face and eyes are vulnerable to corrosive materials.

7.4.4 Head Protection

ANSI Z89 approved hard hats will be worn by all workers and visitors at all times while onsite, except in designated areas (e.g., office trailers and inside work vehicles).

7.5 Respiratory Protection Program

Respiratory protection is required during the following activities:

- Asbestos abatement.
- Torch cutting operations.
- When action levels for dust and / or VOCs are exceeded.

Any employee who may be required to wear a respirator shall do so in compliance with OSHA regulations, 29 CFR 1910.134, *Respiratory Protection*. The following Respiratory Protection Program shall be adhered to anytime respirators are required.

7.5.1 Purpose

The purpose of this respirator program is to ensure the protection of all employees from respiratory hazards, through proper use of respirators. This program has been prepared in accordance with 29 CFR 1910.134, *Respiratory Protection*. Sessler's Respiratory Protection Program Manager is Mr. Gus Rivera, Director of Health and Safety.

Work areas shall be evaluated by the Safety and Compliance Manager whenever there is reason to suspect a work area may involve a hazardous atmosphere. Safety and Compliance Manager will determine when respiratory protection is required. Respiratory protection utilized during the remediation tasks will be determined by the Safety and Compliance Manager and CIH based on the following:

- Expected contaminate concentration,
- Action levels based on air monitoring,
- The PEL, STEL, Ceiling value, and threshold limit value,
- Physical state of the contaminate (gas, vapor, mist, fume or dust),
- Chemical warning properties,
- Concentration levels that are immediately dangerous to life or health.

7.5.2 Respirator Assignment

Each employee will be assigned his own respirator. No sharing of respirators is allowed. Each respirator will be clearly marked by employee name. Each employee is responsible for securing his respirator and preventing theft or loss.

7.5.3 Employee Training

All employees will be trained on the proper use of respirators prior to use. Any new employee will require respiratory protection training before performing any operations requiring the use of a respirator. Sessler Wrecking's training program is in accordance with OSHA Standards 1910.134 and 1926.65 and includes the following elements.

- The reason respiratory protection is needed.
- The nature and effects of respiratory hazards to which employees may be exposed.
- An explanation of why a particular respirator has been selected for use.
- An explanation of why a particular type of respirator has been selected for a specific hazard.
- Instruction in inspecting, donning, checking the fit and wearing the respirator.
- An opportunity for each respiratory wearer to handle the respirator, learn how to don and wear it properly, check seals, and be fit tested.
- An explanation of proper maintenance and storage.
- Instruction on how to recognize and cope with emergency situations.

7.5.4 Storage

Respirators must be stored in a way that protects it from dust, sunlight, heat, extreme cold, excessive moisture and damaging chemicals. A clean reusable bag provides a contaminate-free storage method. Do not hang the respirator by the headbands or place it in any position that may cause distortion that could lead to a damaged face to mask seal.

Each employee is responsible for storing his own respirator in an appropriate manner. Respirators will be stored in the site office when not in use.

7.5.5 Inspection and Maintenance

Respirators shall be inspected each day before use. These routine checks are vital in maintaining a respirator that will protect you from hazardous chemicals.

The following should be done each day:

- Check all valves and seals for cracks, dirt, grit or anything that might cause a leak.
- Check all rubber & plastic parts for deterioration.
- Check headbands for good elasticity.
- Keep a written record of inspection dates and findings.

If any major problems are found with your respirator, it should be disposed of immediately.

7.5.6 Cleaning

Respirators should be cleaned any time it is necessary. To clean the respirator, remove cartridges and clean with soap and water. If need be, the respirator can be disinfected with isopropyl alcohol or a mild solution of bleach and water. Employees are responsible for maintaining the cleanliness of their respective respirator.

7.5.7 Fit Testing

All employees that may, because of their expected job functions, need to upgrade to Level C if action levels are exceeded, will be fit tested prior to donning respirators. Employees must be fit tested to assure the respirator fits and does not leak. Fit test records will be maintained on-site by the Safety and Compliance Manager.

During the test, the wearer of a respirator is exposed to a harmless irritant smoke while performing exercises similar to workplace functions. The respirator is equipped with a cartridge that can remove the irritant from the air. A good fit is achieved when the wearer cannot detect the odor.

Every time a wearer puts on a respirator, a positive and negative fit test must be performed.

7.5.8 Medical Surveillance

Before assignment where respirators are required, employees must be determined medically fit to wear a respirator by an occupational physician. Documentation that on-site personnel have met the medical surveillance requirements of 29 CFR 1910.120 and 29 CFR 1910.134 will be kept on-site by the Safety and Compliance Manager and made available upon request.

8. Employee Air Monitoring Plan

Inhalation hazards are caused by exposure to airborne concentrations of vapors and/or contaminated dust. To reduce the exposure to airborne hazards, the following Air Monitoring Plan shall be followed. The purpose of the Air Monitoring Plan is to determine the proper level of personal protective equipment and to document that the level of personal protective equipment is adequate. The Air Monitoring Plan includes both real-time and personal air monitoring. The Safety and Compliance Managers are responsible for implementing the air monitoring program.

8.1 Air Monitoring Equipment

Air monitoring equipment shall include a photo ionization detector (PID), Total Particulate Monitor, oxygen / explosive gas meter (LEL), personal sample pumps and any associated calibration equipment. All equipment will be calibrated and maintained according to manufacturer's instruction. Maintenance and calibration logs will be kept on site. Table 8-1 lists the air monitoring equipment to be used.

Table 8-1- Air Monitoring Equipment

<i>Instrument</i>	<i>Manufacturer</i>	<i>Range</i>	<i>Calibration</i>
Total Particulate Monitor	TSI - Dust Track	0.001 - 100 mg/m ³	Factory
PID	REA Systems, MiniRae 2000	0-10,000 ppm	Daily
Oxygen / LEL	REA Systems MutiRae Gas Monitor	LEL – 0-100% Oxygen – 0-100%	Daily
Personal Sample Pump – Asbestos, Silica & Lead	SKC	NA	Daily

8.2 Work Area Monitoring

Work area monitoring will be performed during demolition and excavation operations. The purpose of work area monitoring is to ensure appropriate PPE is being worn by site personnel.

Real time area monitoring for VOCs and total particulates will be conducted by the Safety & Compliance Manager in the work zone during demolition and contaminated material handling activities until deemed safe by the Safety and Compliance Manager. The purpose of real time monitoring is to determine if an upgrade or downgrade of PPE is required. Any monitored results above set action levels will require upgrades in PPE, work stoppage and/or site evacuation.

Real Time Air Monitoring data will be recorded daily on the Air Monitoring Log.

Work area monitoring will also be performed during confined space entry per Section 19.2.

8.2.1 Work Area Action Levels

Action levels are work area concentrations of organic vapor and dust which require an upgrade in Personal Protective Equipment, or where personnel must exit the area until other remedial or engineering controls are utilized to reduce the concentrations below the action level. When an action level is exceeded, the control (upgrade of PPE or work stoppage) must continue until air monitoring results taken by the Safety and Compliance Manager document concentrations are below the action level. Please note that since DNAPL could cause sustained VOCs, if sustained readings of VOCs are detected, the work will be paused and appropriate action taken.

Table 8-2 summarizes organic vapor and explosive gas action levels, which will be used during construction at the Hudson Falls Powerhouse site.

Table 8-2 – Work Area Action Levels

<i>Contaminant</i>	<i>Monitoring Location</i>	<i>Action Level</i>	<i>Control Action</i>
Total Organic Vapors	Work Area	1 ppm	Use Sensidyne detector tube for vinyl chloride to verify if concentration is vinyl chloride. No respiratory protection is required if vinyl chloride is not present.
		> 5 ppm	Stop work, withdrawal from work area, institute engineering controls, if levels persist, upgrade to Level C.
		> 25 ppm	Stop work, withdraw from work area, notify PM and Safety
Particulates	Work Area	150 ug/m3	Implement work practices to reduce/minimize airborne dust generation, e.g., spray/misting

8.3 Personal Monitoring

Personal monitoring will be performed during asbestos abatement, lead and potential silica producing operations. Asbestos samples will be collected daily during abatement. An initial assessment will be performed for lead and silica. Personal samples will be collected from employees performing these operations using the following NIOSH and/or OSHA sampling and analytical methods.

- Asbestos – NIOSH Method 7400
- Lead – NIOSH Method 7300
- Silica – NIOSH Method 7500

Additionally, an initial assessment for PCB exposure will be conducted and personal samples for VOCs will be collected if sustained real time VOC readings are encountered. PCB monitoring will be performed during initial dust generating activities. PCB monitoring will be performed as



well when at or below grade portions of the building are disturbed and will generate dust (i.e., during foundation removal or soil excavation adjacent to the building).

9. Chemical / Health Hazards and Controls

Exposure to contaminants found at the Hudson Falls Powerhouse site may be expected during building and foundation demolition. Based on the anticipated site activities and prudent safety and hygiene practices, ingestion of site contaminants is unlikely. The primary route of exposure is inhalation.

The following sections summarize potential chemical hazards and controls associated with the Hudson Falls Powerhouse site.

9.1 General Control of Chemical Exposures

Exposure to chemicals will be controlled by:

- Providing training as required by the OSHA Hazardous Waste, Asbestos, Lead in Construction and Silica Standards.
- Monitoring air concentrations in the breathing zone of site workers. Monitoring can reduce risks by indicating when action levels have been exceeded and when personal protective equipment is required.
- Providing respiratory protection in areas known to have concentrations above the action level.
- Providing protective clothing to eliminate skin exposure, where necessary.
- Implement best practices when handling PCB impacted materials, including wearing appropriate PPE, avoid touching material and washing hands.
- Performing torch cutting operations wearing Level C protection in accordance with OSHA Lead in Construction standard, 29CFR 1926.62.
- Wearing Level C during asbestos abatement operations, including Tyvek coveralls and ½ air purifying respirator, and performing removal under wet conditions.
- Establishing restricted work zones and posting restricted access signs during asbestos abatement and lead operations.
- Safe work practices will include:
 - Avoiding contact with contaminated materials
 - Using proper hygiene (hand washing, etc.) if in contact with PCB contaminated materials.
 - Wear proper PPE including Tyvek coveralls and chemical resistant gloves if in direct contact with PCB contaminated material.
- Use of engineering controls, including:

- Dust Control Measures - Sessler Wrecking will suppress fugitive dust during the selectively deconstruction of the former Powerhouse by use of portable water spray systems and use of a 2000-gallon water truck and/or other portable water application means such as a towable water tank with sprayer pump. Such controls shall be strategically placed and relocated as needed throughout the demolition areas. Additionally, laborers with water hoses and appropriate nozzles shall provide additional dust suppression support as needed.
- Using water during concrete saw cutting operations to eliminate silica dust.
- Use of remote operated demolition equipment.

9.2 Polychlorinated Biphenyls (PCBs)

PCBs are present in soils and the rock beneath the powerhouse and exposure may be possible during excavation of powerhouse walls. Control of PCB exposure is provided in Section 9.1 and includes training, safe work practices and the use of PPE when necessary.

PCBs are considered a potential human carcinogen, especially with respect to the liver. PCBs can be inhaled or absorbed through the skin. Skin effects include lesions, rashes, and a severe acne-like condition for those who may be especially sensitive to contact with PCBs. PCBs may be volatile and potential exposure could consist of contaminated dust and contact with contaminated soil and groundwater.

9.3 Asbestos

A pre-demolition asbestos survey was conducted by ARCADIS in January 2021. This survey determined that Chrysotile asbestos was present at a concentration of 14% in the roof flashing on the structure. Sessler Wrecking will abate the roof flashing prior to building demolition. Control of asbestos exposure during flashing removal is provided in Section 9.1 and includes training, restricted work areas, engineering controls and the use of Level C PPE.

Asbestos has been classified as a known human carcinogen (a substance that causes cancer). There is sufficient evidence that asbestos causes mesothelioma (a relatively rare cancer of the thin membranes that line the chest and abdomen), and cancers of the lung, larynx, and ovary. Although rare, mesothelioma is the most common form of cancer associated with asbestos exposure. There is limited evidence that asbestos exposure is linked to increased risks of cancers of the stomach, pharynx, and colorectum.

9.4 Silica

Potential for silica exposure during building demolition and concrete saw cutting. Building demolition will be performed by a combination of remote mechanical demolition using the Brock and manual demolition by employees working from personnel hoists. Control of silica exposure during these tasks is provided in Section 9.1 and includes training, engineering controls and the use of PPE.

Crystalline silica has been classified as a human lung carcinogen. Additionally, breathing crystalline silica dust can cause silicosis, which in severe cases can be disabling, or even fatal. The respirable silica dust enters the lungs and causes the formation of scar tissue, thus reducing the lungs' ability to take in oxygen. There is no cure for silicosis. Since silicosis affects lung function, it makes one more susceptible to lung infections like tuberculosis. In addition, smoking causes lung damage and adds to the damage caused by breathing silica dust. Exposure occurs during many different construction activities.

9.5 Volatile Organic Compounds (VOCs)

VOCs have been detected in groundwater at the site. Consequently, potential exposure to VOCs during demolition and material handling is low. Several VOCs used as organic solvents may be encountered at the Site and residual quantities may be present in groundwater. Although the precise mixture is unknown or may vary from location to location, VOCs may include (but not necessarily be limited to) trichloroethylene (TCE), perchloroethylene (PCE), 111-trichloroethane (TCA), n-hexane, dichloroethylene (DCE), and vinyl chloride (VC).

Although details associated with the exact location or minimum values detected for historical sampling events were not clearly identified in available documents, historical exposure data indicate that VOC exposures are below OSHA exposure limits. Available data are summarized below for primary VOCs of concern which do not represent every VOC that may have been detected in soil or groundwater:

- Trichloroethylene (TCE) <1 ppm
- Perchloroethylene (PCE) <1 ppm
- 1,1,1-Trichloroethylene (TCA) <1 ppm
- n-Hexane 0.2 ppm to 13.4 ppm Hexane was detected in air samples taken during DNAPL collection tasks.
- Vinyl Chloride 0.0011 ppm to 0.75 ppm. The highest exposure of 0.75 ppm was associated with the WTP solids handling area in 1996 and was significantly higher than other measured exposures. VC samples were collected at the WTP, former manufacturing areas, and tailrace tunnel

Acute (short-term) and chronic (long-term) inhalation exposure to VOCs can affect the human central nervous system (CNS), with symptoms such as dizziness, headaches, confusion, euphoria, facial numbness, and weakness. Chronic exposure has been shown to affect liver, kidney, immunological, endocrine, and developmental functions. Vinyl chloride is a known human carcinogen causing liver cancer, brain cancer and some cancers of the blood.

9.6 Lead

Lead is assumed present in building materials and painted steel components of equipment to be removed. Potential for lead exposure during building demolition is low due to the use of remote operated demolition equipment. The potential for lead exposure is high during torch cutting operations during equipment removal. Control of lead exposure during these tasks is provided in Section 5.1 and includes training, restricted work areas, engineering controls and the use of PPE.

When lead gets into the body it is only partly eliminated. The majority of the lead is stored in the bones and other tissues. As exposure to lead continues, the amount stored in the body increases if more lead is absorbed than is excreted. Consequently, continuous exposure to low levels of lead can, over time, can lead to accumulate in the body and lead poisoning may result.

Symptoms of lead exposure include:

- Short term (acute) overexposure. Large doses of lead may cause seizures, coma, and death from cardio-respiratory arrest. Short term occupational exposures leading to these effects are unusual but possible.
- Long-term (chronic). Overexposure may result in damage to the blood-forming, nervous, urinary, and reproductive systems. Some common symptoms of overexposure include loss of appetite, metallic taste in the mouth, anxiety, constipation, nausea, pallor, insomnia, headache, nervous irritability, muscle and joint pain, and tremors.

9.7 COVID 19

Sessler Wrecking will follow Appendix D - Arcadis COVID-19 Mitigation Plan for National Grid.

9.8 Hazard Communication

The worker right-to-know program provides Sessler Wrecking personnel with information and training about safety and health hazards associated with the chemicals they might encounter in the workplace. This procedure meets the requirements of 29 CFR1910.1200 and describes how chemical safety hazards are communicated to Sessler Wrecking personnel working in offices and at field site locations, and how information is to be provided to employees of other employers working at the location. The requirements include steps to acquire this information, maintain it, and train everyone to use it.

Materials that are considered hazardous materials under the OSHA Hazard Communication Standard (29 CFR 1910.1200) will be used during this project. An inventory list of site chemicals will be maintained. MSDSs for these materials will also be maintained on-site. If additional chemicals are necessary, the inventory and MSDSs will be updated.

The Safety and Compliance Manager will make copies of these MSDSs available to any subcontractors (i.e., surveyors, excavators, etc.) on this project.

9.8.1 Safety Data Sheets (SDSs)

A variety of chemicals and products may be brought on site to be used during field activities. These chemicals and products include sample preservatives and generator and equipment fuels (gasoline and diesel).

A list of hazardous materials brought on site and copies of SDSs will be maintained on site by the Safety and Compliance Manager. SDSs will be reviewed when performing Job Safety Analyses (JSAs).

SDS will be consulted when in determining proper use, storage, and disposal of chemicals.

9.8.2 Labeling

Chemicals containers used onsite will be properly labeled. Labels must include product identifier, signal word, hazard statement, precautionary statements, name address and telephone number of manufacture.

9.8.3 Training

All employees will receive hazard communication training. Training will be initially provided during site specific orientation. Periodic training will be provided chemicals are altered or new chemicals are brought on-site. Training will include:

- Requirements and use of the HAZCOM program on the project.
- The location of all hazardous or toxic agents at the project.
- Identification and recognition of hazardous or toxic agents on the project.
- Physical and health hazards of the hazardous or toxic agents pertinent to project activities.
- Protective measures employees can implement when working with project-specific hazardous or toxic agents.

10. Physical Hazards

The following sections outline potential physical hazards to be encountered and procedures to control each hazard.

10.1 Cranes / Hoisting / Rigging

See Crane Hoist and Rigging Safety Program in Section 17 of this SSHASP.

10.2 Working from Man Basket

See Section 17.6 of the Crane Hoist and Rigging Safety Program of this SSHASP.

10.3 Demolition

Building demolition will be performed by a combination of remote mechanical demolition using the Brock and manual demolition by employees working from personnel hoists. Additional detail regarding demolition procedures can be found in the Project operations Plan and site Construction Plan.

In accordance with the OSHA 29 CFR 1926 Subpart T – Demolition, 12 NYCRR 23 - Protection in Construction, Demolition, and Excavation Operations and 2020 NYS Existing Building Chapter 15 – Construction Safeguards. This program is to protect employees who may encounter demolition and the accompanying hazards while performing work. This procedure applies to Sessler Wrecking operations where employees may be exposed to demolition during the course of their routine work.

- This program is to ensure essential information regarding the hazards of demolition work is communicated to our staff and controls to minimize any potential exposure. When work is performed on a non-owned or operated site, the operator's program shall be followed.
- All demolition work must be carried out in accordance with local regulations and permits. Demolition procedures are outlined in the Site Construction Plan and POP.

10.3.1 Prior Notification

If Sessler Wrecking is applying for demolition work proper notification is required and Sessler Wrecking must ensure it has read and will comply with local regulations and permits.

10.3.2 Stability Notification

In accordance with the OSHA 29 CFR 1926 Subpart T – Demolition, 12 NYCRR 23 - Protection in Construction, Demolition, and Excavation Operations, 2020 NYS Existing Building Chapter 15 – Construction Safeguards and 2020 NYS Existing Building Section A303 – Structural Weakness, local authorities must be informed immediately if, during any demolition work:

- The building concerned (including an intact part of the building) becomes unstable; and

- There is a danger that the building could collapse and injure any person who is in any place not under the control of the person who is carrying out that work, either directly or by his or her employees or agents.

10.3.3 Investigation Prior to Demolition

In accordance with the OSHA 29 CFR 1926 Subpart T – Demolition, 12 NYCRR 23 - Protection in Construction, Demolition, and Excavation Operations, 2020 NYS Existing Building Chapter 15 – Construction Safeguards and 2020 NYS Existing Building Section A303 – Structural Weakness, before the commencement of stripping or demolition work, an initial investigation of the building to be demolished and the site on which it is located must be carried out in accordance with local regulations and permits.

- The records of the investigations must be included by the employer in the work method statement for the demolition to substantiate the choice of a particular sequence, method, or technique of demolition.
- It is a requirement that the results of the investigations of the building and site must be recorded in writing by Sessler Wrecking and must be made available to local authorities for inspection on demand.

10.3.4 Barricading and Signage

In accordance with the OSHA 29 CFR 1926 Subpart T – Demolition, 12 NYCRR 23 - Protection in Construction, Demolition, and Excavation Operations, and 2020 NYS Existing Building Chapter 15 – Construction Safeguards:

- If falling material could endanger workers the danger area must be barricaded or effectively guarded to prevent entry by workers, and conspicuous warning signs must be displayed on all sides and approaches, or adequate protective canopies must be installed over the danger area, or adequate catch platforms or nets must be provided to stop materials from falling into areas accessible to workers.

10.3.5 Sequential Mechanical Demolition Requirements

In accordance with the OSHA 29 CFR 1926 Subpart T – Demolition, 12 NYCRR 23 - Protection in Construction, Demolition, and Excavation Operations, 2020 NYS Existing Building Chapter 15 – Construction Safeguards and 2020 NYS Existing Building Section A303 – Structural Weakness:

- If mechanical means are used to carry out demolition work, the work must be carried out sequentially.
- Sessler Wrecking must ensure that demolition work involving pulling with ropes or chains or similar means is carried out only if the building being demolished is not more than 16 feet in height and the work is carried out sequentially.

10.3.6 Demolition Steps

In accordance with the OSHA 29 CFR 1926 Subpart T – Demolition, 12 NYCRR 23 - Protection in Construction, Demolition, and Excavation Operations, 2020 NYS Existing Building Chapter 15 – Construction Safeguards and 2020 NYS Existing Building Section A303 – Structural Weakness, Sessler Wrecking shall ensure that:

- Refer to Site Construction Plan.
- Dust from the demolition is controlled to the extent that is reasonably practicable.
- Materials and debris are not allowed to accumulate in any area to the extent that the materials and debris cause overloading of a structure that could result in the collapse of all or part of the structure.
- Any opening or hole in a floor, roof or other surface on which workers are required or permitted to walk or stand is guarded or covered.
- A free-standing scaffold is used in the demolition of a building shaft from the inside.
- Steel structures are dismantled column length by column length and tier by tier from the top downward.
- No wall or other part of the structure being demolished is left in an unstable condition or in danger of accidental collapse except during the actual demolition of that wall or part of the structure.
- Ensure tools and equipment are in good working order.

10.3.7 Structural Members and Cranes

In accordance with the OSHA 29 CFR 1926 Subpart T – Demolition, 12 NYCRR 23 - Protection in Construction, Demolition, and Excavation Operations, 2020 NYS Existing Building Chapter 15 – Construction Safeguards and 2020 NYS Existing Building Section A303 – Structural Weakness:

- Sessler Wrecking shall ensure that structural members that are being removed are not under any stress other than the member's own weight and are secured or supported to prevent any unexpected movement.
- Where a structural member is being hoisted by a crane or other similar lifting device from a structure being demolished or from the demolition rubble, Sessler Wrecking shall ensure that the hoisting line is in a vertical position and is over the center of gravity of the load in a manner that will reduce the danger to workers from a swinging or uncontrolled load.

10.3.8 Use of a Registered Professional Engineer

Where the demolition of a structure may affect the stability of an adjoining structure, Sessler Wrecking shall ensure that the demolition is carried out in accordance with procedures certified in writing by a registered professional engineer to safeguard the stability of the adjoining structure and a copy of the procedures is kept at the worksite during demolition.

10.3.9 Housekeeping

In accordance with the OSHA 29 CFR 1926 Subpart T – Demolition, 6 NYCRR NYS DEC Construction and Demolition Debris, 12 NYCRR 23 - Protection in Construction, Demolition, and Excavation Operations, 2020 NYS Existing Building Chapter 15 – Construction Safeguards and 2020 NYS Existing Building Section A303 – Structural Weakness, Material and debris must not be allowed to accumulate on floors or on the ground outside the building or structure if workers will be endangered. This is required and will be monitored throughout the project to eliminate hazards.

10.3.10 Clearances

In accordance with the OSHA 29 CFR 1926 Subpart T – Demolition, 12 NYCRR 23 - Protection in Construction, Demolition, and Excavation Operations, 2020 NYS Existing Building Chapter 15 – Construction Safeguards and 2020 NYS Existing Building Code no person shall work in or below a building that is being demolished if, at any time during the carrying out of the demolition work, there is a danger that the person might be injured as a result of demolished or other material falling or rebounding. This clause applies whether or not the person's work is associated with the demolition of the building.

10.4 Trenching and Excavation

Minimal excavation is anticipated during this project. Limited soil removal will be done at the top of the bank to access powerhouse walls. Entry into excavations will not be required during this project. A competent person will inspect open excavations daily for any instability caused by rain upland soil loading. Sessler Wrecking will submit the Intrusive Fieldwork Notices to the EPA and NYSDEC before any ground intrusive work.

In accordance with the OSHA 29 CFR 1926 Subpart P – Excavations, OSHA Technical Manual (OTM) Section V: Chapter 2 Excavations, 12 NYCRR SUBPART 23-4. Excavation Operations, and OSHA Publication 2226-10R - Trenching and Excavation Safety, this training program is to protect employees from safety hazards that may be encountered during work in trenches and excavations.

10.4.1 Utilities and One-Call Center Requirements

In accordance with the OSHA 29 CFR 1926.651 - Specific Excavation Requirements, and 16 NYCRR 753, Protection of Underground Facilities, the location of underground installations shall be determined before excavation.

Sessler Wrecking shall follow these procedures for calling the appropriate one-call center before digging, driving equipment into the ground, or engaging in any earth-moving activities:

- The appropriate utility company (gas, electric, water, sewer) shall be contacted prior to work beginning using the appropriate one-call center.

- If utilities are located on client property and the client contacts the one-call center Sessler Wrecking will not begin operations unless written evidence of the one-call center is provided for each appropriate utility company.

Excavation shall be done in a manner that does not endanger the underground installations or the employees engaged in the work. Utilities left in place shall be protected by barricades, shoring, suspension, or other means as necessary to protect employees.

10.4.2 Protection of the Public

- Barricades, walkways, lighting and posting shall be provided as necessary for the protection of the public prior to the start of excavation operations.
- Guardrails, fences, or barricades shall be provided on excavations adjacent to walkways, driveways and other pedestrian or vehicle thoroughfares. Warning lights or other illumination shall be maintained as necessary for the safety of the public and employees from sunset to sunrise.
- Wells, holes, pits, shafts, and all similar hazardous excavations shall be effectively barricaded or covered and posted as necessary to prevent unauthorized access. All temporary excavations of this type shall be backfilled as soon as possible.

10.4.3 Proximity to Heavy Equipment

Hazards associated with working near excavation equipment are discussed in Section 10.7.

10.5 Falls

Potential for fall hazards exist during equipment mobilization and setup, powerhouse equipment removal and when working on stairway along northern side of the Powerhouse. It is the policy of Sessler Wrecking that all employees working at heights greater than 4 feet, or where a fall from lower heights may result in serious injury (i.e., Impalement) utilize fall protection. "100 Percent fall protection" is required at all times. Violation of this policy is considered a serious violation which can result in immediate termination.

The use of fall protection systems will be used to minimize hazards associated with falls from heights. It is anticipated that personal fall arrest systems will be used. A personal fall arrest system includes the use of full body harness, shock absorbing lanyard appropriate attachment point. Use of fall restraint system may be necessary while performing work on the roof. Retractable lanyards may be used in certain situations.

10.6 Torch Cutting

Torch cutting structural steel will be required during mechanical equipment removal from the powerhouse. The following general safety requirements will be followed during torch cutting operations.

- Obtain / issue hot work permit

- Properly use and store compressed gas cylinders, hose and torches.
- All hoses in use shall be inspected at the beginning of each work shift. Defective hose shall be immediately removed from service.
- Torches to be used shall be inspected at the beginning of each work shift for leaking shutoff valves, damaged hose couplings, and clogged tip connection. Defective torches shall not be used.
- Torches shall be ignited by friction lighters or other approved devices only. Matches and, flame lighters shall not be used to ignite a torch
- Oxygen and fuel gas pressure regulators, including related gauges, shall be in proper working order and equipped with “Flashback” arrestors attached to the gauges.
- Stop all burning activities 1 hour prior to end of shift.
- Provide fire watch and water during all burning activities.
- Wear proper PPE, including burn coat and gloves, protective eye wear.

10.7 Proximity to Heavy Equipment

Hazards associated with working around heavy equipment exist during equipment mobilization and setup, barge system mobilization and assemble, excavation, material transfer to staging area, material loading for disposal, crane operations, and site restoration. Working around heavy equipment poses obvious physical hazards. Workers could easily be injured or killed if hit by heavy equipment. These hazards can be reduced by minimizing the number of workers and equipment in the same area, responding to backup alarms, maintaining a clear field of view for drivers and operating equipment at safe speeds.

Heavy equipment will be operated under the following conditions:

- When necessary, spotters will be used to ensure safe transportation, mobility and operation of equipment in areas of high personnel or community traffic.
- The operation of heavy equipment will be limited to authorized personnel specifically trained in its operation.
- The operator will use the safety devices provided with the equipment, including seat belts. Backup warning indicators and horns will be operable at all times.
- While in operation, all personnel not directly required in the area will keep a safe distance from the equipment.
- Personnel directly involved in an activity will avoid moving into the path of operating equipment. Areas blinded from the operator’s vision will be avoided and barricaded as necessary to prevent inadvertent entry into blind spots.

- Additional riders will not be allowed on equipment unless it is specifically designed for that purpose.

10.8 Working Over / Near Water

See Water Operations Safety Program in Section 16 of this SSHASP

10.9 Diving Operations

Sessler Wrecking will use a specialty subcontractor for underwater video surveillance and debris removal. Diving operations will be in accordance with dive subcontractor safety plans.

10.10 Clearing & Grubbing

Gas powered chain saws and trimmers will be used to clear the site and a tow behind chipper will be used to downsize treetops. The following precautions will be followed by employees during clearing and grubbing operations.

- Use Proper PPE, to include hard hat with face shield, safety glasses, hearing protection, gloves, steel toe boots and chaps.
- Maintain safe clearance of site personnel / equipment.
- Be alerted to breaking or snapping branches.
- Inspect saw prior to use. Test kickback break.
- Wear protective chaps.
- Maintain proper chain tension.
- Maintain safe clearance of site personnel / equipment
- Shut down saw when not cutting or traversing hazardous terrain.
- Look for nails, spikes, etc. prior to cutting.
- Operate saw with all guards in place.
- Keep firm grip on saw with two hands at all times.
- Stand slightly to side of direction of cut.
- Do not cut directly overhead.
- Use only sharp chain.
- Use notch cut / back cut technique.

The precautions will be followed by employees when using the chipper:

- Do not wear loose clothing.
- Place machine on level surface.

- Ensure all guards are in place.
- Feed material only when machine at full operating speed.
- Feed chute from side, not front.
- Keeps hand outside chute.
- Let go of material as soon as it's pulled into chipped.
- Feed branches butt end first.
- Lay short pieces on top of longer pieces and then feed into chipper.
- Shut down machine before servicing or trying to clear jammed material.
- Maintain housekeeping and eliminate trip hazards around the machine.

10.11 Trucking Activities

The following rules shall be followed for all trucking activities. These are the minimum standards for all drivers who enter the Site. Failure to follow these rules may be grounds for immediate removal from the Site.

- Always wear a seat belt when in a moving vehicle, regardless of speed, distance, or direction.
- No cell phone or radio use while the truck is moving.
- Always obey the speed limit. Unless otherwise posted, the on-Site speed limit is five (5) mph.
- Follow the routes as directed or approved by the Site Superintendent and/or Project Manager.
- Spotters shall be provided to assist drivers when backing. Trucks must not back onto the Site until directed to do so by a present Spotter. Backing shall be stopped immediately if sight of Spotter is ever lost.
- Drivers must remain inside the truck at all times while on Site unless otherwise directed.
- Drivers who are permitted to leave the cab, must wear the proper PPE required by the Site: hard hat, safety glasses, high visibility vest, long pants, shirt, and safety toe work shoes.
- No eating on site.
- Trucks without automated tarping systems will tarp their loads in designated tarping station,

10.12 Slip/Trip/Fall Injuries

As with any construction project, hazardous waste site work poses numerous slip, trip and fall hazards. These hazards can be reduced by avoiding work on slippery surfaces, wearing

slip resistant footwear, working with a low center of gravity and making slow and deliberate movements. Personnel must be aware that the protective equipment worn may limit dexterity and visibility and may increase the difficulty of performing some tasks. Based on winter work schedule, snow and ice are likely. Snow and ice will be controlled in active work areas by plowing and / or ice melt.

10.13 Inclement Weather

In addition to heat and cold extremes, severe rain, snow or electrical storms can also pose risks to site workers. Driving hazards are also increased in poor weather. Work may need to be stopped under such conditions. Outside work should be suspended during electrical storms and during periods of high or gusty winds.

Weather conditions will be monitored daily. If lightning is observed, a 30-minute stand-down will be initiated. Work will resume once it is confirmed that the lightning has not struck the area for the 20 minutes. All other weather-related stand-downs will be at the discretion of the site superintendent.

The primary source of shelter from lightning will be the project vehicles, as identified during the daily safety briefing. The secondary source of shelter will be vehicles and enclosed cab equipment. Open areas, water, high places, trees, small open structures, tall structures, and metal fences will be avoided during lightning events. The crew will utilize surge protectors and turn off all unnecessary electrical equipment to prevent electrical fires.

Most deaths from lightning strikes are due to heart attacks and/or the person stops breathing. Keep in mind that injured persons do not carry an electrical charge. If a person has been struck by lightning, apply first aid (if trained), and call 911. If unconscious, check for breathing and a pulse. If not breathing, begin CPR and check for other injuries

10.14 Use of Power and Hand Tools

Only tools with grounded three wire plugs should be used. GFIs must be used when using power tools outside or in wet areas. Tools must be checked frequently for defects and maintained properly. All tools must be unplugged before making adjustments or repairs.

The following will also reduce the hazard associated with working with power and hand tools:

- Only use tools for which you have been properly trained.
- Maintain all equipment guards and never remove or block.
- Make frequent inspections for defective blades, wheels, cords and plugs.
- Assure all electrical tools are properly grounded.
- Never use grinding wheels in excess of their safe operating speed.

- Air hoses on pneumatic tools should not be disconnected until pressure is relieved.
- Compressed oxygen must never be used to power pneumatic equipment.
- Hand tools must be kept in good repair.
- Tools should only be used for the purpose they were designed.
- Tools should never be left on ladders, scaffolds or other area where they will create a trip or fall hazard.
- Tools should be properly stored when not in use.

10.15 Lifting

Back injuries are the most common injury in the construction industry. Injuries are usually caused by improper lifting techniques. The following lifting techniques will help reduce lifting injuries:

- Inspect the work area prior to lifting for trip hazards.
- Set feet solidly and well apart, with one foot slightly ahead of the other.
- Crouch as close to the load as possible, with the legs bent.
- Keep back as straight as possible.
- Do not twist or turn during lifting.
- “Lift with your brain - then lift with your back.”

10.16 Fueling Vehicles

All equipment should be shut off, with ignition off, during fueling operations. Smoking is not allowed near fueling stations or anywhere on site.

10.17 Electrical Hazards

There are a variety of utilities around the Site and near the Powerhouse. The utilities include the 34.5 kV overhead electric lines and supporting poles. Sessler Wrecking shall maintain the 10-ft Occupational Health and Safety Administration (OSHA) minimum approach distance from the overhead electric lines and shall protect the existing guy wires, which are assumed to remain in place during demolition activities. Sessler Wrecking has considered overhead utilities and associated OSHA offset clearances, especially when developing the planned approach for building demolition, water sprays, material load-out, tarping, onsite transportation, etc.

Both mobile cranes will be grounded. Additionally, all working in the vicinity of the energized power lines shall be performed under the oversight of a Sessler Wrecking hired, third party Electrically Qualified Spotter in accordance with National Grid requirements.

All electric connections to existing electrical outlets or temporary generators will utilize ground fault circuit interrupters (GFCI). Lock-out/tag-out procedures will be implemented before work on any electrical systems.

Prior to any ground intrusive work activities, Sessler Wrecking shall employ a private utility locator to assist with the location and identification of all above and below grade utilities. Existing utilities are not required to be removed; however, Sessler Wrecking will verify that all utilities have been either identified, protected, and/or disconnected prior to demolition of the former Powerhouse structure.

10.17.1 Procedures and Guidelines to Eliminate Injuries from Possible Malfunctions, Improper Grounding and/or Defective Electrical Tools

The following procedures and guidelines are designed to eliminate all injuries resulting from possible malfunctions, improper ground and/or defective tools.

10.17.1.1 Ground Fault Circuit Interrupters

In accordance with NFPA 70E and 29 CFR 1926 Subpart K - Electrical, all 120-volt, single-phase 15 and 20 ampere receptacle outlets on construction or maintenance sites, which are not part of the permanent wiring of the building or structure, and which are in use by employees, shall have approved ground fault circuit interrupters for personnel protection.

- All hand portable electric tools and extension cords will use a GFCI.
- Additionally, approved GFCI's will be used for 240-Volt circuits in the same service as described above.
- GFCI's will be used on all 120-volt, single-phase 15-amp and 20-amp receptacles within 6 feet of a sink, damp areas or on installed outdoor equipment.
- The GFCI will be the first device plugged into a permanent receptacle.
- The GFCI will be tested before each use.
- Cords will be inspected to each use.

10.18 Elevated platforms and Aerial Lifts

Aerial man lifts will not be used on this project. See Section 17.6 of this SSHASP for information regarding personnel hoisting utilizing a crane.

10.19 Noise

Requirements set forth in the Hearing Conservation Regulations (29 CFR 1910.95) shall be adhered to during work on site. Hearing protection will be provided where sound pressure levels exceed 85 dBA scale. The Safety and Compliance Manager shall identify areas of high noise that require hearing protection. The Site Safety Supervisor will also monitor noise levels to ensure compliance with all state and local laws regarding community noise levels.

10.20 Material Handling

Proper material handling procedures shall be utilized during all material handling activities. The following general material handling rules will be followed:

- Use good back posture when lifting,
- Never walk under a suspended load,
- Always wear a hard hat and foot protection,
- Only use qualified equipment operators,
- Be aware of contaminated equipment,
- Never walk in front of moving equipment,
- Keep all loose clothing away from moving and mechanical parts,
- Never add fuel to running equipment.

10.21 Use of Repaired Wooden Walkway / Stairs

The wooden stair way is currently not in use and is barricaded to prevent entry. Sessler Wrecking intends to use the stair way to install barge anchors in rock below. Prior to using the stairway, repairs will be in accordance with an engineering survey completed by Jensen / BRV Engineering, PLC on August 2, 2022. Repairs will include:

- Reattaching deck boards with deck screws where necessary.
- Replacing missing deck boards.
- Replacing handrails in area that will be occupied with pre-engineered handrail system.
- Replace missing or deteriorated stair treads.
- Install 2x4 transverse cross braces between posts under the stair where they are not present.
- Paint edges of non-standard changes in elevations with high-visibility paint.

After Sessler Wrecking's work is complete, the stairs will be barricaded to prevent future use.

10.22 Installation of Erosion Control

Hazards associated with installing and maintaining erosion control measures include working near heavy equipment, clearing and grubbing, material handling, working on uneven slopes and use of hand tools (shovels, rakes, hammers, etc.). The work area will be inspected for slip and trip hazards prior to work. Slip and trip hazards will be removed or marked. Proper PPE will be worn when using hand tools, including work gloves. Hand tools will be inspected prior to use and only used as intended.

Additional information on proximity to heavy equipment, clearing and grubbing and material handling can be found in sections 10.7, 10.10 and 10.20.

11. Site Control

The purpose of site control is to minimize exposure to onsite workers, prevent unauthorized entry to the site and prevent the spread of contamination. The following measures will be used to control the site.

11.1 Site Security

Sessler Wrecking will use a 3rd Party Security Guard employed by National Security. The site entrances will be controlled by chain link fencing that will remain closed to traffic and pedestrians during the project. However, workers should be aware of unauthorized vehicles or pedestrians entering the site where the work is being conducted. Unauthorized vehicles or pedestrians will be stopped and escorted off-site. All Sessler Wrecking employees will wear high-visibility clothing and use high-visibility cones and/or flashing lights during the work.

Signs will be posted on the site access gate directing all site visitors to the project trailers to sign in and receive a safety orientation and a safety orientation sticker. Project visitors will be provided a safety briefing by the site superintendent. The briefing will include the overall site hazards and concerns and the current day's site activities and associated hazards. Prior to a visitor leaving the trailer, the site superintendent will make sure the visitor has the correct PPE (steel toe boots, hard hat, safety glasses, and a high-visibility vest). The site visitor will be escorted when on site by someone familiar with the site's activities.

Work zone security and control during emergencies, accidents, and incidents will be monitored by the site superintendent while Sessler Wrecking is onsite. The duties of the site superintendent include limiting access to the work zones to authorized personnel and overseeing emergency response activities. The project work area is to be cordoned off or enclosed in such a way as to keep unauthorized and unprotected workers out of the area. The decontamination area will be set up adjacent to the work area to minimize contamination to the clean area.

11.1.1 Preventing Trespassing

The perimeter will be established by installing fencing and gates that will be locked during nonworking hours. Signs will be installed on the fencing to deter unauthorized people from entering the work site. Sessler Wrecking will use a 3rd party Security Guard to monitor off hour activities.

11.1.2 Preventing Unqualified or Unprotected Workers from Entering Restricted Areas

Signs and fencing shall be used to mark restricted areas.

11.2 Use of Site Work Zones

A three-zone approach shall be used during site operations to contain the potential spread of contamination and control the flow of personnel, vehicles, and materials into and out of work areas. The zones include the exclusion zone, the contamination reduction zone and the support zone. The exclusion zone and contamination reduction zone will be designated using temporary chain link fence. These site work zones will be developed after mobilization and finalized with site personnel.

11.2.1 Exclusion Zone

The exclusion zone(s) is the area of known or suspected contamination. These areas will be clearly marked using orange construction fence or caution tape. Only personnel involved in the work activities shall be allowed in the exclusion zone. Proper PPE, as determined by the Safety and Compliance Manager shall be worn by personnel entering and working in the exclusion zone. Exclusion zones will be setup whenever intrusive activities are occurring and may be modified based on field conditions and air monitoring results. Exit from an exclusion zone may only be made through the contamination reduction zone.

11.2.2 Contamination Reduction Zone

The contamination reduction zone (CRZ) is the “buffer zone” between the contaminated areas and the clean area. This zone serves as a point of decontamination for equipment and personnel, and material transfer from the clean zone to the exclusion zone. This zone may also provide first aid stations and rest areas (upwind of exclusion zone). The contamination reduction zone will also be clearly marked with orange construction fence or caution tape. PPE may be required in the CRZ, as determined by the Safety and Compliance Manager after air monitoring and site inspection. A Contamination Reduction Zone will be in place for all exclusion zones established on site.

11.2.3 Support Zone

The support zone includes all areas not defined by the contamination reduction or exclusion zones. Administrative services, bulk storage supply, job site shipping and receiving and personal vehicle parking will be located in this zone. The support zone should have negligible potential for exposure to contaminants on site. Normal work clothes may be worn in the support zone.

11.3 Site Control Log

A log of personnel visiting, entering, or working on the site will be maintained on-site by the Safety and Compliance Manager. The log will contain the following:

- Date,
- Name,

- Agency or company,
- Time entering and exiting,

All visitors must show proof of current training, medical surveillance before entering the CRZ or Exclusion Zone. All personnel must fill out a Certificate of Worker or Visitor Acknowledgment form.

11.4 Communication

Both onsite and offsite communication will be maintained at all times. Onsite and offsite communication will be by cellular phone and two-way radios. A list of emergency telephone numbers is included in Section 15-2 of this Site-Specific Health and Safety Plan.

12. Heat and Cold Stress Prevention

12.1 Heat Stress

In hot, sunny environments there is a high potential for heat stress to pose a significant safety hazard to workers. This is especially true where the use of mandated protective clothing will limit the body's ability to dissipate excess heat through evaporation of sweat. In order to mitigate the effects of heat stress, it will be necessary to establish a work routine which incorporates appropriate rest periods to allow workers to remove protective clothing, drink fluids (vital when extreme sweating is occurring) and rest. The frequency and length of such work breaks must be determined by the individual work location supervisor based upon factors such as the ambient temperature and sunshine, the amount of physical labor being performed, the physical condition of the workers, and protective clothing being used. In any case, breaks must be sufficient to prevent workers from manifesting symptoms of heat stress, which can include irritability, confusion, lethargy, and headache.

Workers should be encouraged to immediately report any difficulties or heat-related problems, which they may experience or observe in fellow workers. Supervisors should use such information to alter the work break schedule to accommodate such problems. During breaks, workers should be encouraged to drink plenty of water or other liquids to replace lost fluids and to help cool off. Should any worker exhibit signs of severe heat distress, such as profuse sweating, extreme confusion and irritability, or pale, clammy skin, that worker should be relieved of all duties at once and made to rest in a cool location and drink plenty of water. Anyone exhibiting symptoms of heat stroke, such as red, dry skin, or unconsciousness, should be taken immediately to the nearest medical facility, taking steps to cool the person during transportation (clothing removal, wet the skin, air conditioning, etc.). Heat stroke is a life-threatening condition, which must be treated by competent medical authority.

12.2 Cold Stress

As your body temperature decreases, the body maintains its temperature by reducing blood flow to the skin. This causes marked decrease in skin temperature, especially in the extremities (feet, hand, nose, ears etc.).

Harmful effects of working in the cold include frostbite and hypothermia. Frostbite occurs when parts of the body freeze. Toes, fingers, earlobes and noses are most susceptible to frostbite. Hypothermia occurs when the body is no longer capable of maintaining its core temperature. Hypothermia can result in hallucinations, sleepiness, irregular heartbeat, unconsciousness and death.

12.2.1 Preventing Cold Stress

Cold stress can be prevented by:

- Wearing several layers of loosely fitted dry clothes. An outer layer of water and wind proof clothing may be necessary.
- Drinking warm liquids
- Changing clothing if you get wet from sweating or exposure to water.
- Taking breaks in warm shelter to prevent sleepiness, shivering or pain in your extremities.

13. Spill Response

Spills will be reported to the National Response Center and other regulatory agencies, as directed by EPA full-time onsite Project Coordinator and EPA Project Director.

In event of a release the following procedure will be followed:

- Notify the Safety and Compliance Manager immediately, notify project personal per Incident report matrix located in Section 15.9.
- Notify the EPA full-time onsite Project Coordinator and EPA Project Director for further guidance.
- Evacuate immediate area of release.
- Conduct air monitoring to determine need for PPE.
- Don appropriate PPE and prepare to implement spill control / remediation.

13.1 Spill Response Materials

Sessler Wrecking will maintain the following spill response materials on site.

- Oil absorbent booms.
- Pads
- Socks
- Pillows
- A stockpile of earthen material (bentonite clay, or other approved oleophilic material)

13.2 Water Release of Equipment Oil or Fuel

When an oil spill occurs on water, it is critical to contain the spill as quickly as possible to minimize danger and potential damage to persons, property, and natural resources.

Should a release of fuel or oil happen in the vicinity of the barge debris capture system, Sessler Wrecking will deploy oil adsorbent booms to contain the spill. Booms will be deployed from boats inside the turbidity curtain surrounding the barge system. Additional, adsorbent pads or booms will be used to collect oil from inside the containment area.

13.3 Release of Hudson Falls Contaminates

Sessler Wrecking anticipates that certain remaining environmental impacts and regulated constituents may be encountered during the demolition activities. In addition, various remedial systems still exist, including monitoring and recovery wells near the Powerhouse and around the site, which require periodic access by GE during the deconstruction activities. Additionally, an existing Tunnel Drain Collection System (TDCS), as well as a

soil cover system, will need to be protected and maintained. Because exterior walls of the Powerhouse located below existing grade may be impacted by HF Contaminants such as dense non-aqueous phase liquid (DNAPL), as a conservative approach, the below-grade sections of exterior walls in contact with subgrade soils or existing bedrock will be carefully and sequentially deconstructed in compliance with the EMPM. Resulting debris will be segregated from other debris and handled and staged as potentially TSCA-regulated material until such time that the segregated demolition debris are characterized and resulting data are reviewed.

Additionally, prior to removing ground floor equipment and/or ground floor exterior foundation walls below existing grade, Sessler Wrecking will install, low permeability type materials such as Oil-Dry®, or other approved equal absorptive material in accordance with the EMPM, around the northern, western, and southern sides of the former powerhouse ground floor slab in an effort to contain the potential release of TSCA-regulated DNAPL migration from bedrock towards the ground floor. Such absorptive materials shall be placed at a 3-inch thickness and at a minimum of approximately 6-ft wide up to existing exterior walls.

If a release or seep is observed, the response actions will be situation-specific and could include temporary suspension of the wall removal activities, deployment of additional spill containment measures within the Main Floor slab (and possibly in-river), expedited deconstruction and removal of the remaining wall materials to allow safe personnel access for reconnaissance and performance of additional, localized response measures

GE will monitor the site and river conditions during the project. Should any release of site contaminants be detected, Sessler Wrecking will deploy additional Oil-Dry, adsorbent pads, booms, etc. as appropriate to contain the release.

Additional detail regarding the potential release of Hudson Fall contaminants can be found in Section 4.3.2 of the EMPM.

13.4 Fueling Procedures

Appropriate spill kits will be available during all equipment fueling operations. Absorbent pads will be placed beneath the fuel nozzle during fueling operations. All fuel brought on site will be contained in a DOT approved truck mounted tank, outfitted with electric fueling nozzle and automatic shutoff.

Fueling of equipment on barge will be by 5-gallon OSHA safety can. Cans will be stored in poly secondary containment lined with adsorbent pads.

All hydraulic and fluid lines will be inspected daily. In case of line break, a spill kit stored on each piece of equipment, will be used to contain the spill. The spilled material and contaminated soil will be placed in DOT approved drums for off-site disposal.

13.5 Release Reporting

In accordance with the Fully Executed Powerhouse-Mill Agreement and Order on Consent (AOC), Section 103 of CERCLA, 42 U.S.C. § 9603, or Section 304 of the Emergency Planning and Community Right-to-know Act, 42 U.S.C. § 11004, and upon the occurrence of any event during performance of the work, Sessler Wrecking shall adhere to all reporting requirements.

Prior to reporting Sessler Wrecking shall orally notify EPA's onsite Project Coordinator and/or EPA Project Director or, in the event that neither one is unavailable, EPA Regional Duty Officer at (732) 906-6850 for further guidance on reporting requirements.

For any event covered under Section XIII of the Fully Executed Powerhouse-Mill AOC, Sessler Wrecking shall submit a written report to EPA within 7 days after the onset of such event, setting forth the action or event that occurred and the measures taken, and to be taken, to mitigate any release or threat of release or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release or threat of release. This written report shall be done/reviewed in conjunction with the EPA's onsite Project Coordinator and/or EPA's Project Director.

14. Decontamination

It is the responsibility of the Safety and Compliance Manager to ensure all personnel and equipment leaving the site are properly decontaminated. Decontamination is essential to ensure contamination does not migrate offsite on employees and equipment. Proper decontamination also protects support zone and offsite personnel from exposure to hazardous materials.

14.1 Contamination Prevention

One of the most important aspects of decontamination is preventing unnecessary contamination while working onsite. Effective contamination prevention practices will eliminate unnecessary contamination and aid in the decontamination process. The following are general contamination prevention techniques and should be followed while working onsite:

- Avoid walking through areas of obvious or known contamination unless you are working directly in that area,
- Minimize contact with contaminated material,
- Minimize contact with unknown materials,
- Fasten all closures on suits, covering with tape, if necessary,
- Take particular care to protect any skin injuries.

14.2 Personal Decontamination

A personal decontamination facility will be established in the contamination reduction zone, adjacent to the exclusion zone. The Personnel Decontamination Area shall consist of a Sessler Wrecking owned personnel decontamination trailer(s), stocked with the proper PPE (i.e., half-mask respirators, Tyvek suits, gloves, glasses, hearing protection, etc.) as well as consumable materials such as 6-mil fire retardant plastic sheeting, disposal bags, 55-gallon drums, absorbents wipes, soaps, towels, personnel lockers for clean clothing and personal item storage.

The decontamination trailer will be kept clean and free of debris or used PPE. Trash will be bagged and disposed. Eating or drinking is not allowed in the decontamination trailer.

Decontamination procedures shall be followed by all personnel exiting the contamination reduction zone. Under no circumstances, other than emergency response, will personnel be allowed to leave the site before decontamination.

All disposable PPE shall be removed before meal breaks and at the conclusion of the workday and replaced with new PPE before commencing work. In addition, respirator cartridges, if needed, will be changed at the beginning of each day, and at any other time breakthrough is detected. Contaminated clothing will be placed in designated containers in

the contaminate reduction zone. Respiratory and other non-disposable PPE (boots, glasses, hard hats) will be fully decontaminated and placed in a clean storage area.

The following decontamination procedure will be used for Modified Level D and Level C (if necessary). Decontamination procedures for higher levels of protection will be provided if required:

- Deposit equipment used on site on plastic drop cloths or in designated containers with plastic liners,
- Scrub over boots and outer gloves with decontamination solution (soap/detergent),
- Rinse off decontamination solution with clean water,
- Remove reusable over boots, clean, place in clean storage
- Remove disposable outer gloves and deposit in disposal containers with plastic liner
- Remove coveralls and dispose,
- Remove inner glove and deposit in disposal container with plastic liner,
- Remove respirator, clean, sanitize and place in clean storage.
- Contain and dispose of used PPE appropriately.

14.3 Equipment Decontamination

14.3.1 Small Equipment / Hand Tools

Small equipment and hand tools shall be protected as much as possible from contamination by draping, masking or otherwise covering as much as possible with plastic without hindering the operation of the equipment or tool. Contaminated hand tools and small equipment shall be decontaminated by:

- Removing and disposing of protective coverings in approved containers,
- Monitoring equipment will be wiped down with a disposable paper wipe,
- Washing hand tools with decontamination solution (soap/detergent) and rinsing with water.

14.3.2 Heavy Equipment

Prior to leaving the site, heavy equipment and trucks will be decontaminated on the existing equipment decontamination pad. Only the parts of equipment that has come in contact with contaminated materials need be decontaminated.

Contaminated heavy equipment shall be decontaminated by:

- Cleaning all loose, heavy debris with a brush, broom or spade,
- Washing equipment with high pressure, low volume pressure washer and surfactant.
- Rinsing equipment, using high pressure, low volume pressure washer.
- Upon Demobilization, collect PCB Wipe sample from equipment surfaces to ensure proper decontamination.

Truck wheels will be chocked during decontamination to prevent the driver from leaving the decontamination pad while decontamination is in progress.

Water from equipment decontamination will be collected in a decontamination pad sump and pumped to the temporary 21,000-gallon storage tank.

All personnel performing equipment decontamination shall do so wearing modified Level D protection.

Information related to decontamination pad construction and disposal of decontamination water is addressed in the Project Operations Plan and the Site Construction Plan.

14.4 Emergency Decontamination

Whenever possible, personnel should be decontaminated before administering first-aid. The emergency decontamination procedures will be determined based on the specific incident, based on severity and type of incident.

15. Emergency Response

In the event of an accident or emergency, immediate action must be taken by the first person to recognize the emergency. Onsite personnel will use the following emergency procedures. The Site Supervisor must be notified of any onsite emergency. In all cases the Site Supervisor will notify the proper authorities of the incident.

During an emergency the Site Supervisor will assume command of the situation, with all employees reporting to him. If the cause of the injury, or absence of the injured person, does not affect the performance of site personnel, operations may continue. If the injury increases the risk to others the designated emergency signal, three (3) long blasts on an air horn, shall be sounded and site personnel shall evacuate. Activities shall not resume until the risk is evaluated and removed.

All site personnel will be trained in these emergency response procedures during the pre-work site orientation.

15.1 Emergency Response

Given the amount of heavy equipment utilized within the demolition work area and safe working tolerance of the Site, Sessler Wrecking shall ensure the following:

- All work tasks will be properly planned and discussed in detail during the morning safety meeting and again after lunch break as Site conditions may change.
- Verify that all utilities and possible energized devices have been de-energized, separated and locked-out by the Client and Owner prior to start of demolition activities.
- All work will be performed at minimum in teams of two (2) trained persons.
- All workers shall maintain consistent communication with the Sessler Wrecking team (e.g., verbal, hand, or eye contact).
- Ensure that site access points are not blocked for emergency access.
- Minimize on-road truck traffic staging onsite.
- Should an emergency develop, the Site Supervisor shall proceed with the following action items:
 - Efficiently and safely secure the work area to prevent additional issues and initial some form of emergency action as needed.
 - Sessler Wrecking Site Supervisor shall call emergency phone numbers in order of significance by use of a cellular line (i.e., 911 or Onsite Emergency Contact First).
 - Once Emergency services are notified, the Client shall be notified. Client will be responsible for notifying the Owner.

Additional details of emergency action procedures are as follows.

15.2 Emergency Contact Information

Refer to **Appendix A** for directions to the two (2) closest hospitals.

In case of an emergency, call 911 or Numbers listed below:

- Health Center on Broad Street Urgent Care
 - 100 Broad St, Glens Falls, NY 12801
 - (518) 792-2223
- Glens Falls Hospital: Emergency Room
 - 100 Park St, Glens Falls, NY 12801
 - (518) 926-1000
- Hudson Falls Police Department: (518) 747-4011
- N.Y.S. Police: (518) 583-7000
- Hudson Falls Vol Fire Department: (518) 747-4412
- Fort Edward Fire Department: (518) 747-5127

****Note:** The upland portion of the site on the east side of the river is in Washington County.

When calling 911 to report an emergency. Give the emergency operator the location of the emergency, type of emergency, the number of persons injured, and a brief description of what occurred. Stay on the phone and follow the instructions given by the operator. The operator will then notify and dispatch the proper emergency response agencies.

NOTE: Because the project bisects county lines, it is important to give an accurate location of the emergency. If the 911 call is received by emergency response by the adjoining county the call will be forwarded to the appropriate county 911 call center.

15.3 Emergency Response Plan

Given the amount of heavy equipment utilized within the demolition work area and safe working tolerance of the Site, Sessler Wrecking shall ensure the following:

- All work tasks will be properly planned and discussed in detail during the morning safety meeting and again after lunch break, when necessary, as Site conditions may change.
- Verify that all utilities and possible energized devices have been de-energized, separated and locked-out by Sessler Wrecking prior to start of demolition activities.
- All work will be performed at minimum in teams of two (2) trained persons.
- All workers shall maintain consistent communication with the Sessler Wrecking team (e.g., verbal, hand or eye contact).

- Ensure that site access points are not blocked for emergency access.
- Minimize on-road truck traffic staging onsite.

Should an emergency develop, the Site Supervisor shall proceed with the following action items:

- Efficiently and safely secure the work area to prevent additional issues and initiate some form of emergency action as needed.
- Sessler Wrecking Site Supervisor shall call emergency phone numbers in order of significance by use of a cellular line (i.e., 911 or Onsite Emergency Contact First).
- Sessler Wrecking Site Supervisor shall contact the following:
 - Sessler Wrecking Site Safety Manager and 3rd Party Safety Manger
 - Sessler Wrecking Director of Health and Safety
 - National Grid
 - 3rd Party Engineer Arcadis
 - Authorities having jurisdiction
 - Notify GE and its representatives of the incident; and
 - Take appropriate measures to stabilize the incident scene and ensure that the situation will not affect other areas.

Appropriate emergency response measures will immediately be taken by site management personnel to assist those who have been injured if they have the required resources and are trained to respond to the emergency, taking into account on whether they can do so without jeopardizing their own safety.

15.3.1 Responsibilities

The Site Supervisor is responsible for responding to and coordinating the response of off-site emergency personnel. In the event of an emergency, the Site Supervisor will direct notification and response, and will assist the Supervisor and Project Manager in arranging follow-up actions. Upon notification of an incident, the Site Supervisor will call the hospital, fire, and police emergency response personnel for recommended medical diagnosis, treatment if necessary, and transportation to the hospital.

Before the start of work, the Site Supervisor shall:

- Review with the site staff weekly, emergency planning information including evacuation routes, emergency gathering areas, and locations of first aid kits, fire extinguishers, and eye wash stations.
- Notify emergency contacts, and health care facilities of the potentially hazardous activities on-site as a result of the activities.

- Confirm that the following safety equipment is available: eyewash, first aid supplies, air horn, and fire extinguishers.
- Have a working knowledge of the Sessler Wrecking safety equipment.
- Confirm that employees who will respond to emergencies have been appropriately trained.

Before work may resume following an emergency, used emergency equipment must be recharged, refilled, or replaced and government agencies must be notified as required. All waste generated from an accident or investigation will be containerized in a manner consistent with regulatory requirements.

The Project Manager and Site Supervisor are responsible for investigating the incident as soon as possible. The Project Manager will review the incident investigation report to determine whether and to what extent exposure occurred and the means to prevent similar incidents.

15.3.2 Accident & Injuries

In the event of an accident or injury, workers will immediately implement emergency isolation measures to assist those who have been injured or exposed and to protect others from hazards. Upon notification of an incident, the Site Supervisor will contact emergency response personnel who can provide medical diagnosis and treatment. The Site Supervisor will notify the Client of any incidents.

If necessary, immediate medical care will be provided by personnel on site that are trained in first aid procedures. Other on-site medical or first aid response to an injury or illness will be provided only by personnel competent in such matters.

15.3.3 Fire Response

At least one, or more pending scope, fire extinguishers meeting the requirements of 29 CFR Part 1910 Subpart L, as a minimum, will be available in the work zones(s) during on-site activities. Fire extinguishers shall be utilized to control small fires. When a fire cannot be controlled with the extinguisher, the Exclusion Zone will be evacuated, and the fire department will be contacted immediately.

15.3.4 First Aid

All Sessler Wrecking personnel are trained in first aid and CPR. First aid kits, eyewash units, and fire extinguishers will be maintained on-site at active work locations and will be immediately available for use in the event of an emergency. If treatment beyond first aid is required, the injured should be transported to the medical facility. Directions to the medical facility will be posted in the office trailer and be available in each vehicle.

The following is some additional information. If the injured person is not ambulatory or shows any sign of not being in a comfortable and stable condition for transport, then an ambulance/paramedic should be summoned. If there is any doubt as to the injured worker's condition, it is best to let the local paramedic or ambulance service examine and transport the worker.

The following steps shall be followed in the event of an injury on-site:

- Survey the scene. Determine if it is safe to proceed. Try to determine if the conditions that caused the incident are still a threat. Protect yourself from exposure before attempting to rescue the victim.
- Do a primary survey of the victim. Check for airway obstruction, breathing, and pulse. Assess likely routes of chemical exposure by examining the eyes, mouth, nose, and skin of the victim for symptoms.
- Phone Emergency Medical Services (EMS) dial 911. Give the location, telephone number used, caller's name, what happened, number of victims, victims' condition, and help being given.
- Maintain airway and perform rescue breathing as necessary.
- Perform CPR only if trained and as necessary
- Do a secondary survey of the victim. Check vital signs and do a head-to-toe exam.
- Treat other conditions as necessary. If the victim can be moved, take the victim to a location away from the work area where EMS can gain access.

15.3.5 Emergency Equipment

The following equipment will be maintained in the Support Zone for safety and emergency response purposes:

- At minimum, one ABC fire extinguisher per work area.
- One industrial grade first aid kit scalable to the number of workers.
- Eye wash bottle scalable to the number of workers.
- Washable coveralls.
- Gloves, both inner and outer.
- Face shields.
- Safety glasses.
- Respirators and appropriate cartridges.
- Disposable coveralls.
- Hard hats.

- Spill kit.
- Rain suits.
- Emergency blanket.
- American Red Cross Standard First Aid Book.

15.4 Emergency Evacuation

In the event of an emergency which requires Site evacuation to protect the health and safety of Site personnel, the Site Superintendent or Safety and Compliance Manager will implement the Emergency Evacuation Plan and the Site Superintendent will be designated as the on-site emergency coordinator. The Emergency Evacuation Plan procedure is to be communicated to all Site workers, Subcontractors, and visitors as part of the Site Safety Orientation.

If evacuation is needed, the following procedures are to be initiated:

- Initiate an evacuation by hand signals, voice commands, or two-way radios. Report to the designated Muster Point.
- Upon hearing the evacuation notice, all personnel on-Site (to include Contractors, Arcadis, GE and visitors) calmly proceed to and gather at the Muster Point, See Section 15.7. Personnel will gather in the Assembly Area and report to their respective organizations. When proceeding to the Assembly Area, each Contractor should adhere to the following requirements:
 - Shut off all machinery, if safe to do so.
 - Crew foremen and supervisor will determine the safest exit routes for employees and will determine an alternate exit if the first choice is inaccessible.
 - While proceeding to the Assembly Areas, each leader shall keep their group together. Immediately upon exit to a safe area, the leader will conduct a head count to verify their crew is all present.
 - Each organization will ensure that all employees are accounted for and report the results to the Site Superintendent and Sessler Wrecking Safety Manager
- Site Superintendent and Sessler Wrecking Safety Manager will serve as the Incident Commander until aid arrives, if required.
 - They will gather the sign-in sheets and validate that all are accounted for.
- Once personnel are evacuated, appropriate response procedures will be enacted to control the situation (e.g., Safety Stand-down, reassess task at hand and implement new mitigation controls, whether to proceed for the day, etc.).

When the Evacuation Notice is given, no additional entry of visitors, Contractors, or trucks will be permitted. Vehicle traffic within the Site will cease in order to allow safe exit of personnel and movement of emergency equipment. Vehicle traffic on public roads transecting the Site will be managed by emergency responders, as needed.

15.5 Incident Investigations

Incident investigations are documented by using the Sessler Wrecking Accident Report Form, (see **Appendix E**) After the investigation of the incident Sessler Wrecking shall prepare a written report including the description of the incident, any evidence collected during the investigation, an explanation of the causes of the incident and corrective actions required or recommended. Written incident reports will be prepared via the Accident Report Form and a detailed narrative statement concerning the events. The format of the narrative report may include an introduction, methodology, summary of the incident, Incident Review Team member names, narrative of the event, findings, and recommendations. Photographs, witness statements, drawings, etc. should be included.

The supervisor completes the Sessler Wrecking Accident Report Form and takes the below steps when beginning an incident investigation.

- Provide emergency assistance, as needed and qualified for
- Secure the area as quickly as possible to retain area in the same condition at the time of the incident
- Notify management by phone according to the Incident Notification Matrix
- Identify potential witnesses
- Use investigation tools, as needed (camera, drawings, video, etc.)
- Tag out for evidence any equipment that was involved
- Interview witness (including the effected employee) and obtain written, signed statements and send it to the Sessler Wrecking Site Safety Manager or/and 3rd Party Ambient Safety Manager
- Prepare Sessler Wrecking Accident Report Form, sign the form, send it to the Sessler Wrecking Site Safety Manager or/and 3rd Party Ambient Safety Manager
- Implement any immediate corrective actions needed

15.5.1 Incident Notice Form

Lessons learned will be reviewed and communicated via the Incident Notice Form. (See **Appendix F**) Changes to processes must be placed into effect to prevent reoccurrence or similar events.

In order to communicate incident information and lessons learned from incidents the Sessler Wrecking Site Safety Manager or/and 3rd Party Ambient Safety Manager shall send the Incident Notice to all work sites. The form shall be posted on employee bulletin boards

and shall be discussed in weekly safety meetings until all employees at the job site have been informed of the incident.

15.6 Procedure for Near Miss

Near miss incidents are those in which no injury or property damage occurred, but under slightly different circumstances an injury or property damage could have occurred. Near misses will be investigated in the same manner as injuries. An accident investigation form will be completed, focusing on root cause and prevention. All site employees will be informed of the results of the investigation and any resulting changes to work procedures.

15.7 Muster Point

In the event of an emergency, an air horn will be sounded to notify all site personnel to stop work and proceed to the designated Muster Point(s). The location of the muster points is shown on the Figure below. Muster points will be reviewed during the daily safety meetings and, if necessary, secondary muster points will be identified based on daily weather and work activities.

Figure 15 - 2 - Muster Point Locations



15.8 Emergency Site Communications

Portable/cellular telephones and radios will be available during site activities for emergency response communications. In the event of an emergency, a visual hand signal will be used as follows:

- Hand Signal - Hands crossed on top of head
- Meaning - Stop all Work immediately; Await verbal instructions (in-person, radio, or cellular communication). In addition, walkie-talkies will be used for long distance communication as well as three-way communication where orders are repeated by the listener to ensure correct understanding of request.

15.9 Incident Reporting Matrix

The Incident Reporting Matrix identifies, based on type of incident, who within corporate management shall be verbally notified and when. It also specifies which type of report from the field shall be completed based on the type of incident.

Table 15-1 - Incident Reporting Matrix

Type of Incident	Who to Notify Verbally	When	Incident Report form
Minor First Aid	Sessler Site Safety Manager or/and 3 rd Party Ambient Safety Manager and National Grid, and EPA	24 hours	Verbally Initially
Clinic or Doctor Visit	Sessler Site Safety Manager or/and 3 rd Party Ambient Safety Manager, Owners, Project Managers, and EPA	ASAP	Yes
In-patient Hospitalization	Sessler Site Safety Manager or/and 3 rd Party Ambient Safety Manager, Owners, OSHA, and EPA	Within 24 hours to State or Federal OSHA	Yes
Amputation			
Loss of an Eye			
Fatality	Sessler Site Safety Manager or/and 3 rd Party Ambient Safety Manager, Owners, OSHA, and EPA	Within 8 hours to State or Federal OSHA	Yes
Property damage > \$500	Sessler Site Safety Manager or/and 3 rd Party Ambient Safety Manager, Owners, Project Managers, and EPA	Within 24 hours	Yes
Any Property Damage related to the General Public	Sessler Site Safety Manager or/and 3 rd Party Ambient Safety Manager, Owners, Project Managers, and EPA	ASAP	Yes
Reportable Spill	Sessler Site Safety Manager or/and 3 rd Party Ambient Safety Manager, Owners, Project Manager, EPA full-time onsite Project Coordinator and EPA Project Director for further guidance.	ASAP	Yes
Near Miss	Sessler Site Safety Manager or/and 3 rd Party Ambient Safety Manager, Owners, Project Managers, and EPA	24 hours	Verbally Initially, then in writing

16. Water Operations Safety Program

This Program establishes the minimum requirements and guidance for site personnel at risk of falling into water where a drowning hazard exists (e.g., more than 3 feet / 1 meter deep, fast-moving stream, water body with soft bottom creating entrapment hazard), including working ashore, near to, or over water.

The shoreline and embankment to the north and south of the Powerhouse features high, steep, uneven slopes that drop off to the Hudson River with severe high-flow conditions depending on the time of year. Sessler Wrecking anticipates that all work will be performed during low-flow conditions during the late summer, fall and early winter. Similar conditions exist at the Boralex Hydroelectric Facility on the west side of the Hudson River. Appropriate measures and precautions in accordance with applicable regulations will be necessary to protect personnel and equipment. The demolition activities will be performed immediately adjacent to the Hudson River and certain support activities, such as debris cleanup, will require work to be performed on the Hudson River. The river is considered an important natural resource and all efforts will be made to protect the natural habitat of the ecosystem. During the demolition process, Sessler Wrecking shall implement measures to prevent all debris from falling into the Hudson River, as well as implement a debris recovery program to retrieve fallen debris from the river, as required by Regulatory Agencies if debris capture systems are not successful. Similar precautions will be taken during material load-out, refueling, and other site operations.

Water flow rates and conditions in the Hudson River are highly variable and can result in periods where safe access and/or use of the Hudson River is not feasible. Flow conditions will be monitored throughout the day by the Swift Water Rescue team and reported during daily safety meetings. Water level data will be obtained from the National Water Information System Website Interface by USGS for the following stations:

- Upstream: Hudson River at Handle, NY: USGFS 01318500 Surface Water, Stream
- Upstream: Hudson River at Handle, NY: USGFS 01325000 Surface Water, Stream
- Downstream: Hudson River at For Edward, NY: USGS 01327750 Surface Water,

This program applies to all Sessler Wrecking employees working in the offshore environment.

16.1 Roles And Responsibilities

See Section 2 of this SSHASP.

16.2 Training Requirements and Qualifications

All project personnel working with exposure to open water will receive training in the hazards, precautions, and rescue procedures associated with working in or over water. This training will be conducted in conjunction with the Swift River rescue personnel.

Training will include:

- The contents and procedures included in this plan

- Requirements for PPE, including use of life jackets / vests.
- Location of safety and rescue equipment, including ring buoys and rescue skiffs.
- Swift water self-rescue procedures.
- Third party rescue plans and procedures.

16.3 General Safety Requirements

The following general safety requirements will be followed while working over / near water.

- High visibility U.S. Coast Guard-approved life jackets or buoyant work vests (PFDs) will be worn by all employees working over or near water except for employees working in man baskets. PFDs will not be worn when working from personnel hoist / man basket over water.
- PFDs will be inspected prior to each use. Worn, dried out/faded, and defective PFDs, and PFDs missing straps or zippers will be removed from service.
- PFDs will be sized appropriately for each employee.
- PFDs will be worn as outer most garment.
- Slip and trip hazards that are near the water (such as at the edge of boat or dock) will be removed. If removal is not possible, that hazards will be well marked, and workers will be notified.
- Wear footwear with slip-resistant soles.
- Install curbs on barge if mobile equipment will be used.

16.4 Communication Protocols

Communication between on water and shore operations will be by 2-way radio and or cellular phone. An emergency air horn will be located on the barge to signal emergencies.

16.5 Fire Protection

See Section 15 of the SSHASP for Emergency Response Procedures.

16.6 Cold Weather / Cold Water Immersion

Sudden immersion in cold water induces a reflex gasp, followed by hyperventilation. The gasp response is dangerous if we are submerged, since it can lead to aspiration of water, laryngospasm and drowning. Hyperventilation can quickly lower blood levels of carbon dioxide and cause tingling, numbness and spasm in the extremities, as well as headache,

and in extreme cases, changes in level of consciousness. Fear and panic exacerbate the hyperventilation.

Immersion hypothermia is a risk, but most people drown before they are cool to the point of hypothermia.

16.6.1 Additional Requirements for Working in Cold Weather

When the water temperature is between 40- and 50-degrees Fahrenheit, field personnel will wear a float coat (top half of a Mustang Suit). When the water temperature is less than 40 degrees Fahrenheit, field personnel shall wear a float coat with bib-overalls (full two-piece Mustang Suit) or one-piece float coverall.

See <https://mustangsurvival.com/collections/flotation-clothing/products/deluxe-anti-exposure-coverall-and-worksuit-ms2175>

Suits or Float Coats shall be USCG-approved.

16.7 Life Saving and Safety Equipment

PFDs will be worn by all employees working over or near water. PFDs must be fully buckled, snapped, or zipped whenever there is a hazard of falling into the water.

PFDs

- An approved and readily available PFD is required to be on board the vessel for each individual on board. An immersion/exposure suit is considered to be an acceptable substitute for a PFD. All lifesaving equipment designed to be worn is required to be readily available and in serviceable condition.
- Each vessel 26 feet or longer must have at least one approved ring life buoy which is immediately available. All lifesaving equipment designed to be thrown into the water is required to be immediately available and in serviceable condition.
- An approved light is required for all PFDs and immersion/exposure suits while working at night. Also, all PFDs must have approved retro reflective material installed.
- Employees shall inspect buoyant work vests or life preservers for defects which could alter their strength or buoyancy prior to and after each use. Defective units shall not be used.

Employees will wear USCG approved PFD's when:

- In any area posted as a "life vest" area.
- Within 15 feet of any body of water without barriers.
- When operating equipment near a body of water.

- When operating or riding in a boat.
- When installing flashboard.

Have the necessary safety equipment at hand so it is ready for immediate use:

- Ring Lifebuoy
- 90' Buoyant Heaving Line
- Life Saving Skiff

Ring buoys will be provided and readily available for emergency rescue operations with at least 90 feet of line and the distance spaced between ring buoys may not exceed 200 feet.

At least one lifesaving skiff will be immediately available when employees are working over or adjacent to water. Each skiff shall be checked daily prior to work beginning to ensure the capability of the skiff to respond to an emergency.

16.7.1 Safety Equipment for Water Rescue

Per Amphibious Medics Swift Water Rescue Plan (SSHASP) the Life Saving and Safety Equipment each station is to have available the following and carried on the piece of equipment that responds to Water Rescue calls:

- 2 - Type 3 Personal Floatation Devices
- 2 – Water Rescue type safety helmets
- 2 – Water Rescue type whistles

Water Rescue Support Units (Shore Line) shall have:

- 2– 70-foot Rope Throw bags
- 2– USCG Type III or V Personal Floatation Devices with whistle and knife
- 2 – water rescue helmets
- 2 – pair water shoes
- 2 – pair water gloves
- 2 – pair of safety eyewear
- 2 – Dry suits OR wetsuits
- 2– hand lights
- 2 – USCG Type II Personal Floatation Devices for victims
- 2 – USCG Type IV devices (Throw Ring)
- 1 – 6-foot pole or hook
- 2 – 100-foot 3/8 inch or 1/2 inch kernmantle rope

While on the boat Amphibious Medics personnel shall have:

- 2– USCG Type III or V Personal Floatation Devices with whistle and knife, 2 of these must be USCG Type V with tethered swimmer with whistle, knife, and locator flashing light

- 2– Water rescue helmets
- 2 – Pair water shoes
- 2 – Pair water gloves
- 2 – Headlamps
- 2– Pair of safety eyewear
- 1 – Pair swimming goggles
- 1 – Pair fins
- 2 – Dry suits OR wetsuits
- 2 – Cold water rescue suits (Seasonal)
- 2 – Hand lights
- 2 – 70-foot Rope Throw bags
- 2 – USCG Type II Personal Floatation Devices for victims
- 1 – Waterproof radio bag
- 1 – Rescue swimmer board
- 12 – Chemical light sticks
- 2 – USCG Type IV devices (Throw Ring)
- 1 – 6-foot pole or hook
- 1 – Megaphone or PA system
- 1 – Boat with USCG minimum rating for 4 persons, with appropriate gas engine
- 2 – Paddles or oars
- 1 – ABC fire extinguisher
- 1 – Anchor
- 2 – Mooring lines
- 1 – Crew 1st aid kit that meets county standards
- 1 – Blanket
- 1 – Stokes type litter with floatation
- 1 – Floatation type spine board with straps
- 1 – Line throwing device
- 1 – Decon kit (brush, Clorox, anti-bacterial soap, peroxide)

16.8 Emergency And Rescue Plans, Including Man-Overboard Procedures

16.8.1 Swift Water Rescue

A copy of Amphibious Medics Swift Water Rescue Plan can be found in Appendix I. Per Amphibious Medics (AM) Swift Water Rescue Plan the Swift Water Rescue Responder (SWRR) shall respond on all incidents involving water as defined below:

- Still Water – defined as pond, lake, reservoir (except overflow areas which are defined as streams)

1. Shore Tech – Skiff Deployment

- Swift Water – defined as any moving water

1. Shore Tech – Skiff Deployment – Local Emergency response activated

Amphibious Medics will attend all daily briefings on operational discussions – during the briefings any concerns for the day will be outlined and discussed prior to operations commencing. SWRR techs will review weather reports from the news and USGS link. During the meeting, AM will brief the client on weather reports.

PTP will be discussed and confirm staging area for the day All equipment and Skiff will be inspected each morning prior to briefing to ensure and on-time start for daily operations.

The skiff will be deployed and operated 3 times a day to ensure it is operational.

When Swift Water Rescue is necessary/warranted the following operations shall apply:

- Command
 - a. All working incidents will be operated within the NIMS command structure as adopted by Amphibious Medics and utilized by responding companies known as the Incident Command System.
 - b. The designated Amphibious Medics SWRR (1) shall assume the position of Water Rescue Branch Director and shall advise the incident commander and/or operations Section Chief of the same.
 - c. The Water Rescue Branch Director shall consult with the Incident Commander and/or Operations Section Chief for the scene size-up.
 - d. Additional resources shall be requested for any complex or extended operations if not already dispatched by local municipalities.
- Scene Control
 - a. Personnel are prohibited from entering any hazardous area without the proper protective equipment and training, and until the area has been determined to be safe.
 - i. Any area within ten feet of water or over water shall be considered a hazardous area
 - Hot Zone = In water or in a boat.
 - Warm Zone = Within ten horizontal feet of water or over water.
 - Cold Zone = Greater than ten feet from water.
 - When the water temperature is between 40- and 50-degrees Fahrenheit, field personnel will wear a float coat (top half of a Mustang Suit). When the water temperature is less than 40 degrees Fahrenheit, field personnel shall wear a float coat with bib-overalls (full two-piece Mustang Suit) or one-piece float coverall.
 - Dry suits should be worn when entering any floodwaters.

- No structural turnout gear is to be worn in the hot or warm zones.
- b. Scene control shall be established as follows:
 - i. Barrier tape should be used to mark the hazard zone in immediate area of operations and as terrain permits.
 - ii. Personnel and equipment staging areas will be Established (Prior to incident) outside the designated hazard zone (in the cold zone) but in close proximity to the incident.
 - iii. Upstream observers and downstream safety shall be established as needed.
- The following tactical (Reach, Throw, Row, Go) RETHROG options shall be utilized:
 - a. Option 1 – Reach. 1st arriving AM SWRR feels they are capable of safely performing a rescue by simply reaching the victim, with minimal risk to personnel or victim.
 - b. Option 2 – THROW. 1st arriving AM SWRR feels they are capable of safely performing a rescue by simply throwing a device to the victim, with minimal risk to personnel or victim.
 - c. Option 3 – Row. 1st arriving SKIFF feels they are capable of safely performing a rescue by “independent” boat operations, with minimal risk to personnel or victim.
 - d. Option 4 – GO. SWRR Operation, no attempts are possible or made until a formal rescue team is assembled and operational. Requires advanced personnel to insure accountability and safety.
 - i. Option 4a – Boat operations above objective using rope system to lower and retrieve boat.
 - ii. Option 4b- Boat operations below the objective using motor to maneuver upstream to the objective in Class 3 or greater water.
 - iii. Option 4c- Shallow water crossing technique.
 - iv. Option 4d – Tethered rescue swimmer
 - e. Assessing the Victim
 - i. Once the rescuers have reached the victim, they should do an immediate assessment of the victim - a quick assessment of the ABC's and the exact method of entrapment. If the victim is conscious, the rescuer should determine if the victim can assist in his/her own rescue. If the victim is unconscious, the rescue must be quick.

- ii. When the victim is brought to safety, an assessment should be done by the onsite AM SWRR or local municipalities personnel. Treatment shall be administered according to local protocol. If necessary, the victim shall be transported to the appropriate facility.
- Termination Procedure
 - a. Upon determination that operations are terminated by the Incident Commander the AM SWRR Team will stand down and assets will return to the staging area for accountability and demobilization.
 - b. The AM SWRR Staging Area Manager will assign personnel to assist with the collection of equipment.
 - c. Equipment will be placed back in service per procedure including any gross deacon at scene.
 - d. First report of injury and exposure reports will be filed on any injury case or known exposure to harmful material.

16.8.2 Swift Water Self Rescue

If swept into swift moving water, attempt the following to self-rescue.

- Don't try to stand up, avoid foot entrapment!
- Use an aggressive swimming technique to get to shore.
- Keep your feet down stream to adsorb the impact with exposed rocks.
- Arch your back to keep your butt up.
- Time your breaths between waves, turn your head to the side.
- Back stroke with your hands to position yourself in the river.
- Reverse position to dive over logs and 'strainers
- Swim over logs and other debris. Never try to swim under.
- Look for safe shore landing and attempt to exit stream where safe to do so.

16.8.3 Man Overboard Procedure

When a crew member goes over the side recovery time is of the essence. The following procedure will be implemented in the event of an employee falling overboard. *These procedures assume employees will be wearing Personal floatation at all times while on board, as required.*

If you are person on board:

- Shout "man overboard" and designate a crew member to spot and point to the victim's position in the water. The spotter should not take his eyes off the victim.

- One long blast from a whistle and notification over the radio “3” times Man overboard, man overboard, man overboard
- Provide immediate flotation by throwing buoyant life ring and tether.
- Be patient. Victim will be shocked by cold water. Personal flotation will keep them afloat until they overcome initial cold-water reaction. If they have not grabbed the life ring, reposition near the victim.
- Lack of current and way means the victim should be near the barge. Talk to and try and calm victim.
- Use throw ring and lifeline to draw employee to side of barge. If calm and capable, drop boarding ladder over and assist employee back on barge.
- Rescuers should not enter the water. Don’t compromise your own safety and do not leave your vessel undermanned.
- If person is unconscious and has drifted from the barge, use emergency boat to retrieve person.

If you are the person in the water:

- It is essential to conserve as much energy as possible – you will need it to assist with your recovery from the water.
- Remember you will be wearing a life jacket, so you do not need to struggle to stay afloat. In rough conditions, turn your back to the waves to keep your mouth and nose clear of spray.
- Whatever your situation conserves your body heat – the greatest threat to your survival is from the cold. Remember in cold water your ability to assist in your rescue will be greatly diminished after ten to fifteen minutes.
- Yell and maintain voice contact with persons onboard.
- If you can reach a lifebuoy, invert it over an upraised arm thence over your head and shoulders. Allow persons onboard to pull you back to barge.
- Assist in getting back on board as possible.

After recovery:

- In cold weather, strip wet clothes. Redress from emergency bag. Sweats, sweatshirt, socks and hat.
- Wrap employee in blanket and try to warm.

- Safely return to shore as quickly as possible. Warm in vehicle if necessary. Seek medical attention if necessary.

16.9 Pollution Control Equipment and Procedures for Fueling Vessels and Equipment

See the Project Operations Plan and the Site Construction Plan for description of pollution control equipment.

See Section 13.4 of this SSHASP for fueling procedures.

16.10 Lighting

Working will be performed during daylight hours. No supplemental lighting is necessary.

16.11 Restrictions Due to Weather or Sea State

Work will be suspended during high rain events, high or turbulent water conditions and thunderstorms.

16.12 Procedures For Ensuring Safe Vessel Operations in Accordance with Laws and Regulations and Requirements of Authorities Having Jurisdiction

Not Applicable

16.13 Inspection and Maintenance of Vessels

Daily inspections of boats, skiffs and barge float equipment will be made with special attention given to anchors and barge connections. Inspection of Sessler owned equipment will be by Sessler personnel. Inspection of Amphibious Medics equipment will be by their personnel.

16.14 Procedures For Transferring Materials, Equipment, And Personnel to And from Vessels

Materials, equipment, and personnel will transfer to the barge using a crane and equipment and personnel platforms. Employees or materials will not be shuttled to and from the barge using boats.

Personnel will be transferred to and from the barge using the personnel hoisting procedures found in Section 17.6 of this SSHASP.

Debris and materials will be transferred to and from the barge using a crane, equipment platforms and debris hoppers. See Critical Lift Plan(s), Project Operations Plan and Site Construction Plan for additional information.

16.15 Loading Limits and Draft of Vessels

See Appendix B of the Project Operations Plan for barge specifications.

16.16 Approval Of Equipment Loading on Vessels

See Project Operations Plan, approved by consulting Professional Engineer.

17. Crane, Hoist and Rigging Plan

17.1 Lifting roles and responsibilities

All lifting operations will be performed under the direction of a competent person. The competent person will be the Crane Operator(s). Crane Operators have ultimate responsibility for each lift and will direct lift operations. Crane operators are responsible for performing required crane inspections and ensuring lifts are performed in accordance with the Critical Lift Plans(s).

Qualified riggers are responsible for conducting and documenting daily rigging inspections.

17.2 Training Requirements and Qualifications

All crane operators will possess a Certificate of Competence and NYS Crane Operators license issued by NYS Department of labor. Rigging will be performed by Qualified Riggers, as defined by a person that:

- possesses a recognized degree, certificate, or professional standing, or
- has extensive knowledge, training, and experience, and
- can successfully demonstrate the ability to solve problems related to rigging loads.

17.3 General Lifting Safety Requirements

The following general lifting safety requirements will be followed:

- Verification of training appropriate to employee's roles in the lift. Confirm that crane operators, signal persons, and riggers are certified/qualified.
- Perform daily and monthly inspections and daily equipment check.
- Ensure annual crane inspection is current.
- Inspect work area for site hazards, overhead power, structures, etc. Plan lift accordingly.
- Establish safe work zones with barricades / fencing.
- Prepare ground conditions for crane setup in accordance with Critical Lift Plans.
- Maintain safety distances from overhead power lines.
- Use fall protection above 4' when assembling crane.
- Use universal hand signals and ensure all lift personnel are conversant in hand signals.

17.4 Crane Operation Safety Requirements

- Barricade Area between outriggers and within the swing radius of the body of the crane as soon as outrigger are deployed. Identify other restricted areas such as swing path of crane, Riggers and other site personnel are not to enter restricted areas.
- Perform crane operations only with sufficient lighting.
- Suspend operations when winds exceed 20 MHP.
- Suspend operations in icing conditions.
- Suspend operations if visibility is impaired by fog.
- Suspend operations in times of electrical storms. Wait 20 minutes to resume.
- Maintain crane operation manual, load charts and monthly and annual inspections in crane.
- Perform no critical lifts at night.
- Never leave controls with load suspended.
- Inspect Crane daily and perform operational check. Document daily inspections.
- Follow Critical Lift Plans (submitted under separate cover). Operate with crane load charts.
- Coordinate lifts with daily safety / pre-lift meeting.
- Use only NYSDOL Licensed crane operator.
- Do not side load crane.
- Do not shock load crane.
- Verify pick weights by use of load indicator on crane and compare with Design Tables in Design Plans.

17.5 Slings/rigging Safety Requirements

- Use only rigging as specified in the Critical Lift Plans. No substitutions to be made.
- All rigging connections must be made in accordance with Critical Lift Plans. No changes are allowed.
- Inspect all rigging daily. Document on rigging inspection form. Defective rigging will be removed from service.
- Store rigging properly at end of each shift.
- Protect rigging from sharp edges if necessary, using heavy duty rubber.

- Do not pull rigging from under load if load is resting on rigging.
- Swing loads away from personnel. Never swing over site personnel or work under load.
- Do not turn your back on suspended load.
- Use tag lines on all loads.
- Use positive connections on all loads.
- Use qualified signal men. Review hand signal with crane operator prior to work starting.

17.6 Personnel Hoisting

Hoisting of personnel is required for this project as the erection, use, and dismantling of conventional means of reaching the worksite, such as a personnel hoist, ladder, stairway, aerial lift, elevating work platform or scaffold is not possible because of the project's structural design or worksite conditions. Hoisting personnel is a Critical Lift. The requirements of this section are supplemental to the other requirements in this procedure and apply when one or more workers are hoisted.

- A critical lift plan will be developed for personnel lifts.
- Capacity – Use of suspended personnel platforms. The total load (with the platform loaded, including the hook, load line, and rigging) will not exceed 50 percent of the rated capacity for the radius and configuration of the equipment.
- When the occupied personnel platform is in a stationary working position, the load and boom hoist brakes, swing brakes, and operator-actuated secondary braking and locking features (such as pawls or dogs) or automatic secondary brakes shall be engaged.
- The personnel platform will be rigged to minimize tipping of the platform due to movement of workers working from the platform.
- Personal platform will be equipped with guardrail system meeting OSHA fall protection requirements.
- If equipped with doors or gates, doors or gates will not swing outward and be equipped with a device that prevents accidental opening.
- Use dedicated rigging for personnel hoisting platform. Do not use rigging used for equipment or materials.
- Rigging hardware (including wire rope, shackles, rings, master links, and other rigging hardware) and hooks shall be capable of supporting, without failure, at least ten times the maximum intended load applied or transmitted to that component.
- Rigging connections to personnel platform will be positive connectors. No open hooks allowed. Shackles with screw pin will be secured with safety tie wire.

- Perform unoccupied trial lift with at least the anticipated load.
- When performing occupied lift, hoist the platform a few inches and have it inspected by a competent person to confirm that it is secure and properly balanced.
- Do not load the personnel platform in excess of its rated capacity.
- Personnel platforms will be used only for workers, their tools, and the materials necessary to do their work. Platforms shall not be used to hoist materials or tools when not hoisting personnel.
- Perform the hoisting of the personnel platform in a slow, controlled, cautious manner, with no sudden movements of the equipment or the platform.
- Platform occupants will:
 - Keep all parts of the body inside the platform during raising, lowering, and horizontal movement. This provision does not apply to an occupant of the platform when necessary to position the platform or while performing the duties of a signal person.
 - Not stand, sit on, or work from the top or intermediate rail or toe board, or use any other means/device to raise their working height.
 - Not pull the platform out of plumb in relation to the hoisting equipment
- Use tag lines when necessary to control the platform.
- Suspend operations during extreme wind (greater than 20mph) or weather conditions.
- Except over water, workers occupying the personnel platform shall be provided and use a personal fall arrest system. The system shall be attached to a structural member within the personnel platform.

17.7 Lift Planning and Operations

Pre lift meeting will be held in accordance with the Critical Lift Plan(s). Pre lift meetings will be attended by the equipment operator, signal person (if used for the lift), workers to be hoisted, and the site management and safety personnel.

17.8 Inspection, Testing, and Maintenance Requirements

Annual crane inspection will be available on-site. Additionally daily and monthly crane inspections will be performed and documented by a qualified person.

Rigging will be inspected daily. Rigging inspections will be documents.

17.9 Recordkeeping

Crane operator, signal, and rigging personnel training and qualifications will be maintained on-site. Copies of crane and rigging inspections will be submitted to the Safety and compliance manager daily and maintained onsite.



18. Critical Lift Plans

A critical lift plan has been developed by our consulting Professional engineer. The Critical Lift Plan(s) consists of as drawings, specifications, and procedures as necessary to accurately assess all important load factors and site factors relating to a Critical Lift.

Critical lift plans will be submitted for each critical lift under separate cover.

19. Confined Space entry Program

Entry into confined space will be required to clean the frac tank prior to demobilization. This entry will be permit required.

This program is to ensure the safety of all employees and contractors working for Sessler Wrecking and to comply with all regulations and host clients that pertain to confined spaces. This program is in accordance with the 29 CFR 1926 Subpart AA – Confined Spaces in Construction and OSHA Permit-Required Confined Spaces Publication 3138-01R & 3825-09.

This program covers all employees and other workers that may be involved in confined space entry. When work is performed on a non-owned or operated site, the operator's program shall take precedence. This document covers Sessler Wrecking employees and contractors and shall be used on owned premises, or when an operator's program does not exist or is less stringent.

19.1 Key Responsibilities

Managers/Supervisor

- These responsibilities herein are in accordance with the 29 CFR 1926.1203 – General Requirements, 29 CFR 1205 – Permitting Process, 29 CFR 1926.1206 – Entry permit, 29 CFR 1926.1207 -Training, and the OSHA Permit-Required Confined Spaces Publication 3138-01R & 3825-09.
- Shall ensure that all employees have been trained and fully understand the requirements of this program.
- Shall provide the necessary equipment to comply with these requirements and ensure that all employees are trained on its use.
- Shall ensure that all confined space assessments have been conducted and documented.
- Shall ensure that provisions and procedures are in place for the protection of employees from external hazards including but not limited to pedestrians, vehicles, and other barriers and by use of the pre-entry checklist verifying that conditions in the permit space are acceptable for entry during its duration.
- Shall ensure that all Permit-Required Confined Spaces permits are posted.
- Shall ensure an annual review of the program including all entry permits issued that during that annual period.
- Shall ensure that confined spaces are identified properly as either a Non-Permit Confined Space or a Permit-Required Confined Space.
- Shall ensure that all confined spaces that have been identified as “no entry” have signs that state, “DANGER- DO NOT ENTER.”

- Shall ensure signs have been posted at all Permit-Required Confined Space areas that state, “DANGER – PERMIT ENTRY CONFINED SPACE” along with the proper warning word such as “ASPHYXIAN, FLAMMABILITY or TOXIC HAZARD”
- Shall file all permits at the area offices for review. Permits shall be kept on file for one year.

Affected Employee

- These responsibilities herein are in accordance with the 29 CFR 1926.1207 - Training, 29 CFR 1926.1212 – Employee Participation and the OSHA Permit-Required Confined Spaces Publication 3138-01R & 3825-09.
- Shall attend Confined Space Entry training commensurate with their duties and when duties change as required.
- Shall comply with all aspects of this program.
- Authorized Entrants, Attendants and Entry Supervisors may be any Sessler Wrecking employee that is authorized by management to work in a confined space setting and that has been trained and is proficient in the understanding of program requirements.

Authorized Entry Supervisor Duties

These duties herein are in accordance with the 29 CFR 1926.1210 – Duties of Entry Supervisor, and the OSHA Permit-Required Confined Spaces Publication 3138-01R & 3825-09.

- Shall have a tailgate safety meeting, with all workers to be involved in the confined space entry and review the job to be performed and what safety concerns may be present.
- Shall confirm that all isolation, Lock/out and Tag/outs have been completed prior to entry into a confined space.
- Shall ensure that the requirements of this program are followed and maintained.
- Shall test all atmosphere conditions prior to entry and shall complete and maintain the confined space permit form and have it accessible for review on the job site at all times.
- Shall notify Sessler Wrecking supervisor of entry into a confined space and notify the supervisor of any changes that may occur, during an entry.
- If the confined space possesses a hazard that cannot be eliminated, the Entry Supervisor must arrange for a rescue services.
- If the confined space possesses no hazards to the Entrants, the Entry Supervisor can reclassify the confined space to a Non-Permit Confined Space.
- A stand-by rescue team is not required to be on site for Non-Permit Confined Space entries.

Authorized Attendant Duties

These duties herein are in accordance with the 29 CFR 1926.1209 – Duties of Attendants, and the OSHA Permit-Required Confined Spaces Publication 3138-01R & 3825-09.

- Knows the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.
- Is aware of possible behavioral effects of hazard exposure in authorized Entrants.
- Continuously maintains communication and an accurate count of authorized Entrants in the confined space and ensures that the means used to identify authorized Entrants, and accurately identifies who is in the confined space.
- Remains outside the confined space during entry operations until relieved by another Attendant.
- If more than one confined space is to be monitored by a single attendant, the program must include the means & procedures that will be used in order to enable the attendant to respond to emergencies in one or more permit spaces that he/she is monitoring without distraction from all responsibilities.
- Attendants may enter a confined space to attempt a rescue, if they have been trained and equipped for rescue operations as required and only when they have been relieved by another authorized Attendant.
- Monitors activities inside and outside the confined space to determine if it is safe for Entrants to remain in the space and orders the authorized Entrants to evacuate the confined space immediately under any of the following conditions:
 - If the Attendant detects a prohibited condition.
 - If the Attendant detects the behavioral effects of hazard exposure in an authorized Entrant.
 - If the Attendant detects a situation outside the space that could endanger the authorized Entrants.
 - If the Attendant cannot effectively and safely perform all the duties required.
 - Summon rescue and other emergency services as soon as the Attendant determines that authorized Entrants may need assistance to escape from confined space hazards.
 - Takes the following actions when unauthorized persons approach or enter a confined space while entry is underway:
 - Warn the unauthorized persons that they must stay away from the confined space.
 - Advise the unauthorized persons to exit the confined space immediately, if they have entered the space.

- Inform the authorized Entrants and the Entry Supervisor if unauthorized persons have entered the confined space.
- Performs no duties that might interfere with the Attendant's primary duty to monitor and protect the authorized Entrants.
- Authorized Attendants shall not monitor more than one confined space at a time.

Authorized Entrant Duties

These duties herein are in accordance with the 29 CFR 1926.1208 – Duties of Authorized Entrants and the OSHA Permit-Required Confined Spaces Publication 3138-01R & 3825-09.

- Knows the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.
- Using appropriate personal protective equipment properly, e.g., face and eye protection, and other forms of barrier protection such as gloves aprons, coveralls, and breathing equipment.
- Is aware of possible behavioral effects of hazard exposure in authorized Entrants.
- Shall witness and verify calibrated air monitoring data and if approved, sign off, before entry is made.
- Is entitled to request additional monitoring at any time.
- Maintain communication with the Attendants to enable the Attendant to monitor the Entrants status as well as to alert the Entrant to evacuate if needed.
- Exit from confined spaces as soon as possible when ordered by an Attendant or Entry Supervisor, when the Entrant recognizes the warning signs or symptoms of an exposure exists, or when a prohibited condition exists, or when an alarm is activated.

19.2 Procedures for Protection of Workers During Entry into Confined Spaces

Permit-Required Confined Space Entry

This procedure is in accordance with the 29 CFR 1926.1202 definition of Permit-Required Confined Space Entry, 29 CFR 1926.1204 – Permit-Required Confined Space Program, 29 CFR 1926.1205 – Permitting Process, and the OSHA Permit-Required Confined Spaces Publication 3138-01R & 3825-09. If the space is properly isolated and results of air monitoring are above acceptable parameters without local exhaust ventilation in operation, classify the entry as a Permit-Required Confined Space.

- Complete the Sessler Wrecking Confined Space Entry Permit before proceeding with work in a Permit-Required Confined Space.

- Entrants and/or their representative shall be given the opportunity to observe and participate in the air monitoring process.
- Entrants shall review and sign the confined space permit.
- At least one trained Attendant must always be outside the Permit-Required Confined Space.
- The Attendant must monitor the authorized Entrants for the duration of the entry operation.
- Only authorized Entrants may enter a Permit-Required Confined Space.
- All Entrants must sign in and out on the entry permit when entering and leaving a Permit-Required Confined Space.
- The back of the permit or a sign-in sheet must be used for this purpose.
- Post signs and barricades outside all Permit-Required Confined Spaces to notify personnel that a confined space entry is in progress and unauthorized entry is prohibited.
- Conditions must be continuously monitored where Entrants are working to determine that acceptable conditions are maintained during entry.
- If a hazardous atmosphere is detected during an entry, personnel must immediately evacuate the space.
 - The Entry Supervisor shall cancel the entry permit.
 - Re-evaluate the space to determine how the hazardous atmosphere developed.
 - Take action to protect personnel before any subsequent activity to re-enter the space takes place.
 - Re-issue the Sessler Wrecking Confined Space Entry Permit before allowing Entrants to re-enter the space.
 - Employees or their representatives are entitled to request additional monitoring at any time.
- The permit must be terminated when the entry operations are complete or when permit conditions change (i.e., hazardous air monitoring results are noted, unsafe behaviors are observed, etc.).
- The minimum rescue equipment required for Permit-Required Confined Space entry is covered in the Rescue & Emergency section of this program.
- Permit-Required Confined Space entry operations will be reviewed when Sessler Wrecking believes that the requirements of this confined space program may not adequately protect personnel.

- If deficiencies are found in the program, the program will be revised, and personnel will be trained in the new revisions before subsequent entries are authorized.

Pre-Job Planning and Space Preparation

This procedure is in accordance with the 29 CFR 1926.1203(e)(2)(iii) – Confined Spaces in Construction General Requirements, 29 CFR 1926.1204(e) evaluation of permit space conditions, 29 CFR 1926.1205 – Permitting Process, and the OSHA Permit-Required Confined Spaces Publication 3138-01R & 3825-09.

- The Entry Supervisor must determine that the confined space is properly isolated by blinding, disconnecting, and/or by following local Lockout/Tagout procedures. The Entry Supervisor must discuss with all Entrants the hazards of the space, communication methods and emergency procedures during the confined space entry.
- Eliminate any condition making it unsafe to open the equipment to atmosphere.
- Promptly guard the opening to prevent an accidental fall through the opening and to protect each employee working in the space from foreign objects entering the space.
- If applicable, wash, steam, ventilate or degas the confined space to properly free it of possible contaminants. Vent vapors to a safe location.
- Do not allow unauthorized personnel to enter a confined space. Barricade and/or guard all confined spaces to prevent entry of unauthorized Entrants.
- If performing hot work in the confined space, precautions must be taken consistent with the Sessler Wrecking Hot Work Permit procedure.
- Ensure that vehicle or other equipment exhaust does not enter the space.

Pre-Entry Safety Meeting

This procedure is in accordance with the 29 CFR 1926.1203(e)(2)(iii) – Confined Spaces in Construction General Requirements, 29 CFR 1926.1204(e) evaluation of permit space conditions, 29 CFR 1926.1205 – Permitting Process, and the OSHA Permit-Required Confined Spaces Publication 3138-01R & 3825-09.

- The Entry Supervisor must declare when the confined space is ready for entry.
- The Entry Supervisor shall hold a pre-entry safety meeting to discuss all requirements and procedures with all authorized Entrant(s) and Attendant(s) involved with the entry. He/she will discuss other concerns such as previous contents, vessel coating, PPE required etc., during this meeting.
- The Entry Supervisor must coordinate entry operations when employees of more than one company are working simultaneously in the confined space. This coordination is necessary so that one company's work does not endanger the employees of another company.

Equipment

This procedure is in accordance with the 29 CFR 1926.1203 – Confined Spaces in Construction General Requirements, 29 CFR 1926.1204 – Permit-Required Confined Space Program, and the OSHA Permit-Required Confined Spaces Publication 3138-01R & 3825-09.

Check all work equipment to ensure that it has the proper safety features and is approved for the locations where it will be used. The Entry Supervisor shall ensure that all equipment is properly maintained in a safe condition and that Entrants use the equipment properly.

The following equipment must be considered and may be required when entering a confined space:

- Atmospheric Testing and Monitoring Equipment.
- Barriers, Shields, and Signs – Post signs and barricades outside all Permit-Required Confined Spaces to notify personnel that a confined space entry is in progress and unauthorized entry is prohibited. Any signs used must state “Danger – Permit Entry Confined Space” along with the proper warning word such as “Asphyxiant, Flammability or Toxic Hazard.” All barricades must be capable of preventing a person from inadvertently walking into or kicking an object into the space.
- Communications Equipment – Only use intrinsically safe equipment in areas where a hazardous atmosphere may exist. Use a communication system that will keep the Attendant in constant, direct communication with the Entrant(s) working in the confined space. Also, use a communication system that allows the Attendant to summon help from rescue or emergency service.
- Entry and Exit Equipment – (For example: ladders may be needed for safe entry and exit).
- Lighting Equipment – Needed for safe entry, work within the space and exit. Lighting equipment used in the confined space must be certified safe for the location.
- Portable electric lighting used in wet and/or other conductive locations (drums, tanks, vessels) must be operated at 12 volts or less. 120-volt lights may be used if protected by a ground-fault circuit interrupter.
- Personal Protective Equipment – Ensure that personnel wear the required personal protective equipment. For respiratory protection requirements, refer to the Respiratory Protection Program.
- Rescue and Emergency Equipment – Except if provided by outside rescue services.
- The Attendants must also have an approved first aid kit.
- Vacuum Trucks – When used, trucks must be properly grounded or bonded to prevent static sparks.
- Ventilating Equipment – Local exhaust air movers used to obtain acceptable atmospheric entry conditions (e.g., Copus air movers).

- Other – Any other equipment necessary for safe entry into and rescue from permit required confined spaces.

Air Monitoring

This procedure is in accordance with the 29 CFR 1926.1203 – Confined Spaces in Construction General Requirements, 29 CFR 1926.1204 – Permit-Required Confined Space Program, and the OSHA Permit-Required Confined Spaces Publication 3138-01R & 3825-09.

- Before an employee enters the space, the internal atmosphere shall be tested, with a calibrated direct-reading instrument, for oxygen content, for flammable gases and vapors, and for potential toxic air contaminants, in that order. Monitoring of the space must inform the entrants of the potential hazards and results and they must participate in the permit review and signing.
- Air shall be periodically test while continuous ventilation is applied.
- Any employee, who enters the space, or that employee's authorized representative, shall be provided an opportunity to observe the pre-entry testing required by this paragraph.
- Employees or their representatives are entitled to request additional air monitoring at any time.

Ventilation

This procedure is in accordance with the 29 CFR 1926.1203 – Confined Spaces in Construction General Requirements, 29 CFR 1926.1204 – Permit-Required Confined Space Program, and the OSHA Permit-Required Confined Spaces Publication 3138-01R & 3825-09.

Continuous forced air ventilation must be used and tested as follows:

- An employee may not enter the space until the forced air ventilation has eliminated any hazardous atmosphere.
- The forced air ventilation shall be so directed as to ventilate the immediate areas where an employee is or will be present within the space and shall continue until all employees have left the space.
- The air supply for the forced air ventilation shall be from a clean source and may not increase the hazards in the space.
- The atmosphere within the space shall be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere. Any employee, who enters the space, or that employee's authorized representative, shall be provided with an opportunity to observe the periodic testing and may request additional monitoring at any time.

- If a hazardous atmosphere is detected during entry each employee shall leave the space immediately and the space shall be evaluated to determine how the hazardous atmosphere developed; and measures shall be implemented to protect employees from the hazardous atmosphere before any subsequent entry takes place.

Issuance/Reviewing of Permit

This procedure is in accordance with the 29 CFR 1926.1204 – Permit-Required Confined Space Program, 29 CFR 1926.1205 – Permitting Process, and the OSHA Permit-Required Confined Spaces Publication 3138-01R & 3825-09.

- Only when all pre-entry requirements are satisfied, the Entry Supervisor shall issue a completed and signed confined space permit. The confined space permit is valid for one shift.
- In the event of any unauthorized entry, employee complaints, a hazard not covered by the permit, the occurrence of an injury or near miss the entry permit shall be cancelled and a review shall be conducted to provide employee protection and for revising the program prior to authorizing subsequent entries.
- An annual review of this program, using the cancelled permits retained within 1 year after each entry shall be conducted by the HSE Manager to revise the program as necessary, to ensure that employees are protected. If no confined space entries were performed during a 12-month period, no review is necessary.

Termination and Closing or Cancelling of Permits

This procedure is in accordance with the 29 CFR 1926.1204 – Permit-Required Confined Space Program, 29 CFR 1926.1205 – Permitting Process, and the OSHA Permit-Required Confined Spaces Publication 3138-01R & 3825-09.

- The Entry Supervisor shall terminate the confined space permit, at the end of the job operation, at the end of the shift or when the Entry Supervisor or Attendant determine that conditions in or near the confined space have changed and is hazardous to the Entrants.
- The Entry Supervisor shall, at the conclusion of entry operation, close out the permit and provide the safety department the original copy of the Confined Space Permit.

Procedures for Summoning Rescue Services, Rescuing Entrants, First Aid and Unauthorized Personnel During Rescues

This procedure is in accordance with the 29 CFR 1926.1204 – Permit-Required Confined Space Program, 29 CFR 1926.1205 – Permitting Process, 29 CFR 1926.1206 – Entry Permit, 29 CFR 1926.1209 – Duties of Attendants, 29 CFR 1926.1211 – Rescue and Emergency Services, and the OSHA Permit-Required Confined Spaces Publication 3138-01R & 3825-09.

Rescue service must be on-site for immediately dangerous to life and health (IDLH) conditions while work is being performed. Rescue services must be either:

- Provided by the host facility,
- Provided by an outside service which is given an opportunity to examine the entry site, practice rescue and decline as appropriate, or
- Provided by Sessler Wrecking by selecting a rescue team that is equipped and trained to perform the needed rescue services.

The Attendant shall order the other Entrants not to move the injured nor allow untrained or unauthorized workers into the space that are not trained to handle a confined space rescue.

- Safety Data Sheet's for substances that an injured Entrant was exposed to must be provided to the medical facility treating the injured worker.

Permit-Required Confined Space Rescue

- When the Attendant becomes aware of the need for rescue, the Attendant shall immediately summon the onsite rescue team by the agreed upon communication method, verbally, radio or cell phone, without leaving the vicinity of the confined space.
- The Attendant shall prevent unauthorized personnel from attempting a rescue.
- After the rescue team has been notified, the Attendant shall alert the Entry Supervisor of the emergency via the same communication methods.
- The preferred means of providing rescue service is through the use of a qualified outside rescue service vendor (client host). The outside rescue service vendor must be:
 - Informed of the hazards that they may confront during a rescue.
 - Provided access to the Permit-Required Confined Space to examine the entry site, practice rescue, and decline as appropriate.
 - Access to the space allows the rescue service and local supervision to jointly develop appropriate rescue plans.
 - If the host operator is designated to provide rescue services for Sessler Wrecking, the agreement of services must be included in contract for the job.
- If Sessler Wrecking employees are to perform Permit-Required Confined Space rescues, they must be:
 - Provided and trained in the use of the proper personal protective equipment necessary to make the rescue.
 - Provided PPE at no cost.
 - Trained to perform the assigned duties.
 - Required to practice making rescues at least once every 12 months.

- Trained in basic first aid and CPR.
- A minimum of one member of the rescue team must hold a current certification in first aid and CPR.

Non-entry Rescue

- To facilitate non-entry rescue, an Entrant must be attached to a retrieval system whenever he/she enters a Permit-Required Confined Space with a vertical depth of more than 5 feet.
- The retrieval equipment is not required if it will increase the overall risk of the entry, e.g., creating an entanglement hazard, or will not contribute to the rescue of the Entrant.
- Each Entrant shall use a full body harness equipped with a “D” ring located between the shoulders or above the head.
- Wristlets may be used instead of the full body harness, if the use of the full body harness is not feasible or creates a greater hazard *and* that using wristlets is the safest and most effective alternative.
- The retrieval line must be attached to the “D” ring and the other end of the retrieval line attached to a retrieval device or fixed point located outside the space so that rescue can begin as soon as the rescuer becomes aware that rescue is necessary.

Training

This procedure is in accordance with the 29 CFR 1926.1204 – Permit-Required Confined Space Program, 29 CFR 1926.1207 – Training, 29 CFR 1926.1211(b) – Rescue and Emergency Services, where applicable, and the OSHA Permit-Required Confined Spaces Publication 3138-01R & 3825-09.

- Training shall be provided so that all employees whose work is regulated by this program acquire the understanding, knowledge, and skills necessary for the safe performance of the duties assigned to them.
- Training shall be provided to each affected employee, before the employee is first assigned duties under this program, if a new hazard has been created or special deviations have occurred and before there is a change in assigned duties.
- The training shall establish employee proficiency in the duties required by this program and shall introduce new or revised procedures, as necessary.
- The supervisor shall certify that the training required by this program has been accomplished.

20. Accident Prevention Plan

A vital element of any Health and Safety Program is accident and exposure prevention. It is essential that the contents of the Health and Safety Plan are communicated to, and understood by, all that work at the Hudson Falls Powerhouse Site. There are four elements to preventing accidents and over exposures.

- Educate personnel as to the requirements of the Health and Safety Plan,
- Eliminate unsafe conditions - identify and correct conditions that can contribute to an accident and limit exposure to these conditions,
- Reduce unsafe acts - personnel must make a conscious effort to work safely. Management must enforce safety regulations,
- Inspect frequently - regular safety inspections of the work site, materials and equipment by qualified persons ensures early detection and correction of unsafe conditions.

The following guidelines describe specific measures personnel shall take to minimize the occurrences of accidents onsite:

- Cell phone only allowed in designated areas.
- Employees must back into parking spots.
- Smoking is not allowed anywhere on-site.
- Use the buddy system for all onsite work.
- Maintain a copy of this HASP on-site at all times.
- Suspend work and reevaluate the hazard and level of PPE required upon the discovery of any situation more hazardous than anticipated.
- Report all potentially unsafe condition or work practices to the Safety and Compliance Manager and PM.
- Report all injuries, illnesses and near misses to the Safety and Compliance Manager and PM.
- Do not eat, drink, chew gum or tobacco, take medication or smoke in any contamination reduction or exclusion zone.
- Do not wear contact lenses onsite.
- Conduct site activities only with sufficient lighting.
- Use toilets provided onsite for personal needs.
- Do not bring drugs, alcohol or weapons on site.
- Do not attempt to work onsite if under the influence of illegal drugs or alcohol.

- Inform your doctor of the possibility of contact with toxic material before allowing them to write you any new prescriptions.
- If taking over-the-counter drugs within a day before working on site inform the Safety and Compliance Manager of any warnings on the drug's label.
- Do not fight or horseplay onsite.
- Personal visitors are not allowed onsite.
- Maintain personal property in a clean and safe manner; keep work area free of litter and obstruction.
- Wash hands and face upon leaving the work area and before eating, drinking or other activities.
- Do not touch soil, water or sludge unless necessary and wearing appropriate PPE.
- Do not work in the area of odors without appropriate PPE.
- Post hazardous work and noise signs as necessary.
- Wash entire body as soon as possible after wearing PPE and going through personnel decontamination.

Additionally, employees must follow National Grid safety policies and those outlined in the GE Health and Safety Plan. These additional requirements will be reviewed during the pre-work orientation training.

21. Logs, Reports, and Record keeping

The Safety and Compliance Manager will maintain the following logs and reports onsite during the duration of this project:

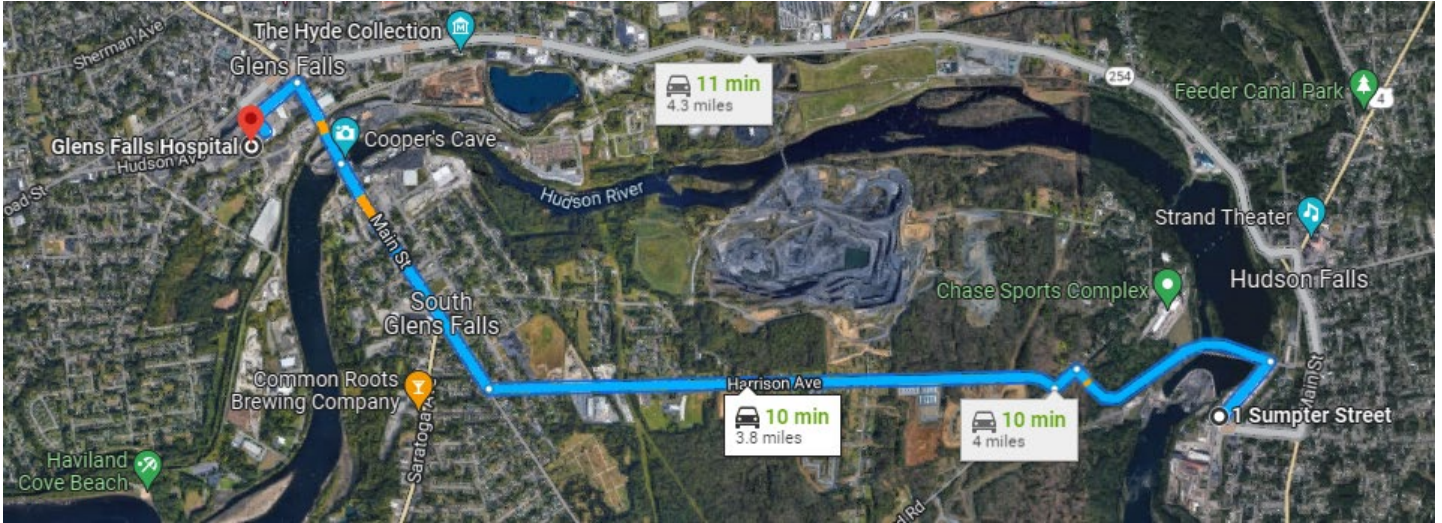
- Employee training records.
- Employee medical surveillance written opinion records.
- SSHASP Plan Acceptance Forms
- Air monitoring maintenance and equipment logs.
- Site control log.
- Air monitoring results and data sheets.
- Safety meetings sign-in sheets.
- Accident and near miss investigation reports.
- Daily work report.
- Daily safety log.
- Crane inspections.
- Daily rigging inspections.
- Crane operator and qualified rigger qualifications.

Appendix A

Direction to Nearest Hospital(s)

Directions to Glens Falls Hospital

100 Park Street, Glens Falls, NY 12801



10 min (3.8 miles)



via Harrison Ave

Fastest route now due to traffic conditions

1 Sumpter St

Kingsbury, NY 12839

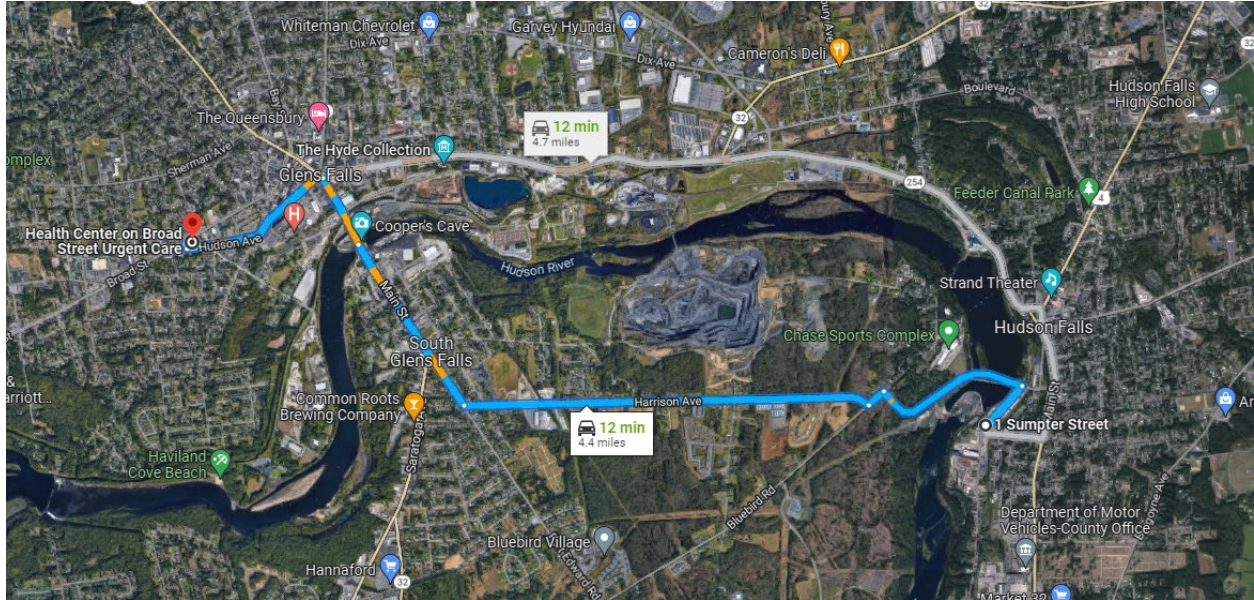
- ↑ Head northeast on Sumpter St toward Bridge St/Hudson Falls Rd
33 s (0.2 mi)
- Take Harrison Ave and Main St to Park St in Glens Falls
9 min (3.4 mi)
- Continue on Park St to your destination
2 min (0.2 mi)

Glens Falls Hospital

100 Park St, Glens Falls, NY 12801

Directions to Health Center on Broad Street Urgent Care

100 Broad Street, Glens Falls, New York 12801



12 min (4.4 miles)



via Harrison Ave

Fastest route now due to traffic conditions

1 Sumpter St

Kingsbury, NY 12839

- ↑ Head northeast on Sumpter St toward Bridge St/Hudson Falls Rd

33 s (0.2 mi)

- > Drive from Harrison Ave and Main St to Glens Falls

11 min (4.1 mi)

- ↪ Turn right

i Destination will be on the right

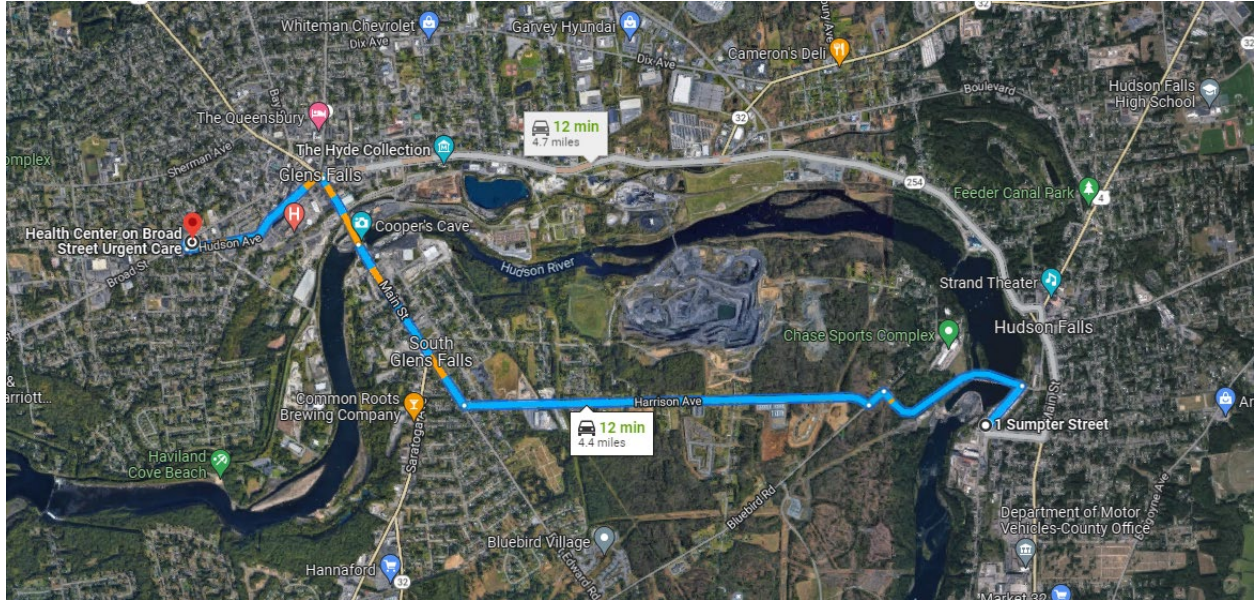
7 s (115 ft)

Health Center on Broad Street Urgent Care

100 Broad St, Glens Falls, NY 12801

Directions to Health Center on Broad Street Urgent Care

100 Broad Street, Glens Falls, New York 12801



12 min (4.4 miles)



via Harrison Ave

Fastest route now due to traffic conditions

1 Sumpter St

Kingsbury, NY 12839

- ↑ Head northeast on Sumpter St toward Bridge St/Hudson Falls Rd

33 s (0.2 mi)

- Drive from Harrison Ave and Main St to Glens Falls

11 min (4.1 mi)

- Turn right

i Destination will be on the right

7 s (115 ft)

Health Center on Broad Street Urgent Care

100 Broad St, Glens Falls, NY 12801

Appendix B

Sessler Wrecking JHA's

REFERENCES

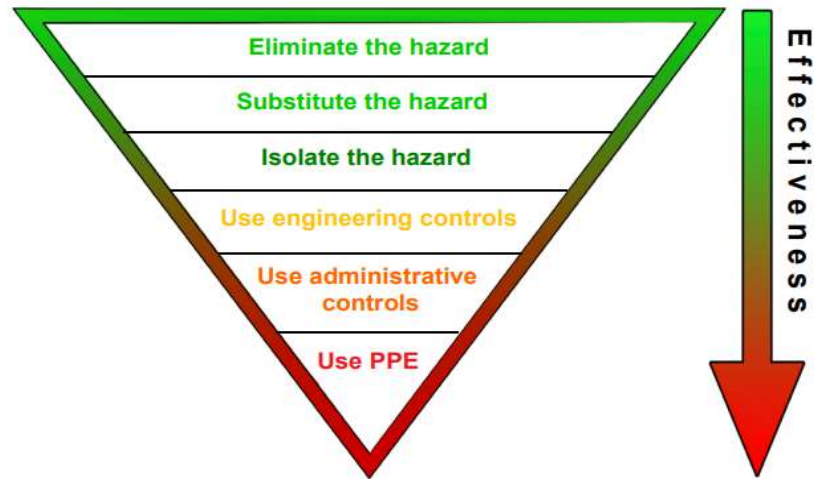
Legislation & Codes of Practice

29 CFR 1904, Recording and Reporting Occupational Injuries and Illnesses.	12 NYCRR 57, High Voltage Proximity.
29 CFR 1910, Occupational Safety and Health Standards.	12 NYCRR 59, Workplace Safety and Loss Prevention Program.
29 CFR 1926, Safety and Health Regulations for Construction.	16 NYCRR 753, Protection of Underground Facilities.
The American National Standards Institute (ANSI) published a standard.	17 NYCRR 32, Oil Spill Prevention and Control – Actions to be Taken in Case of Discharge.
American Society for Testing and Materials (ASTM).	United States Coast Guard (USCG) requirements.
National Fire Protection Association (NFPA).	Sessler Wrecking Safety Management System
2020 Existing Building Code of New York State	National Grid Safety Requirements 01 35 22
40 CFR 261.3, 264, and 265, Resource Conservation and Recovery Act (RCRA).	National Grid Contractor's Health and Safety Plan 01 35 29
6 NYCRR 371, Identification and Listing of Hazardous Wastes.	National Grid Demolition Design Summary of Work 01 11 00
6 NYCRR 375, Environmental Remediation Programs.	HAZWOPER OSHA 29 1910.120 and 1926.65
12 NYCRR 23, Protection in Construction, Demolition, and Excavation Operations.	
12 NYCRR 56, Asbestos.	

First, identify and assess the risks, then decide the best way to control them by applying the Hierarchy of Control as follows:

LEVEL	CONTROL	DEFINITION
Level 1	Elimination	Controlling the Hazard at source
Level 2	Substitution	Replacing one substance or Activity with a less hazardous one
	Isolation	Separating the hazard from the person
	Engineering	Installing Guards on machinery
Level 3	Administration	Implementing policies and procedures for safe work practices
	Personal Protective Equipment	Use of safety glasses, hardhats, protective clothing, etc.

Hierarchy of Controls





Job Hazard Analysis - COVID-19

Client Job #: 30058171

Sessler Job #: 22-3100

Date Created: 7/25/2022

Date Last Modified: 8/8/22

SUBCONTRACTOR: L.M. Sessler Excavating & Wrecking, Inc.

SUBCONTRACTOR SCOPE OF WORK: Site Preparation, Demolition and Site Restoration

Principle Step	Potential Hazards	Recommended Controls
All Operations	COVID-19	Follow the Arcadis COVID-19 Mitigation Plan for National Grid.
		Incorporate Social distancing as much as possible by maintaining six-foot distance from others.
		Perform regular housekeeping practices, including routine cleaning and disinfecting of work areas, and common surfaces, equipment, and other elements of the work environment.
		Any Employees demonstrating symptoms, primarily a fever, will not be allowed onsite until they no longer have a fever for 24 hours without medication. Return to work protocol will follow CDC and/or local PH guidelines.
		If Employee has tested Positive they must not come to work onsite. Contact Sessler Director of Health and Safety for further instructions.
Recommended PPE:	Face covering only when applicable per CDC and/or PH guidance. Hi-Viz Safety Vest, Steel-Toe footwear, Hard Hat and Safety Glasses. All other required PPE has been outlined in their designated controls.	
Sessler Representatives		
Developed/Reviewed By: Gustavo Rivera	Signature: <i>Gustavo Rivera</i>	Date: 8/23/22
Developed/Reviewed By: Chadd General	Signature: <i>Chadd General</i>	Date: 8/23/22
Reviewed By: Penny Hanshaw	Signature: <i>Penny Hanshaw</i>	Date: 8/23/22
Reviewed By: Dan Skinner	Signature: <i>Dan Skinner</i>	Date: 8/23/22
Reviewed By: Alaina Hickey	Signature: <i>Alaina Hickey</i>	Date: 8/23/22
Client Representative		
Approved By:	Signature:	Date:



Job Hazard Analysis - Emergency Onsite

Client Job #: 30058171

Sessler Job #: 22-3100

Date Created 7/25/2022

Date Last Modified: 8/8/22

SUBCONTRACTOR: L.M. Sessler Excavating & Wrecking, Inc.

SUBCONTRACTOR SCOPE OF WORK: Site Preparation, Demolition and Site Restoration

Principle Step	Potential Hazards	Recommended Controls
Emergency at the work location	Lack of awareness in case of emergency Personal injury Fire possibility	Employees must be informed of what to do in case of an emergency. This should also be addressed during daily safety talks.
		All incidents immediately shall be reported to the Site Superintendent / Site Foremen/ Site Safety Managers / Site Project Manager.
		Report to the nearest Assembly point in case any emergency. Immediately call the emergency contact number.
		Emergency contact numbers shall be displayed near the work area

Recommended PPE:

Site PPE is Hard Hat, Safety Toe Shoes, Hi-Viz Shirt or Vest, Safety Glasses, and Hearing Protection

Sessler Representatives

Developed/Reviewed By: Gustavo Rivera	Signature: <i>Gustavo Rivera</i>	Date: 8/23/22
Developed/Reviewed By: Chadd General	Signature: <i>Chadd General</i>	Date: 8/23/22
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Reviewed By: Alaina Hickey	Signature: <i>Alaina Hickey</i>	Date: 8/23/22

Client Representative

Approved By:	Signature:	Date:
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Job Hazard Analysis - Site Orientation

Client Job #: 30058171

Sessler Job #: 22-3100

Date Created: 7/25/2022

Date Last Modified: 8/8/22

SUBCONTRACTOR: L.M. Sessler Excavating & Wrecking, Inc.

SUBCONTRACTOR SCOPE OF WORK: Site Preparation, Demolition and Site Restoration

Principle Step	Potential Hazards	Recommended Controls
Report to site reception	Entering Restricted Areas	Follow posted signs and go directly to reception. All person(s) who have completed Safety Orientation will receive a Site Safety Orientation Sticker.
		Site will maintain a visitor log/sign sheet.
	Unfamiliarity with emergency procedures	Listen and ensure you obtain information and site emergency and evacuation procedure
	Unawareness of site specific hazards	Listen and ensure you obtain information about any and all site hazards
	Unawareness of restricted areas	Listen and ensure you obtain information about any restricted areas
	Unawareness of other operations or hazardous activities being undertaken on site	Listen and ensure you obtain information about any other activities being undertaken on site

Recommended PPE:

N/A for Orientation; however, to be on site PPE is Hard Hat, Safety Toe Shoes, Hi-Viz Shirt or Vest, Safety Glasses, and Hearing Protection

Sessler Representatives

Developed/Reviewed By: Gustavo Rivera	Signature: <i>Gustavo Rivera</i>	Date: 8/23/22
Developed/Reviewed By: Chadd General	Signature: <i>Chadd General</i>	Date: 8/23/22
Reviewed By: Penny Hanshaw	Signature: <i>Penny Hanshaw</i>	Date: 8/23/22
Reviewed By: Dan Skinner	Signature: <i>Dan Skinner</i>	Date: 8/23/22
Reviewed By: Alaina Hickey	Signature: <i>Alaina Hickey</i>	Date: 8/23/22

Client Representative

Approved By:	Signature:	Date:
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Job Hazard Analysis - Temperature Conditions

Client Job #: 30058171

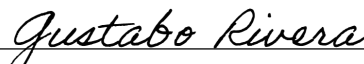



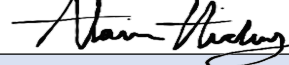
Sessler Job #: 22-3100

Date Created: 7/25/2022

Date Last Modified: 8/8/22

SUBCONTRACTOR: L.M. Sessler Excavating & Wrecking, Inc.

SUBCONTRACTOR SCOPE OF WORK: Site Preparation, Demolition and Site Restoration

Principle Step	Potential Hazards	Recommended Controls
1. Working in high Temperature / under direct sunlight	Headache Loss of concentration Dehydration Collapse of the persons due to heat stress, Heat stroke, Sunburns Tiredness No Sweating Red or flushed, hot dry skin Rapid pulse Blurred vision Dizziness or fainting Difficulty breathing Unusual behavior	1) Heat stress precautionary measures and symptoms of heat stress will be highlighted to all employees in the daily toolbox talks in the summertime.. 2) All employees will be encouraged to drink sufficient water at frequent interval to compensate the dehydrate. Drinking water will be provided in the site always 3) Provision of frequent rest intervals. All workers will be advised to take a short break if feel fatigued. 4) Heat exhausted people will be immediately attended the first aider and will be referred to the hospital if required.. 5) Direct sunlight works will be suspended during the high temperature and humidity. 6) Heat stress monitoring and work crew to know limits for working if working inside confined spaces. 7) Prohibited from resting under vehicle and/or equipment.
2. Working in Cold Conditions	Hypothermia Frostbite Trench Foot Chilblains Tiredness Other cold-related illness or injuries	Management: 1) Schedule cold jobs for the warmer part of the day. 2) Reduce the physical demands of workers. 3) Use relief workers or assign extra workers for long, demanding jobs. 4) Provide warm liquids to workers. 5) Provide warm areas for use during break periods. 6) Monitor workers who are at risk of cold stress. Include a thermometer and chemical hot packs in your first aid kit.. Workers: 1) Wear appropriate clothing. - Wear several layers of loose clothing. Layering provides better insulation. - Tight clothing reduces blood circulation. Warm blood needs to be circulated to the extremities. - When choosing clothing, be aware that some clothing may restrict movement resulting in a hazardous situation.. 2) Make sure to protect the ears, face, hands and feet in extremely cold weather. - Boots should be waterproof and insulated. - Wear a hat; it will keep your whole body warmer. (Hats reduce the amount of body heat that escapes from your head.). 3) Move into warm locations during work breaks; limit the amount of time outside on extremely cold days. 4) Carry cold weather gear, such as extra socks, gloves, hats, jacket, blankets, a change of clothes and a thermos of hot liquid. 5) Avoid touching cold metal surfaces with bare skin. 6) Monitor your physical condition and that of your co-workers.
Recommended PPE:	PPE is Hard Hat, Safety Toe Shoes, Hi-Viz Shirt or Vest, Gloves, Safety Glasses, and Hearing Protection. All other required PPE has been outlined in their designated controls.	
Sessler Representatives		
Developed/Reviewed By: Gustabo Rivera	Signature: 	Date: 8/23/22
Developed/Reviewed By: Chadd General	Signature: 	Date: 8/23/22
Reviewed By: Penny Hanshaw	Signature: 	Date: 8/23/22
Reviewed By: Dan Skinner	Signature: 	Date: 8/23/22
Reviewed By: Alaina Hickey	Signature: 	Date: 8/23/22
Client Representative		
Approved By:	Signature:	Date:



Job Hazard Analysis - Claim Work Area

Client Job #: 30058171

Sessler Job #: 22-3100

Date Created: 7/25/2022

Date Last Modified: 8/8/22

SUBCONTRACTOR: L.M. Sessler Excavating & Wrecking, Inc.

SUBCONTRACTOR SCOPE OF WORK: Site Preparation, Demolition and Site Restoration

Principle Step	Potential Hazards	Recommended Controls
1. Access the site	Breaching minimum site PPE requirements	HI visibility clothing must be worn at all times while on site. Hard hat must be worn at all times while on-site.
		Safety toe shoes must be worn at all times while on site
		Safety glasses must either be worn or carried at all times while on site
	Breaching site rules or requirements	NO SMOKING on site. Designated smoking area will be available and ALL butts to be placed in a bin
		Progressive housekeeping clean as you go.
2. Establish safe perimeter	Unauthorized Entrants	Controlled by Site Management
		Perimeter fencing throughout the site to restrict unauthorized access. Site Security for "off hours"
		a Barrier or or Caution tape shall define the work area by providing a 10ft. barrier or denying access whichever is more appropriate.
	Unauthorized Entrants - Abatement Area	Restricted Entry. Entry to the regulated abatement work area shall be restricted to the asbestos contractors involved with the asbestos project, employees of the asbestos contractors, authorized visitors, and other public safety personnel. Police and fire officials may enter the work site and not be subject to this Part only on an emergency basis..
		Asbestos warning signs, required as per current OSHA regulations shall be posted to restrict access to the regulated abatement work area at all locations and approaches to a location where airborne concentrations of asbestos may exceed ambient background levels...
Recommended PPE:	PPE is Hard Hat, Safety Toe Shoes, Hi-Viz Shirt or Vest, and Hearing Protection	
Sessler Representatives		
Developed/Reviewed By: Gustavo Rivera	Signature: <i>Gustavo Rivera</i>	Date: 8/23/22
Developed/Reviewed By: Chadd General	Signature: <i>Chadd General</i>	Date: 8/23/22
Reviewed By: Penny Hanshaw	Signature: <i>Penny Hanshaw</i>	Date: 8/23/22
Reviewed By: Dan Skinner	Signature: <i>Dan Skinner</i>	Date: 8/23/22
Reviewed By: Alaina Hickey	Signature: <i>Alaina Hickey</i>	Date: 8/23/22
Client Representative		
Approved By:	Signature:	Date:



Job Hazard Analysis - Material Handling

Client Job #: 30058171

Sessler Job #: 22-3100

Date Created 7/25/2022

Date Last Modified: 8/8/22

SUBCONTRACTOR: L.M. Sessler Excavating & Wrecking, Inc.

SUBCONTRACTOR SCOPE OF WORK: Site Preparation, Demolition and Site Restoration

Principle Step	Potential Hazards	Recommended Controls
Manual handling of materials	Back pain and body injury due to poor manual handling. Accident due to sharp-edged materials Loss of control, slip/trip	All persons must be trained for safe Manual handling. Training on proper posture for manual lifting shall be imparted to all labors. Impart training on proper lifting procedures.
		Proper PPE shall be used while handling any kind of material.
		Know the weight of all lifting material prior to lifting. Plan your lift & protect the back. Before carrying heavy wooden/steel material make sure that your walkway is clear. Don't carry more weight than they can carry safely. Avoid manual handling of heavy material. Use of buddy system for lifts greater than 40 pounds.
		All persons to be made aware of danger through Daily Safety Talk/Meeting. Intermediate break for the workforce.
Recommended PPE:	PPE is Hard Hat, Safety Toe Shoes, Hi-Viz Shirt or Vest, Safety Glasses, Work Gloves, and Hearing Protection	
Sessler Representatives		
Developed/Reviewed By: Gustavo Rivera	Signature: <i>Gustavo Rivera</i>	Date: 8/23/22
Developed/Reviewed By: Chadd General	Signature: <i>Chadd General</i>	Date: 8/23/22
Reviewed By: Penny Hanshaw	Signature: <i>Penny Hanshaw</i>	Date: 8/23/22
Reviewed By: Dan Skinner	Signature: <i>Dan Skinner</i>	Date: 8/23/22
Reviewed By: Alaina Hickey	Signature: <i>Alaina Hickey</i>	Date: 8/23/22
Client Representative		
Approved By:	Signature:	Date:



Job Hazard Analysis - Simultaneous activities

Client Job #: 30058171

Sessler Job #: 22-3100

Date Created 7/25/2022

Date Last Modified: 8/8/22

SUBCONTRACTOR: L.M. Sessler Excavating & Wrecking, Inc.

SUBCONTRACTOR SCOPE OF WORK: Site Preparation, Demolition and Site Restoration

Principle Step	Potential Hazards	Recommended Controls
Simultaneous activities	Hazard unaware Use of improper tools/equipment Manual Handling hazards. Slips/Trips/Falls injuries	Proper communication should be maintained by both party
		Trained personnel.
		Maintained sufficient distance from other working crews/personnel
		Maintain good housekeeping.
Recommended PPE:	PPE is Hard Hat, Safety Toe Shoes, Hi-Viz Shirt or Vest, Safety Glasses, Work Gloves, and Hearing Protection	
Sessler Representatives		
Developed/Reviewed By: Gustavo Rivera	Signature: <i>Gustavo Rivera</i>	Date: 8/23/22
Developed/Reviewed By: Chadd General	Signature: <i>Chadd General</i>	Date: 8/23/22
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Reviewed By: Dan Skinner	Signature: <i>Dan Skinner</i>	Date: 8/23/22
Reviewed By: Alaina Hickey	Signature: <i>Alaina Hickey</i>	Date: 8/23/22
Client Representative		
Approved By:	Signature:	Date:



Job Hazard Analysis - Working Around PME

Client Job #: 30058171

Sessler Job #: 22-3100

Date Created 7/25/2022

Date Last Modified: 8/8/22

SUBCONTRACTOR: L.M. Sessler Excavating & Wrecking, Inc.

SUBCONTRACTOR SCOPE OF WORK: Site Preparation, Demolition and Site Restoration

Principle Step	Potential Hazards	Recommended Controls
Enter the work area where Powered Mobile Equipment (PME) is or will be operating	Being hit or runover by Powered Mobile Equipment (PME)	HI visibility clothing must be worn at all times while on site
		Ensure constant communication with all personnel in the immediate area
		Never assume the PME Operator has seen you or knows where you are
		Establish eye contact with the PME Operator
		Communicate your intentions with the PME Operator via radio or hand or head signals and ensure an appropriate response
	Crushing	Never stand or traverse between the machine and a fixed structure at any time
		Never assume others have seen or are aware of any impeding obstacle; alert site management if observed
	Tripping Hazard	Be aware of surroundings, risers and set downs

Recommended PPE: PPE is Hard Hat, Safety Toe Shoes, Hi-Viz Shirt or Vest, and Hearing Protection

Sessler Representatives

Developed/Reviewed By: Gustavo Rivera	Signature: <i>Gustavo Rivera</i>	Date: 8/23/22
Developed/Reviewed By: Chadd General	Signature: <i>Chadd General</i>	Date: 8/23/22
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Reviewed By: Dan Skinner	Signature: <i>Dan Skinner</i>	Date: 8/23/22
Reviewed By: Alaina Hickey	Signature: <i>Alaina Hickey</i>	Date: 8/23/22
Client Representative		
Approved By:	Signature:	Date:



Job Hazard Analysis - Working Near Water

Client Job #: 30058171

Sessler Job #: 22-3100

Date Created: 7/25/2022

Date Last Modified: 8/8/22

SUBCONTRACTOR: L.M. Sessler Excavating & Wrecking, Inc.

SUBCONTRACTOR SCOPE OF WORK: Site Preparation, Demolition and Site Restoration

Principle Step	Potential Hazards	Recommended Controls
Working Near Water	Working from Heights (Installing Debris Capture System)	100% tie off when working within 6' of a leading edge. All persons exposed to a fall greater than 6' will use a fall arrest system with lanyards. Only persons trained in the use of fall protection equipment will be allowed to use it.
		Fall protection equipment will be inspected daily prior to use.
		Fall protection anchors installed properly with at least a 5000lb rating per worker attached
		Follow Sessler's Fall Protection Standards
	Drowning	Life preservers will be worn by all personnel working within 10 feet of the water. Tie-off points will be determined by Site Superintendent on site based on status of water current force. According to the USCG, "Life jackets are designed to be worn as the outermost garment and because of safety concerns and possible performance issues should not be worn under any other clothing.
		Prior to and after each use, the buoyant work vests or life preservers shall be inspected for defects which would alter their strength or buoyancy. Defective units shall not be used.
		Ring buoys with at least 90 feet of line shall be provided and readily available for emergency rescue operations. Distance between ring buoys shall not exceed 200 feet.
		At least one lifesaving skiff shall be immediately available at locations where employees are working over or adjacent to water.
		If a person is observed falling into the water MAN OVERBOARD must be shouted aloud and communicated through walkie system. Ring Buoys shall be thrown to person in water and, where applicable, swift water rescue will respond
Recommended PPE:	Fall Protection Harness for working at heights. Life preservers within 10 ft. of water. Lifesaving Skiff, Hi-Viz Safety Vest, Steel-toe footwear, Hard Hat and Safety Glasses. All other required PPE has been outlined in their designated controls.	
Sessler Representatives		
Developed/Reviewed By: Gustavo Rivera	Signature: <i>Gustavo Rivera</i>	Date: 8/23/22
Developed/Reviewed By: Chadd General	Signature: <i>Chadd General</i>	Date: 8/23/22
Reviewed By: Penny Hanshaw	Signature: <i>Penny Hanshaw</i>	Date: 8/23/22
Reviewed By: Dan Skinner	Signature: <i>Dan Skinner</i>	Date: 8/23/22
Reviewed By: Alaina Hickey	Signature: <i>Alaina Hickey</i>	Date: 8/23/22
Client Representative		
Approved By:	Signature:	Date:



Job Hazard Analysis - Working in Water

Client Job #: 30058171

Sessler Job #: 22-3100


Date Created: 7/25/2022

Date Last Modified: 8/8/22

SUBCONTRACTOR: L.M. Sessler Excavating & Wrecking, Inc.

SUBCONTRACTOR SCOPE OF WORK: Site Preparation, Demolition and Site Restoration

Principle Step	Potential Hazards	Recommended Controls
Working in Water	Drowning	Life preservers will be worn by all personnel working within 10 feet of the water. Tie-off points will be determined by Site Superintendent on site based on status of water current force. According to the USCG, "Life jackets are designed to be worn as the outermost garment and because of safety concerns and possible performance issues should not be worn under any other clothing.
		Prior to and after each use, the buoyant work vests or life preservers shall be inspected for defects which would alter their strength or buoyancy. Defective units shall not be used.
		Ring buoys with at least 90 feet of line shall be provided and readily available for emergency rescue operations. Distance between ring buoys shall not exceed 200 feet.
		At least one lifesaving skiff shall be immediately available at locations where employees are working over or adjacent to water.
		Full-time, dedicated, appropriately trained, swift water-rescue emergency medical services (EMS) personnel, minimum of 2, during active demolition Work when working with 25 feet of the top of bank.
Recommended PPE:	Life preservers within 10 ft. of water. Lifesaving Skiff, Waders. Hi-Viz Safety Vest, Steel-toe footwear, Hard Hat and Safety Glasses. All other required PPE has been outlined in their designated controls.	
Sessler Representatives		
Developed/Reviewed By: Gustabo Rivera	Signature: <i>Gustabo Rivera</i>	Date: 8/23/22
Developed/Reviewed By: Chadd General	Signature: <i>Chadd General</i>	Date: 8/23/22
Reviewed By: Penny Hanshaw	Signature: <i>Penny Hanshaw</i>	Date: 8/23/22
Reviewed By: Dan Skinner	Signature: <i>Dan Skinner</i>	Date: 8/23/22
Reviewed By: Alaina Hickey	Signature: <i>Alaina Hickey</i>	Date: 8/23/22
Client Representative		
Approved By:	Signature:	Date:

 Job Hazard Analysis - Clearing & Removal		Client Job #:	30058171
		Sessler Job #:	22-3100
		Date Created	7/25/2022
		Date Last Modified:	8/8/22
SUBCONTRACTOR: L.M. Sessler Excavating & Wrecking, Inc.			
SUBCONTRACTOR SCOPE OF WORK: Site Preparation, Demolition and Site Restoration			
Principle Step	Potential Hazards	Recommended Controls	
1. Tree Clearing and Removal (minimum requirements)	Use of Power Tools	All tools and equipment must be inspected by Sessler personnel prior to use. This includes tools and equipment brought onsite after the project has started. Any tool or piece of equipment deemed unsatisfactory will be tagged and removed. Any tool or piece of equipment that leaves the site must be re-inspected upon its return. GFCIs must be used on all portable electrical equipment, 125v or less. Extension cords must be at least 14ga and free of nicks or repairs.	
	Kickback	Kickback occurs when the upper tip of the guide bar touches an object or when the wood closes in and pinches the saw chain in the cut.	
		This contact may cause a lightning-fast reverse action of the guide bar back toward the operator. Results of kickback include severe upper body, neck, and facial lacerations or death. Safety chain (and other features) minimize the dangers of kickback but do not eliminate the hazard.	
	Falling Debris	Employees will maintain a safe distance from the tree felling area to insure that falling debris can not strike them	
	Environmental Irritants (Poison Ivy, Poison Oak, etc.)	Employees will wear long sturdy pants, steel toe boots, working gloves, long-sleeve shirts or arm sleeve protectant, safety goggles and face shields where applicable.	
		Employees will wash hands and face thoroughly once they leave the designated work area.	
		Any Employee who believe they have been exposed to Environmental Irritants should notify Site Supervisor and/or Site Safety immediately. If serious medical attention is needed Employee will be sent to local ER or UR.	
		There is the potential insects and ticks. Insect/Tick Repellant may be used. All persons on site should inspect for Ticks daily. If a person has a Tick on them they should immediately see medical attention to have it removed. Lime Disease Testing may be warranted.	
	Electrocution, where applicable	Assume all power lines are energized, and take appropriate precautions to avoid all contact until you are certain they have been de-energized.	
		Maintain an appropriate safe distance from the power line, depending on the voltage. The distance ranges from 10 to 15 feet.	
		Use non-conductive tools, materials and PPE when there are power lines in the vicinity	
		When near power lines, trees shall not be worked on if wet due to increased electrocution hazard..	
		Trees shall not be worked on during high winds, or when a lightning storm is approaching or in progress..	
		Workers shall not stay beneath trees during lightning storms.	
	Fire	Do not refuel chain-saw while hot.	
		Do not smoke or refuel around ignition sources.	
		Transport & store fuel only in approved containers	
	Environmental	Use only self-closing fuel containers. Utilize a funnel and do not "top-off. Ensure correct fuel mixture.	
	Biological	Utilize insecticide with Deet to eliminate mosquito bites, West Nile Virus and Lyme Disease.	
	Sun	Wear a broad brimmed hat, shirt with sleeves and sun block. Drink plenty of water.	
	Burns	Allow chain-saw to cool before making repairs or adjustments to motor	
	Slips, trips and falls	Trees shall not be worked on when wet due to slippery condition of bark. In general, only one worker shall work in a tree at one time.	
		Before climbing any tree, employee must thoroughly inspect the tree and its surroundings to acquaint themselves with all possible hazards.	
		They shall see that sufficient help, protective equipment, and tools are available, and that they are used to protect themselves, the public, equipment, or property.	
		All tree workers shall use standard lifelines or belts and safety straps at all times when working off the ground.	
		When safety slings and lifelines are used, every rope must be thoroughly inspected before each use. Discard any unsafe or questionable rope.	
	Noise	Limit demolition work to Client agreeable work hours to limit impact to the public. All persons will use appropriate hearing protection when exposed to noise over the PEL.	
	Lifting	Ensure proper lifting techniques are used when moving large objects.	
		Use the buddy system when lifting objects over 40 lbs.	
		If and when applicable, use waste carts, when possible, to move materials around in the work area	
		if and where applicable, keep the waste bags under 30 lbs. when cleaning up or collecting debris.	
	All of the above plus disturbing the ground	Follow all the controls listed above, where applicable	
		Clear brush to within 6 inches of grade in order to not disturb the ground	

2. Brush Clearing and Removal	Use of Skid Steer	Refer to JHA for Skid Steer	
	Use of Weed Wacker	Ensure that unit controls are working properly and inspect unit loose part and tension.	
		Add fuel and additives in a well ventilated space. Wear eye protection and gloves. Clean up small fuel spills (< 1 gallon).	
		Clear brush and debris, examine area to establish secure footing.	
		Inspect work area for poison ivy, bees nests and other biological hazards.	
		Ensure that guards are in place, wear appropriate clothing.	
		Wear NIOSH/OSHA approved earplugs or earmuffs	
		Do not operate unit in close proximity to others.	
		Utilize proper body position, stretch, take frequent breaks to maintain alertness, stay hydrated.	
	Use of Hand Shears	Carry tools in correct safe manner	
		Use correct method of carrying tools close by side of body, sharp edges away and pointing down. Small tools in pouch. Walk with care. Be aware of others.	
		Use tools correctly. Do not touch sharp edges or moving parts. Wear protective clothing, long sleeves, long trousers, gloves, boots & safety glasses. Return tools to pouch when not in use.	
		Maintain good posture and body movements. Use tools correctly	
		Clean and maintain tools to high standard. Report any faulty/damaged tools	
Recommended PPE:	Hi-Viz Safety Vest, Steel-toe footwear, Hard Hat, Safety Glasses or Goggles, Sun Screen, Bug Spray, Leather Gloves, and Hearing Protection.. All other required PPE has been outlined in their designated controls.		
Sessler Representatives			
Developed/Reviewed By: Gustavo Rivera		Signature: <i>Gustavo Rivera</i>	Date: 8/23/22
Developed/Reviewed By: Chadd General		Signature: <i>Chadd General</i>	Date: 8/23/22
Reviewed By: Penny Hanshaw		Signature: <i>Penny Hanshaw</i>	Date: 8/23/22
Reviewed By: Dan Skinner		Signature: <i>Dan Skinner</i>	Date: 8/23/22
Reviewed By: Alaina Hickey		Signature: <i>Alaina Hickey</i>	Date: 8/23/22
Client Representative			
Approved By:		Signature:	Date:



Job Hazard Analysis - Barge System

Client Job #: 30058171

Sessler Job #: 22-3100

Date Created: 7/25/2022

Date Last Modified: 8/8/22

SUBCONTRACTOR: L.M. Sessler Excavating & Wrecking, Inc.

SUBCONTRACTOR SCOPE OF WORK: Site Preparation, Demolition and Site Restoration

Principle Step	Potential Hazards	Recommended Controls
Connection of the Interlocking Barge and working on the Interlocking Barge	Slips/Trips/Falls Falling Overboard Machinery and Equipment Hazards. Fire Hazards	1) Keep all walking and working surfaces clean, dry, and unobstructed. 2) Use non-skid protective deck compound and do not paint over the non-skid compound with standard paint. . 3) Have de-icing procedures in place when necessary.
		1) Avoid overextending the body when performing tasks. 2) Life Preservers and Other Lifesaving Equipment shall meet guidance set forth in the U.S. Coast Guard Regulations 46 CFR 25.25. 3) An approved and readily available PFD is required to be on board the vessel for each individual on board. All lifesaving equipment designed to be worn is required to be readily available and in serviceable condition. According to the USCG, "Life jackets are designed to be worn as the outermost garment and because of safety concerns and possible performance issues should not be worn under any other clothing. 4) Each vessel 26 feet or longer must have at least one approved ring life buoy which is immediately available. All lifesaving equipment designed to be thrown into the water is required to be immediately available and in serviceable condition. 5) An approved light is required for all PFDs. Also, all PFDs must have approved retro reflective material installed.
		Fire Extinguishing Equipment [46 CFR 25.30] 1) Hand-portable fire extinguishers and semi-portable fire extinguishing systems must be of the "B" type. 2) Hand-portable fire extinguishers and semi-portable fire extinguishing systems must have a metal name plate listing the name of the item, rated capacity (gallons, quarts or pounds), name and address of person/firm for whom approved, and the manufacturer's identifying mark. 3) Portable fire extinguishers must be inspected and weighed every six months. 4) Minimum number of B-II hand-portable fire extinguishers required to be on board motor vessels: one if less than 50 tons, two if 50-100 tons, three if 100-500 tons, six if 500-1,000 tons, and eight if over 1,000 tons. 5) An approved light is required for all PFDs. Also, all PFDs must have approved retro reflective material installed. 6) Check for sloppy or loose control arms or foot pedals. 7) Check lights (if applicable), horn and back up alarm.
		Man-overboard procedures should incorporate the use of stand-by boats, life rings with appropriate length of rope (90 feet minimum), and ladders that extend three feet below and above the water surface. The Man-overboard procedures will be discussed in detail during Site Safety Orientation.

Recommended PPE:

Hi-Viz Safety Vest, Steel-toe footwear, Hard Hat and Safety Glasses. All other required PPE has been outlined in their designated controls.

Sessler Representatives

Developed/Reviewed By: Gustavo Rivera	Signature: <i>Gustavo Rivera</i>	Date: 8/23/22
Developed/Reviewed By: Chadd General	Signature: <i>Chadd General</i>	Date: 8/23/22
Reviewed By: Penny Hanshaw	Signature: <i>Penny Hanshaw</i>	Date: 8/23/22
Reviewed By: Dan Skinner	Signature: <i>Dan Skinner</i>	Date: 8/23/22
Reviewed By: Alaina Hickey	Signature: <i>Alaina Hickey</i>	Date: 8/23/22
Client Representative		
Approved By:	Signature:	Date:



Job Hazard Analysis - ESC Install

Client Job #: 30058171

Sessler Job #: 22-3100

Date Created: 7/25/2022

Date Last Modified: 8/8/22

SUBCONTRACTOR: L.M. Sessler Excavating & Wrecking, Inc.

SUBCONTRACTOR SCOPE OF WORK: Site Preparation, Demolition and Site Restoration

Principle Step	Potential Hazards	Recommended Controls
Erosion & Sediment Controls Installation/Maintenance	Slips/Trips/Falls	Housekeeping: Make sure to maintain clean project areas. Watch for debris and irregular or damaged existing conditions (e.g., cracked or shifted sidewalk)
		Walking/working surfaces can become slippery due to water, a slip-resistant safety boot shall be worn (or equivalent). Work area shall be cleaned off or "squeegeed" as best as possible to mitigate this risk.
	Working with Small Hand Tools	All tools and equipment must be inspected prior to use. This includes all tools brought onsite after the project has started. Any tool deemed unsatisfactory will be tagged and removed. Any tool that leaves the site must be re-inspected upon its return. If and where applicable, GFCIs must be used on all portable electrical tools, 125v or less. Extension cords must be at least 14ga and free of nicks or repairs.
		Appropriate body positioning will be used while performing task to with such tools. PPE will include safety glasses and/or goggles, and work gloves.
	Lifting	Ensure proper lifting techniques are used when moving large objects. Use the buddy system when lifting objects over 40 lbs.

Recommended PPE: Hi-Viz Safety Vest, Steel-toe footwear, Hard Hat and Safety Glasses. All other required PPE has been outlined in their designated controls.

Sessler Representatives

Developed/Reviewed By: Gustavo Rivera	Signature: <i>Gustavo Rivera</i>	Date: 8/23/22
Developed/Reviewed By: Chadd General	Signature: <i>Chadd General</i>	Date: 8/23/22
Reviewed By: Penny Hanshaw	Signature: <i>Penny Hanshaw</i>	Date: 8/23/22
Reviewed By: Dan Skinner	Signature: <i>Dan Skinner</i>	Date: 8/23/22
Reviewed By: Alaina Hickey	Signature: <i>Alaina Hickey</i>	Date: 8/23/22

Client Representative

Approved By:	Signature:	Date:
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Job Hazard Analysis - Offloading/Loading Equipment

Client Job #: 30058171

Sessler Job #: 22-3100

Date Created: 7/25/2022

Date Last Modified: 8/8/22

SUBCONTRACTOR: L.M. Sessler Excavating & Wrecking, Inc.

SUBCONTRACTOR SCOPE OF WORK: Site Preparation, Demolition and Site Restoration

Principle Step	Potential Hazards	Recommended Controls
Offloading/Loading Equipment	Struck By	Machinery or equipment will not be operated in a manner that will endanger persons or property nor operating speeds or loads be exceeded.
		All deliveries or pickups will be escorted by a Sessler Wrecking vehicle with 4 way flasher and/or safety beacon light. Make sure backup alarm is working and noticeable above the surrounding noise level, AND THAT A SPOTTER IS UTILIZED.
		Ensure reverse signal alarms are working.
		All personnel required to enter the work area will wait until eye contact with the operator is made and acknowledgement from the operator is received before entering.
	Falls	Maintain three points of contact when climbing on or dismounting a cab or truck bed.
		All persons exposed to a fall greater than 6' will use a fall arrest system with lanyards and harnesses. Only persons trained in the use of fall protection will be allowed to use it.
	Traffic	Sessler to provide traffic control (i.e., signage, fencing, flaggers, etc.) as outlined in the Demolition Work Plan.
	Unqualified Operator or Defective Equipment	Only designated qualified personnel will operate machinery and mechanized equipment.
		Equipment deficiencies observed at any time will be corrected before continuing operation.
	Noise	All persons will use appropriate hearing protection when exposed to noise over the PEL.
	Dust or flying particles	All persons exposed to operations that subject the eyes or face to dust or flying particles will use the eye and/or face protection as required.
	Lifting	Ensure proper lifting techniques are used when moving large objects. Use the buddy system when lifting objects over 40 lbs.
Recommended PPE:	Hi-Viz Safety Vest, Steel-toe footwear, Hard Hat and Safety Glasses. All other required PPE has been outlined in their designated controls.	
Sessler Representatives		
Developed/Reviewed By: Gustabo Rivera	Signature: <i>Gustabo Rivera</i>	Date: 8/23/22
Developed/Reviewed By: Chadd General	Signature: <i>Chadd General</i>	Date: 8/23/22
Reviewed By: Penny Hanshaw	Signature: <i>Penny Hanshaw</i>	Date: 8/23/22
Reviewed By: Dan Skinner	Signature: <i>Dan Skinner</i>	Date: 8/23/22
Reviewed By: Alaina Hickey	Signature: <i>Alaina Hickey</i>	Date: 8/23/22
Client Representative		
Approved By:	Signature:	Date:



Job Hazard Analysis - Skid Steer Operations

Client Job #: 30058171

Sessler Job #: 22-3100

Date Created: 7/25/2022

Date Last Modified: 8/8/22

SUBCONTRACTOR: L.M. Sessler Excavating & Wrecking, Inc.

SUBCONTRACTOR SCOPE OF WORK: Site Preparation, Demolition and Site Restoration

Principle Step	Potential Hazards	Recommended Controls
1. Perform Pre-Trip Inspection	Damaged or faulty equipment may result in property damage, or injury.	Inspect machine for damage or faulty equipment. 1) Check under machine for signs of fluid leaks. 2) Check chassis for faults such as broken welds, missing bolts, broken or missing lights. 3) Check all accessible hydraulic hoses for dry rot, cuts or slashes. Check all accessible hydraulic pipes for dents, cracks or loose fittings. 4) Check tires for loose or missing lug nuts, cuts, or excessive wear on the tires. Note: A audit of the pre-trip inspection form should be conducted at least once per week.
2. Check engine compartment.	Damaged or faulty equipment may result in property damage, or injury.	1) Inspect engine compartment door, check for loose hinges and that the lock mechanism is working. Check engine oil level. 2) Inspect all belts and check coolant level. 3) Check hydraulic oil level. 4) Look for any leaks or fluid buildup that could cause fires.
3. Check safety devices.	Missing or improperly working safety devices may result in property damage, or injury	Check to see that all warning lights are working. To do this safely turn power to machine on but do not start it.
4. Enter skid-steer loader.	Potential for property damage, or injury	Apply seat belt and adjust. It is recommended to not have any loose fitting clothing on that could catch controls.
5. Check inside cab and controls.	Broken or faulty gauges, controls or other items may lead to property damage, or injury	1) Inspect cab door make sure that it is working properly. 2) Look around the interior of the cab check for hazards or visibly broken items. 3) Sit in operator seat and prepare to check all controls. First make sure emergency brake is on. 4) Next start machine, starting may vary depending on make and model, refer to owner's manual. 5) With machine running test all controls in order to cycle hydraulics. 6) Check for sloppy or loose control arms or foot pedals. 7) Check lights (if applicable), horn and back up alarm.
6. Engine Startup procedures.	Potential for property damage, or injury	1) Insert key. 2) Turn key to on position and check lights (where applicable), gauges, fuel and hydraulic levels and horn again. 3) Ensure no personnel are close enough to be injured and start engine
7. Operate Skid-steer loader.	Potential for property damage, or injury	1) DO NOT ALLOW ANY RIDERS. 2) Look in all directions while driving, especially backing, to watch out for other personnel. 3) Do not jerk controls. Use slow and deliberate movements to ensure a smooth ride. 4) Always drive with the load close to the ground. 5) Use the horn at all low-visibility locations and intersections.
8. Talking to co-workers/site-visitors.	Potential for property damage, or injury	Where other personnel may need to speak to the operator, the following steps shall be taken. 1) Bring the machine to a complete stop. 2) Lower all attachments to the ground and apply parking brake. 3) Shut off the engine. 4) Do not allow other personnel to lean on or into the cab of the skid steer loader. If necessary, get out of the loader to talk to personnel.
9. Working on ramps or near embankments.	Potential for property damage, or injury	1) Slow down to a minimum normal operating speed. Recommended at half throttle. 2) Avoid sudden movements (jerking controls) near the edge. 3) Avoid sharp turns near the edge. Back away first, then turn. 4) When traveling on severe slopes or grades, always travel with the heavy end uphill.
10. Use of attachments.	Potential for property damage, or injury	1) Only used manufacturer approved attachments. 2) Always get help loading attachments if the attachment cannot be connected while operating the loader. 3) Once attachments are loaded, follow machine shutdown procedures, exit the loader and secure all locking pins and hydraulic hoses, as necessary. 4) Prior to conducting work with the attachments, cycle all hydraulics and test controls to ensure adequate response levels. 5) Remove attachments in the reverse order they were loaded.

11. Engine Shutdown Procedures.	Potential for property damage, or injury	1) Drive the loader the storage or parking area. 2) Bring the machine to a complete stop. 3) Lower all attachments to the ground and apply parking brake. 4) Shut off the engine. 5) Remove key.	
Recommended PPE:		Hi-Viz Safety Vest, Steel-toe footwear, Hard Hat, Gloves, and Safety Glasses. All other required PPE has been outlined in their designated controls.	
Sessler Representatives			
Developed/Reviewed By: Gustavo Rivera	Signature: <i>Gustavo Rivera</i>	Date: 8/23/22	
Developed/Reviewed By: Chadd General	Signature: <i>Chadd General</i>	Date: 8/23/22	
Reviewed By: Penny Hanshaw	Signature: <i>Penny Hanshaw</i>	Date: 8/23/22	
Reviewed By: Dan Skinner	Signature: <i>Dan Skinner</i>	Date: 8/23/22	
Reviewed By: Alaina Hickey	Signature: <i>Alaina Hickey</i>	Date: 8/23/22	
Client Representative			
Approved By:	Signature:	Date:	



Job Hazard Analysis - Crane Operations

Client Job #: 30058171

Sessler Job #: 22-3100

Date Created: 7/25/2022

Date Last Modified: 8/8/22

SUBCONTRACTOR: L.M. Sessler Excavating & Wrecking, Inc.

SUBCONTRACTOR SCOPE OF WORK: Site Preparation, Demolition and Site Restoration

Principle Step	Potential Hazards	Recommended Controls
1. Mobile Crane to onsite destination	Faults with Crane	Pre-start Checks
	Pedestrians	Personnel on hand to warn others of crane movement in the vicinity or via radio where available.
	Onsite Traffic	Alternate pathway defined. Onsite traffic control where applicable
2. Pre-job meeting and Toolbox	Inexperienced workers	Sufficiently skilled employees to complete task (competencies and Licenses)
	Inadequate consultation	Adequate competent supervision throughout the project
	Inadequate understanding of equipment	To the extent possible, collect water that comes in contact with building materials. Prior to discharge, run water through a 5 micro filter to remove any potential asbestos fibers.
	Airborne Contamination	Proper planning for equipment required for the task
		Site & work area inductions compulsory for all personnel
3. Locate crane into lifting positions on site	Pedestrians	The workplace is adequately prepared for the incoming mobile crane, including where possible a clear predefined area/crane pad for the crane to position upon
		Check and confirm exclusion areas - Barricades, witches Hats, Danger Tape, Warning Signs
	Ground Conditions	Crew should always inspect site prior to positioning crane in final position. Ensure adequate room for rigging and erection of mobile crane.
	Lift radius Access	Ensure adequate tail (counterweight/winch) swing clearance. Ability to cordon off area with suitable barricading resources. Please refer to Critical Lift Plan where necessary.
	Buildings Power lines & underground Utilities	Elements to observe include: (always refer to Critical Lift Plan first) - Load location and scope of lift - Location of any overhead obstructions including wires, trees, buildings, restricted airspace - Location of any underground services and/or trenches including utilities and drainage arrangements that may affect integrity of ground
4. Inspect chains and or slings, shackles, hooks and attachment points in preparation for use	Tears in Slings	Check slings for rips and tears and remove from service if faults are found
	Cracks in chains, shackles, rings and hooks	Check chains, shackles, hooks and rings for cracks, corrosion, wears, mechanism faults etc. and remove from service if faults are found
	Dropping of load due to faulty & Lifting gear or faulty attachment points	Lifting gear/equipment inspected and tagged with appropriately. Also refer to the Critical Lift Plan.
5. Locate crane in lifting position on site – place timbers (pads) and set outriggers	Crane overturning due to unstable ground condition	Outriggers must be positioned on a flat surface, using timbers or suitable material for pads to evenly distribute the load to the ground. Where space is limited, crane should be configured to maximum capacity – this may require the use of reduced outriggers or on rubber; when permitted by the manufacturer. Generally Standard Safe Working Load capacity charts are based on all outriggers fully extended and set with wheels clear of ground.
		Crane to be located within the radius for the loads being lifted. Be sure to refer to the Critical Lift Plan.
		Outriggers should only be extended on the side where the Operator is positioned or with a suitable spotter. Where space permits, outriggers shall always be fully extended. All outriggers-jacks should be utilized at all time.
		Commonly used Outrigger Mats should carry design information and be subject to periodic inspection
6. Attaching Fly or Pin Jib to Crane	Working at heights/falling	Follow Sessler Wrecking Working at Heights procedures and use appropriate attachment point & safety harness when walking along crane boom. Use an Elevated Work Platform (EWP) or ladder for this task & follow safe work practices
7. Position counterweight truck in an easily accessible spot for the crane to load its counterweights	Loading counterweights	Equipment to be positioned in area clear of obstruction.
		Once crane is elevated and level, a trial operation should be completed by the operator; this may include bluffing boom to high angle, and slewing 360 degrees with spotter in position – purpose to review tail swing and outrigger packing suitability and Executing 'dry-run' where load is required to be picked up and placed – Purpose to ensure crane is capable of task and set required limits.
8. Re-assessing Situation throughout job	Changes in weather conditions Changes in operators Changes in ground suitability	Continual safe operation can be aided by periodic inspection throughout the project of the following; • Outrigger Jacks – Leaking oil/retraction of shaft • Outrigger Mats – excessive settlement and/or sinking into ground; i.e., loadings increasing beyond estimated capacity of ground – such as unknown back-filling • Evidence of water content in ground
		Should requirements change during operation, then crew shall re-assess and review crane capacity and wider environment to ensure revised work practice is within limits and safe to continue operation

9. Leaving crane onsite	Unauthorized person access crane site, Damage to crane, and or Injury to public	Upon completion of project, or specific stage the crane; • Equipment and site shall be left in a secure and safe manner • If the crane is to be left onsite Retract Boom, remove keys from the ignition and secure/lock • Outriggers should be inspected prior to next use • Barricading should remain in place around the crane and any work area deemed necessary
10. Packing up to leave site once finished	Manual Handling Injuries, Equipment Damage, Counterweights coming off back of truck/trailer.	Use correct manual handling techniques. Wear appropriate PPE.
		Tools & Equipment to be packed. Lifting gear packed. Timbers or equivalent packed. Pads loaded.
		Guide counterweights onto the truck tray with taglines. Make certain counterweights are stacked on rubber mats and correctly tied down for trip.
		Where possible use Elevated Work Platform (EWP) or ladder otherwise be cautious of footing.
11. Exit site and return to Depot	Overhead Powerlines	Crane boom to be down when travelling under power lines
	Collision with people/personnel and other vehicles/plant when exiting site and traffic accidents	Maintain site speed limit when exiting work site. Communicate with other vehicles onsite is necessary. Observe road rules and take into consideration drivers and riders who don't understand the nature of cranes and trucks.
Recommended PPE:	Hi-Viz Safety Vest, Steel-toe footwear, Hard Hat, Gloves, and Safety Glasses. All other required PPE has been outlined in their designated controls.	
Sessler Representatives		
Developed/Reviewed By: Gustavo Rivera	Signature: <i>Gustavo Rivera</i>	Date: 8/23/22
Developed/Reviewed By: Chadd General	Signature: <i>Chadd General</i>	Date: 8/23/22
Reviewed By: Penny Hanshaw	Signature: <i>Penny Hanshaw</i>	Date: 8/23/22
Reviewed By: Dan Skinner	Signature: <i>Dan Skinner</i>	Date: 8/23/22
Reviewed By: Alaina Hickey	Signature: <i>Alaina Hickey</i>	Date: 8/23/22
Client Representative		
Approved By:	Signature:	Date:



Job Hazard Analysis - Excavator Operation

Client Job #: 30058171

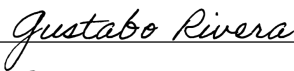

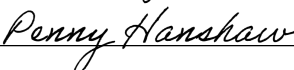
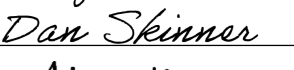

Sessler Job #: 22-3100

Date Created: 7/25/2022

Date Last Modified: 8/8/22

SUBCONTRACTOR: L.M. Sessler Excavating & Wrecking, Inc.

SUBCONTRACTOR SCOPE OF WORK: Site Preparation, Demolition and Site Restoration

Principle Step	Potential Hazards	Recommended Controls
Safety Check and Operation of Excavator		
1. Safety check of unit. Fill out Pre-trip/ Daily Inspection	Faulty equipment machine failure	Check for dents, cracks and faulty welds. Check all hydraulic rams and lines, controls for leaks
		Check all safety devices
		Check tracks for tightness and rollers, idlers, and sprockets for damage
2. Boarding the machine	Falling from Ladder	Ensure 3 point of contact
3. Operating / traveling with or without a load	Injury to people, damage to product or equipment from running into or over	Only trained & experienced operators should operate the equipment and Competent Banks Worker should be present during mechanical excavation or backfilling activity.
	Thrown out of cab or against cab interior	Always wear seatbelt
	Personal Injury	Allow no one to ride outside of the cab. Never use the basket or other attachments as a staging platform for workers. All workers must wear Hi-Viz vest or shirt when on site.
	Noise	Workers exposed to noise provide earplugs/ear muffs.
	Tipping over	Be alert for trenches, open cuts, sump holes and pits. Keep the machine as level as possible when operating. Provided warning signboard, barricades around the excavation area.
	Electrocution	Always check for overhead power lines. Keep Safe distance and wear proper PPE while working near the electrical live line.
4. Dig	Digging up underground services	Any suspected services should be uncovered by hand digging and clearly marked so as to be visible to plant operators on site. Obtain service location from property owner.
	Ground collapse	All stockpile materials must be "put out of the zone of influence".
		If excavations exceed 5 feet no persons should work in the trench without support. If excavations exceed 5 feet undertake benching , battering or shoring.
	Environmental - Spreading of Weeds and pests	Contain weeds if present for disposal
	Environmental - Dust	Wet down area in dry dusty conditions
5. Backing Up	Reversing/ Running over people and equipment and not very good visual	Make sure that your back up alarm is working
6. Ground Water	Ground Water Accumulation	Provide a water pump for dewatering the accumulated groundwater, check the sidewall condition of the excavated pit before entering inside for work. Gas tests will be carried out before starting the job every day in deep excavated Pit or trench.
Recommended PPE:	Safe work methods and PPE are the best protection from potential asbestos exposure. Use a full-face air purifying respirator or self-contained breathing apparatus. Tyvek suits and hoods provide good protection from asbestos dust. All other required PPE has been outlined in their designated controls.	
Sessler Representatives		
Developed/Reviewed By: Gustavo Rivera	Signature: 	Date: 8/23/22
Developed/Reviewed By: Chadd General	Signature: 	Date: 8/23/22
Reviewed By: Penny Hanshaw	Signature: 	Date: 8/23/22
Reviewed By: Dan Skinner	Signature: 	Date: 8/23/22
Reviewed By: Alaina Hickey	Signature: 	Date: 8/23/22
Client Representative		
Approved By:	Signature:	Date:



Job Hazard Analysis - Attachment Installation

Client Job #: 30058171

Sessler Job #: 22-3100

Date Created: 7/25/2022

Date Last Modified: 8/8/22

SUBCONTRACTOR: L.M. Sessler Excavating & Wrecking, Inc.

SUBCONTRACTOR SCOPE OF WORK: Site Preparation, Demolition and Site Restoration

Principle Step	Potential Hazards	Recommended Controls
Attachment Installation	Struck By	All deliveries or pickups will be escorted by a Sessler Wrecking vehicle with 4 way flasher and/or safety beacon light. Make sure backup alarm is working and noticeable above the surrounding noise level, AND THAT A SPOTTER IS UTILIZED.
		Ensure reverse signal alarms are working.
		All personnel required to enter the work area will wait until eye contact with the operator is made and acknowledgement from the operator is received before entering.
	Use of Sledgehammer	All persons will inspect tools and equipment before use. Appropriate body positioning will be used while performing task to attach equipment.
	Pinch Points	All persons will use appropriate gloves when performing tasks with hands.
	Pressure in Hydraulic Lines	All persons will bleed lines and check for leaks when working with hoses.
	Noise	All persons will use appropriate hearing protection when exposed to noise over the PEL.

Recommended PPE:

Hi-Viz Safety Vest, Steel-toe footwear, Hard Hat and Safety Glasses. All other required PPE has been outlined in their designated controls.

Sessler Representatives

Developed/Reviewed By: Gustavo Rivera	Signature: <i>Gustavo Rivera</i>	Date: 8/23/22
Developed/Reviewed By: Chadd General	Signature: <i>Chadd General</i>	Date: 8/23/22
Reviewed By: Penny Hanshaw	Signature: <i>Penny Hanshaw</i>	Date: 8/23/22
Reviewed By: Dan Skinner	Signature: <i>Dan Skinner</i>	Date: 8/23/22
Reviewed By: Alaina Hickey	Signature: <i>Alaina Hickey</i>	Date: 8/23/22

Client Representative

Approved By:	Signature:	Date:
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Job Hazard Analysis - Utilities

Client Job #: 30058171

Sessler Job #: 22-3100

Date Created: 7/25/2022

Date Last Modified: 8/8/22

SUBCONTRACTOR: L.M. Sessler Excavating & Wrecking, Inc.

SUBCONTRACTOR SCOPE OF WORK: Site Preparation, Demolition and Site Restoration

Principle Step	Potential Hazards	Recommended Controls
Utilities	Live Utilities	Sessler shall notify NYS Dig Safe (i.e., the local one call center) at least seven (7) business days prior to any ground intrusive work. If possible, temporarily disconnect power.
		All electric, gas, water, sewer, steam and other service lines not required in the demolition process should be shut off, capped or otherwise controlled at, or outside, the building line before demolition work is started. Notify utility agency in advance and obtain approval to shut down. Any service retained for the demolition work should be adequately protected as required by the relevant authority – e.g. the protection of overhead electric lines. Obtain current information on the services prior to commencing work and: <ul style="list-style-type: none">• Have regard for the information• Keep the information readily available for inspection• Make the information available to any principal contractor and subcontractors• Retain the information until the excavation is completed or, if there is a notifiable incident relating to the excavation, two years after the incident occurs. The available information about existing underground essential services may not be accurate. Therefore, it is important that demolition methods include an initial examination of the area to be demolished.
	Working near to the live facilities	Use adequate PPEs. Use cut-resistant gloves and Isolation of sharp edges. Wear a respirator or chemical mask, when exposed to harmful dust, vapors, or gases. Use earplug or earmuff.
		Check electrical equipment by a competent person. Verify that all-electric cables are properly insulated. Isolate rotating parts.
		Suitable fire extinguishers near wear area. All should be trained on proper use of fire extinguishers.
		Use safe lifting and moving techniques. Where and when feasible, use mechanical aids to assist in lifting. Refer to the Critical Lift Plan where applicable.
		Proper isolation and signage are in a hazardous area.
		All isolation work shall be carried out under the permit to work system.
	Use of Small Hand Tools	All tools and equipment must be inspected by Sessler personnel prior to use. This includes tools and equipment brought onsite after the project has started. Any tool or piece of equipment deemed unsatisfactory will be tagged and removed. Any tool or piece of equipment that leaves the site must be re-inspected upon its return. GFCIs must be used on all portable electrical equipment, 125v or less. Extension cords must be at least 14ga and free of nicks or repairs.
		Appropriate body positioning will be used while performing task to with such tools. PPE will include safety glasses and/or goggles, and work gloves.
Recommended PPE:	Hi-Viz Safety Vest, Steel-toe footwear, Hard Hat and Safety Glasses. All other required PPE has been outlined in their designated controls.	
Sessler Representatives		
Developed/Reviewed By: Gustavo Rivera	Signature: <i>Gustavo Rivera</i>	Date: 8/23/22
Developed/Reviewed By: Chadd General	Signature: <i>Chadd General</i>	Date: 8/23/22
Reviewed By: Penny Hanshaw	Signature: <i>Penny Hanshaw</i>	Date: 8/23/22
Reviewed By: Dan Skinner	Signature: <i>Dan Skinner</i>	Date: 8/23/22
Reviewed By: Alaina Hickey	Signature: <i>Alaina Hickey</i>	Date: 8/23/22
Client Representative		
Approved By:	Signature:	Date:



Job Hazard Analysis - Controlled Demo

Client Job #: 30058171

Sessler Job #: 22-3100

Date Created: 7/25/2022

Date Last Modified: 8/8/22

SUBCONTRACTOR: L.M. Sessler Excavating & Wrecking, Inc.

SUBCONTRACTOR SCOPE OF WORK: Site Preparation, Demolition and Site Restoration

Principle Step	Potential Hazards	Recommended Controls
Demolition (Friable and Non-Friable ACM in Place) Refer to the Demolition Plan for further guidance	Contact with overhead lines (raised dump beds/trailers, excavators, cranes). Operating in congested areas (traffic, near other equipment, near buildings)	Use of Electrical Qualified Spotter. Use of Hi-Vis vest (basic Level D PPE). Make sure backup alarm is functional and noticeable above background noise levels. Sessler will not be rigging any loads. All materials will be lowered with mechanical grapple or shear on excavators. Employees will be reminded in daily tool box talks to be aware of making eye contact or radio contact with the operator before approaching and be aware of the excavator's swing radius and tracking direction.
	Unauthorized Entrants	Restricted Entry. Entry to the regulated abatement work area shall be restricted to the asbestos contractors involved with the asbestos project, employees of the asbestos contractors, authorized visitors, and other public safety personnel. Police and fire officials may enter the work site and not be subject to this Part only on an emergency basis. Signs. Asbestos warning signs, required as per current OSHA regulations shall be posted to restrict access to the regulated abatement work area at all locations and approaches to a location where airborne concentrations of asbestos may exceed ambient background levels.
	Struck By	All deliveries or pickups will be escorted by a Sessler Wrecking vehicle with 4 way flasher and/or safety beacon light. Make sure backup alarm is working and noticeable above the surrounding noise level, AND THAT A SPOTTER IS UTILIZED. Ensure reverse signal alarms are working. All personnel required to enter the work area will wait until eye contact with the operator is made and acknowledgement from the operator is received before entering.
	Asbestos Surface Contamination	A remote decontamination trailer will be onsite adjacent to the restricted work area. All employees exiting the work area will and utilize the unit to decontaminate and remove all protective ppe.
	Dust	Make sure adjacent building entrance/exits have been posted and/or rerouted as needed to ensure safe distances are maintained from the 'construction fence line' throughout demolition. Based on our current exposure assessments, only limited periodic monitoring will be conducted for silica as appropriate based on the work being performed. Dust control will be utilized by application of water. Water will be applied to suppress dust with a fire hose with nozzle and/or self-powered dust boss. If these methods are not sufficient, the use of APR with HEPA cartridges will be utilized only for personnel that are actively managed within Sessler's respiratory protection program. Sessler's Lead Compliance/Safety Plan is a good reference for control of lead dust.
	Dust Suppression Wastewater	To the extent possible, collect water that comes in contact with building materials. Prior to discharge, run water through a 5 micro filter to remove any potential asbestos fibers.
	Airborne Contamination	Personal Air Sampling. Air sampling shall be performed in the worker's breathing zone, by the asbestos site supervisor for his personnel, as required by current OSHA regulations. Perimeter air monitoring if required to be performed by the owners designated monitor
	Collapse of Structure or Portion Thereof	To the extent possible demolition will stop at the end of each day at a point to minimize the chance of unexpected collapse
	Hazardous Materials	If Hazardous Materials (HAZMAT) are found on the project site or location after demolition has begun, the contractor shall immediately cease work and notify the GDA.
	Falling Debris	Employees will maintain a safe distance from the building to insure that falling debris can not strike them
	Slips/Trips/Falls	Housekeeping: Make sure to maintain clean project areas. Watch for debris and irregular or damaged existing conditions (e.g., cracked or shifted sidewalk)
	Stored Energy: Electric, Gas, Water, Steam	Coordinate with Client to locate all utility shutoff and/or rerouting points. If devices have Lock-Out-Tag-Out locks on it, add a Sessler lock if adjacent to critical demolition work area(s). The exclusion zones and approach distances to overhead electric lines at the locations and distances specified on the demolition plan are to be clearly identifiable and enforced by a dedicated Electrical Qualified Spotter and/or Safety Representative.
	Fire	At least two (2) 20-lb properly rated fire extinguishers shall be made readily available throughout the demolition work area at each hot work location, service numbers shall be posted on each extinguisher. Fire watch shall occur for at least one (1) hour after any hot work.
	Noise	Limit demolition work to Client agreeable work hours to limit impact to the public. All persons will use appropriate hearing protection when exposed to noise over the PEL.
	Unqualified Operator or Defective Equipment	Only designated qualified personnel will operate machinery and mechanized equipment. Equipment deficiencies observed at any time will be corrected before continuing operation.
	Traffic	Sessler to provide traffic control (i.e., signage, fencing, flaggers, etc.) as outlined in the Demolition Work Plan.

Recommended PPE:

Safe work methods and PPE are the best protection from potential asbestos exposure. Use a full-face air purifying respirator or self-contained breathing apparatus. Tyvek suits and hoods provide good protection from asbestos dust. All other required PPE has been outlined in their designated controls.

Sessler Representatives

Developed/Reviewed By: Gustabo Rivera

Signature:

Gustabo Rivera

Date: 8/23/22

Developed/Reviewed By: Chadd General	Signature: <i>Chadd General</i>	Date: 8/23/22
Reviewed By: Penny Hanshaw	Signature: <i>Penny Hanshaw</i>	Date: 8/23/22
Reviewed By: Dan Skinner	Signature: <i>Dan Skinner</i>	Date: 8/23/22
Reviewed By: Alaina Hickey	Signature: <i>Alaina Hickey</i>	Date: 8/23/22
Client Representative		
Approved By:	Signature:	Date:



Job Hazard Analysis - PCBs Removal

Client Job #: 30058171

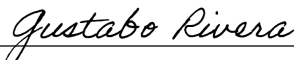

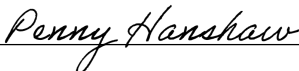

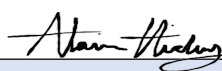
Sessler Job #: 22-3100

Date Created: 7/25/2022

Date Last Modified: 8/8/22

SUBCONTRACTOR: L.M. Sessler Excavating & Wrecking, Inc.

SUBCONTRACTOR SCOPE OF WORK: Site Preparation, Demolition and Site Restoration

Principle Step	Potential Hazards	Recommended Controls
Polychlorinated Biphenyls (PCBs) Removal		
1. Pre-Operation and Preparing for the Job	1. Not having correct tools and training to complete PCB removal. 2. Injury or potential fatality. 3. Assess for any electrical hazards, overhead issues. 4. Inhalation hazard associated with PCBs. 5. Skin, eye, ingestion and inhalation hazards. 6. High winds can spread contamination beyond the work area. 7. Heat or dry removal will increase the inhalation risk and contamination.	Based upon the condition of the caulk, tools may include utility knife, chisel, hammer, crowbar, putty knife, scraper, electrical joint cutter with oscillating blade, and HEPA vacuum. For elastic and soft caulking (primarily in areas protected from sunlight and weather or located indoors), use utility knife, putty knife, or scraper. For hard and brittle (aged and weather-exposed caulks), use chisel, hammer, crowbar, electrical joint cutter with oscillating blade. Always use a HEPA vacuum.
		Understand the building/structure that work will be performed
		Assess foliage or other obstacles that might impede access.
		Ladders, and/or scaffolding, and/or manlifts and fall protection to assist with heights per Sessler's SMS.
		Wet methods and HEPA vacuum are essential dust control requirements.
		Review all SDS (Safety Data Sheet) for any solvent used and, if possible, for the existing caulk.
		Containment items required include polyethylene sheeting (6-mil), tape, water, disposal bag and PCB caulk containment waste drum.
		Do not perform any PCB removal activities in high winds.
2. Selection of Personal Protective Equipment (PPE)	Not having adequate PPE can cause injury or serious complications	Wear safety glasses, chemical resistant gloves (nitrile), appropriate coveralls, and air purifying respirator equipped with a dual HEPA and organic vapor cartridges. When cutting, using knives, chisels and hammer proper cut resistant gloves will be used. Approved Respirators are as follows: • ½ Mask Respirator with safety glasses/goggles, or • Full Face Respirator, or • Powered Air Purifying Respirator.
		Ensure that the employee understands and don's all proper PPE that is adequate for this job description.
3. Site Preparation	1. PCB hazard 2. Slips, trips and fall hazard when working on a ladder/scaffold/man lift. 3. Solvents – eye, skin, ingestion or inhalation hazard.	Dust control measures • Assess and connect to power source for HEPA vacuum and other electrical tools. • Install a trough beneath the window using the polyethylene sheeting to capture all solid and liquid waste from the removal activities, where applicable. • Install a poly seal on the interior of the window, where applicable. • Install a layer of 6 mil polyethylene sheeting beneath the work area and extend 10' from the building
		Follow Sessler's SMS ladder, man lift and/or scaffolding safety and fall protection.
		Prepare to install temporary lighting if required
		Segregate the area with Red Danger Tape
		Isolate and restrict access to any building egress locations within the work zone.
4. Backing Up	Reversing/ Running over people and equipment and not very good visual	Make sure that your back up alarm is working
Recommended PPE: Safe work methods and PPE are the best protection from potential asbestos exposure. Use a full-face air purifying respirator or self-contained breathing apparatus where applicable. Tyvek suits and hoods provide good protection from asbestos dust where applicable. All other required PPE has been outlined in their designated controls.		
Sessler Representatives		
Developed/Reviewed By: Gustavo Rivera		Signature:  Date: 8/23/22
Developed/Reviewed By: Chadd General		Signature:  Date: 8/23/22
Reviewed By: Penny Hanshaw		Signature:  Date: 8/23/22
Reviewed By: Dan Skinner		Signature:  Date: 8/23/22
Reviewed By: Alaina Hickey		Signature:  Date: 8/23/22
Client Representative		
Approved By:		Signature: Date:



Job Hazard Analysis - Cutting, Grinding, and Use of an Acetylene/Oxygen Torch Set

Client Job #: 30058171

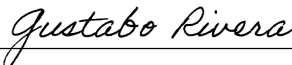

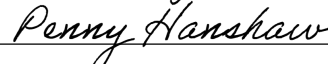

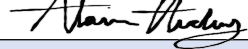
Sessler Job #: 22-3100

Date Created: 7/25/2022

Date Last Modified: 8/8/22

SUBCONTRACTOR: L.M. Sessler Excavating & Wrecking, Inc.

SUBCONTRACTOR SCOPE OF WORK: Site Preparation, Demolition and Site Restoration

Principle Step	Potential Hazards	Recommended Controls	
Cutting, Grinding, Use of an Acetylene/Oxygen Torch Set	Fire, Spark Generation, Dust, Smoke, Noise	Process a Hot Work Permit with Client and maintain a fire watch as required by the Permit All personnel engaged in cutting tasks shall wear all industry recognized PPE to protect from burns either to the skin or the eyes. All permit authorized areas need to be permitted for open flame "hot" work. All workers assigned to the job will review the Hot Work Permit. Two (2) - 20 lb. ABC fire extinguishers shall be readily accessible and immediately available when any open flame work is performed. Combustibles and flammables must be kept clear of the open flame work area. Fire watches must be trained and competent in the use of fire suppression equipment. Fire extinguishers must be checked monthly. Fire watches must have the means and know to call the Fire Department in case of an emergency. Fire watches are to remain 60-minutes after completion of open flame work is stopped. Note: Check with Client to determine potential impact to the smoke detection system from open flame "Hot" work.	
		Process a Hot Work Permit and Maintain Fire Watch as outlined above. Oxygen and acetylene cylinders will be stored and secured in an upright position with caps in place in an approved cart ready for use. All torch set cylinders must have the valves closed and the system de-pressured before going to breaks or lunch. All oxygen/acetylene set-ups must be equipped with flash back arrestors or check valves. All welding and cutting equipment and operations shall be in accordance with standards and recommended practices of ANSI/AWS Z49.1.	
		Torch Inspection: Inspect before each use for leaking valves, hoses, couplings, tips connections. Purge hoses individually before lighting each day. Light only by friction lighter (NEVER LIGHT WITH A MATCH OR FROM HOT WORK).	
		Protection of Workers/Persons within 35-ft of the Cutting Area: Utilize a noncombustible or flameproof screen or shield to protect adjacent workers or persons. Inform Sessler demolition personnel to keep away at least 35-ft.	
	Burns and Inhalation of Fumes	Utilize Proper PPE: Eye and face protection with shield (protect against UV and infrared radiation and flying objects). For painted steel, Sessler will utilize half face PAPR with P100 cartridges if fumes are of nuisance. Utilize leather overcoat with full sleeves and apron when torch cutting.	
		Cut in well ventilated area to minimize exposures to hazardous concentrations of airborne contaminants. Utilize half face or full face respirator with organic vapor cartridge if concentrations are of concern. DO NOT CUT WITH ACETYLENE/OXYGEN TORCH IN A CONFINED SPACE or INDOOR OPERATIONS. Based on our current exposure assessments, only limited periodic monitoring will be conducted for silica as appropriate based on the work being performed.	
	Working in Confined Space (Not Anticipated for this Project)	DO NOT take cylinders that contain oxygen and/or acetylene (or any other fuel gas) into confined spaces.	
	Cutting Potentially Lead Painted Steel	Torch cutting will be done only by Lead Awareness Trained employees that are currently in a medical surveillance program for lead exposure. A 2000 cfm fume exhaust fan will be utilized to minimize exposure, however the employee will be required to wear a PAPR during all cutting activities related to painted steel. Sessler Lead Compliance/Safety Plan, Respiratory Protection Plan, and Silica Exposure Plan have all been submitted separately in the Share File.	
Recommended PPE:	Eye and face protection with shield, leather overcoat with full sleeves and apron, fire resistant gloves, PAPR. Hi-Viz Safety Vest, Steel-toe footwear, Hard Hat and Safety Glasses. All other required PPE has been outlined in their designated controls.		
Sessler Representatives			
Developed/Reviewed By: Gustabo Rivera		Signature: 	Date: 8/23/22
Developed/Reviewed By: Chadd General		Signature: 	Date: 8/23/22
Reviewed By: Penny Hanshaw		Signature: 	Date: 8/23/22
Reviewed By: Dan Skinner		Signature: 	Date: 8/23/22
Reviewed By: Alaina Hickey		Signature: 	Date: 8/23/22
Client Representative			
Approved By:		Signature:	Date:



Job Hazard Analysis - Material Loadout

Client Job #: 30058171

Sessler Job #: 22-3100

Date Created: 7/25/2022

Date Last Modified: 8/8/22

SUBCONTRACTOR: L.M. Sessler Excavating & Wrecking, Inc.

SUBCONTRACTOR SCOPE OF WORK: Site Preparation, Demolition and Site Restoration

Principle Step	Potential Hazards	Recommended Controls
Material Loadout	Struck By	Make sure backup alarm is working and noticeable above the surrounding noise level, AND THAT A SPOTTER IS UTILIZED.
	Contact with overhead lines (raised dump beds/trailers, excavators, cranes)	If contact is made with overhead wires, do not exit the vehicle. Remain in the vehicle till directed to exit by emergency personnel. Operators must maintain visual contact with spotters while the vehicle is backing up, operating near overhead wires, or operating in a congested area. Operators are to stop their equipment immediately upon losing sight of the spotter or the signals are unclear. Spotters must be present during all movement of equipment
	Operating in congested areas (traffic, near other equipment, near buildings)	
	Falling Debris	Employees will maintain a safe distance from the loading area to insure that falling debris can not strike them.
	Lining Trailers (Friable Material)	Ensure ACM is adequately wetted and covered at all times to prevent airborne exposure. If possible, place six-mil plastic sheet on the floor level of the trailers to prevent additional contamination. Contain all of the material into a six-mil drum liner and seal it with duct tape. Each bag must then be double-bagged into a yellow asbestos bag and sealed again. The bags must be properly disposed of as asbestos-containing waste material (ACWM). Note that picking through the debris to recover asbestos may create more potential for exposure. It may be more feasible to contain other debris along with the asbestos material.
		Make sure the load is thoroughly wetted during the removal and loading process. Clean up the area where the load was to ensure that there is no visible debris remaining. If using brooms, make sure the area is wet. A HEPA vacuum is also effective for this purpose.
	Covering of Piles (Friable Material)	Cover the load with six-mil plastic sheeting. Ensure ACM is adequately wetted and covered at all times to prevent airborne exposure.
	Documentation and Vehicle	Ensure the proper shipping documents are with the waste load
	Ensure the haul vehicle is permitted to transport the waste. Ensure the vehicle does not exceed the on-site speed limit of 10 MPH.	
Recommended PPE:	Hi-Viz Safety Vest, Steel-toe footwear, Hard Hat and Safety Glasses	
Sessler Representatives		
Developed/Reviewed By: Gustavo Rivera	Signature: <i>Gustavo Rivera</i>	Date: 8/23/22
Developed/Reviewed By: Chadd General	Signature: <i>Chadd General</i>	Date: 8/23/22
Reviewed By: Penny Hanshaw	Signature: <i>Penny Hanshaw</i>	Date: 8/23/22
Reviewed By: Dan Skinner	Signature: <i>Dan Skinner</i>	Date: 8/23/22
Reviewed By: Alaina Hickey	Signature: <i>Alaina Hickey</i>	Date: 8/23/22
Client Representative		
Approved By:	Signature:	Date:



Job Hazard Analysis - Crushing

Client Job #: 30058171

Sessler Job #: 22-3100

Date Created: 7/25/2022

Date Last Modified: 8/8/22

SUBCONTRACTOR: L.M. Sessler Excavating & Wrecking, Inc.

SUBCONTRACTOR SCOPE OF WORK: Site Preparation, Demolition and Site Restoration

Principle Step	Potential Hazards	Recommended Controls
Crushing Operations	Dust	The use of water sprays or mists for dust suppression at the points where dust is generated
	Falling Debris	All personnel to maintain safe working distance from crushing equipment and material stockpile while in operation.
	Pinch Points	All persons will use appropriate gloves when performing tasks with hands.

Recommended PPE:

Hi-Viz Safety Vest, Steel-toe footwear, Hard Hat and Safety Glasses

Sessler Representatives

Developed/Reviewed By: Gustavo Rivera	Signature: <i>Gustavo Rivera</i>	Date: 8/23/22
Developed/Reviewed By: Chadd General	Signature: <i>Chadd General</i>	Date: 8/23/22
Reviewed By: Penny Hanshaw	Signature: <i>Penny Hanshaw</i>	Date: 8/23/22
Reviewed By: Dan Skinner	Signature: <i>Dan Skinner</i>	Date: 8/23/22
Reviewed By: Alaina Hickey	Signature: <i>Alaina Hickey</i>	Date: 8/23/22

Client Representative

Approved By:	Signature:	Date:
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Job Hazard Analysis - Backfilling

Client Job #: 30058171

Sessler Job #: 22-3100

Date Created: 7/25/2022

Date Last Modified: 8/8/22

SUBCONTRACTOR: L.M. Sessler Excavating & Wrecking, Inc.

SUBCONTRACTOR SCOPE OF WORK: Site Preparation, Demolition and Site Restoration

Principle Step	Potential Hazards	Recommended Controls
Backfilling	Wall Collapse	No wall or other part of the structure being demolished is left in an unstable condition or in danger of accidental collapse except during the actual demolition of that wall or part of the structure.
		Where the stability of walls, or other structures in endangered by operation, support systems such as shoring, bracing, or underpinning should be evaluated to ensure the stability of such structures for the protection of employees.
		All equipment shall be set back; No employees shall be in the direct path of the equipment and demolition activity.
	Working from Heights	100% tie off when working within 6' of a leading edge. All persons exposed to a fall greater than 6' will use a fall arrest system with lanyards. Only persons trained in the use of fall protection equipment will be allowed to use it.
		Fall protection equipment will be inspect daily prior to use.
		Fall protection anchors installed properly with at least a 5000lb rating per worker attached
		Follow Sessler's Fall Protection Standards
	Slips/Trips/Falls	Housekeeping: Make sure to maintain clean project areas. Watch for debris and irregular or damaged existing conditions (e.g., cracked or shifted sidewalk)
	Struck By	Make sure backup alarm is working and noticeable above the surrounding noise level, AND THAT A SPOTTER IS UTILIZED.
	Traffic	Sessler to provide traffic control (i.e., signage, fencing, flaggers, etc.) as outlined in the Demolition Work Plan.
Recommended PPE:	Hi-Viz Safety Vest, Steel-toe footwear, Hard Hat and Safety Glasses	
Sessler Representatives		
Developed/Reviewed By: Gustavo Rivera	Signature:	Date: 8/23/22
Developed/Reviewed By: Chadd General	Signature:	Date: 8/23/22
Reviewed By: Penny Hanshaw	Signature:	Date: 8/23/22
Reviewed By: Dan Skinner	Signature:	Date: 8/23/22
Reviewed By: Alaina Hickey	Signature:	Date: 8/23/22
Client Representative		
Approved By:	Signature:	Date:



Job Hazard Analysis - Auger Drilling

Client Job #: 30058171

Sessler Job #: 22-3100

Date Created: 8/22/2022

Date Last Modified: 8/23/22

SUBCONTRACTOR: L.M. Sessler Excavating & Wrecking, Inc.

SUBCONTRACTOR SCOPE OF WORK: Site Preparation, Demolition and Site Restoration

Principle Step	Potential Hazards	Recommended Controls
1. Establish general locations for boreholes during initial site walk-about	Spray paint or other chemical marking products. Electrical environment. Personnel contacting live electrical apparatus. Moving equipment in vicinity.	MSDS sheet or consumer product labels.
		Have owner/authorized personnel accompany. Approved electrically resistant footwear
		Safe limits of approach.
		Reflective safety vest or other clothing. Stay within visible barriers when required
2. Locate underground utilities	Electrical environment. False or missing locates due to static or induction electric fields. Personnel contacting live electrical apparatus. Moving equipment in vicinity. Other environment.	Approved electrically resistant footwear
		Plans showing underground utility location. Appropriate locate instrumentation. Documentation of locates.
		Safe limits of approach.
		Reflective safety vest or other clothing. Stay within visible barriers when required. The estimated location of utility installations, such as sewer, telephone, fuel, water lines, or any other underground installations that reasonably may be expected to be encountered during auger drilling work, shall be determined prior to auger drilling.
3. Selection of Personal Protective Equipment (PPE)	Not having adequate PPE can cause injury or serious complications	Wear safety glasses, working gloves, reflective safety vest or other clothing. When cutting or handling sharp items wear proper cut resistant gloves.
		Ensure that the employee understands all the PPE that is adequate for this job description.
4. Inspection	Not knowing correct procedures or task at hand	Frequent and regular inspections of the job site, materials and equipment to be made by competent persons
		Conduct daily pre-task meetings to ensure that all employees are aware of the correct procedures to prevent an unwanted incident and any hazards associated with the job task.
5. Drill boreholes to required depth	Electrical environment. Moving equipment in vicinity. Obstacles High-speed rotating auger High decibel levels during drilling Flying particles/debris Contact of underground electrical apparatus by auger Proximity of borehole to buried services/utilities Pinches, cuts, strains Contaminated fills/soils Backfilling Other workers Improper use of Auger	Approved electrically resistant footwear
		Reflective safety vest or other clothing. Stay within visible barriers when required
		Look for obstacles that may need to be removed. Hand digging may verify the presence or absence of underground arterial, including utilities.
		Maintain safe distance away from augers Wear close-fitting clothing Recognized drilling practices
		Hearing protection
		Approved eye protection
		Plans showing underground utility location Locate done using appropriate equipment Drill within defined area
		Hand excavate to expose services
		Personnel wear hard hats and gloves Safe lifting practices
		Personnel wear gloves, eye protection Place collected soils on 6-mil plastic sheeting and/or place directly into 55-G drum
		Backfill the hole, below 1-ft from grade, with the collected impacted soils. Backfill the upper 1-ft to existing grade with clean imported crusher/run stone. Any soils placed in the 55-G drum and not used to backfill, will be sampled and analyzed to determine the waste stream. Follow Backfill JHA.
		Except for the operator, employees should not be near the auger when it is operating. Employees using hand tools should not move or remove spoil-pile while the auger is operating. Remain a safe distance (a minimum of 10 feet) from the auger when helping the operator.
		Follow the instructions in the manufacturer's operating and preventive maintenance manual. Do not modify the operator's station or disable safety controls beyond manufacturer's recommendations .
6. After operation	Bodily Injury	Let the bit cool down after use. Follow JHA for Unloading/Load Equipment
Recommended PPE:	Wear safety glasses, working gloves, reflective safety vest or other clothing. When cutting or handling sharp items wear proper cut resistant gloves. Approved electrically resistant footwear. Wear close-fitting clothing	

Sessler Representatives		
Developed/Reviewed By: Gustavo Rivera	Signature: <i>Gustabo Rivera</i>	Date: 8/23/22
Developed/Reviewed By: Chadd General	Signature: <i>Chadd General</i>	Date: 8/23/22
Reviewed By: Penny Hanshaw	Signature: <i>Penny Hanshaw</i>	Date: 8/23/22
Reviewed By: Dan Skinner	Signature: <i>Dan Skinner</i>	Date: 8/23/22
Reviewed By: Alaina Hickey	Signature: <i>Alaina Hickey</i>	Date: 8/23/22
Client Representative		
Approved By:	Signature:	Date:



Job Hazard Analysis - Utility Pole Installation

Client Job #:	30058171
Sessler Job #:	22-3100
Date Created	8/23/2022
Date Last Modified:	

SUBCONTRACTOR: L.M. Sessler Excavating & Wrecking, Inc.

SUBCONTRACTOR SCOPE OF WORK: Site Preparation, Demolition and Site Restoration

Principle Step	Potential Hazards	Recommended Controls
1. In case of Emergency Situation	Injury and/or other emergency situation	Please refer to SSHASP JHA for Emergency On-Site
2. Utilities	Electrical and underground utilities	Please refer to SSHASP JHA for Utilities & GE SSHASP
3. Selection of Personal Protective Equipment (PPE)	Not having adequate PPE can cause injury or serious complications	Wear safety glasses, working gloves, reflective safety vest or other clothing, When cutting or handling sharp items wear proper cut resistant gloves.
		Ensure that the employee understands all the PPE that is adequate for this job description.
4. Clearing and removing brush at pole install location	Brush and/or tree obstacles	Please refer to SSHASP JHA for Clearing & Removal & GE SSHASP
5. Digging hole for utility pole	Electrical environment. Moving equipment in vicinity. Obstacles High-speed rotating auger High decibel levels during drilling Flying particles/debris Contact of underground electrical apparatus by auger Proximity of borehole to buried services/utilities Pinches, cuts, strains Contaminated fills/soils Backfilling Other workers Improper use of Auger Communication	Please refer to SSHASP JHA for Auger Drilling & GE SSHASP
		Personnel wear gloves, eye protection Place collected soils on 6-mil plastic sheeting and/or place directly into 55-G drum
5. Using Cato 85 Excavator to move and position utility pole in place	Faulty equipment machine failure Injury to people, damage to product or equipment from running into or over Noise Tipping over Environmental - Spreading of Weeds and pests Environmental - Dust Reversing/ Running over people and equipment and not very good visual Utility Pole moving/swinging Soil Collection Communication	Please refer to SSHASP JHA for Excavator Operation & GE SSHASP
		Please refer to SSHASP JHA for Working Around PME & GE SSHASP
		Please refer to SSHASP JHA for Simultaneous Activities & GE SSHASP
		Wear safety glasses, working gloves, reflective safety vest or other clothing, When cutting or handling sharp items wear proper cut resistant gloves.
		Crew should always inspect site prior to positioning excavator in final position. Ensure adequate room for rigging the utility pole to the back of the excavator bucket.
		Spotter is required to perform this task
		Should requirements change during operation and/or unforeseen obstacles occur, then crew shall re-assess and review this process to ensure revised work practice is within limits and safe to continue operation
		Wet down area in dry dusty conditions and to minimize dust. Dust monitoring shall be in place as per Sessler & GE SSHASP
		Any additional soil gather must be placed on 6-mil plastic sheeting and/or place directly into 55-G drum
		Constant communication must be maintained either via walkie talkies and/or equivalent
6. Possible use of Skid Steer when positioning utility pole	Faulty equipment machine failure Injury to people, damage to product or equipment from running into or over Noise Tipping over Environmental - Spreading of Weeds and pests Environmental - Dust Reversing/ Running over people and equipment and not very good visual Utility Pole moving/swinging Communication	Please refer to SSHASP JHA for Skid Steer Operation & GE SSHASP
		Please refer to SSHASP JHA for Working Around PME & GE SSHASP
		Please refer to SSHASP JHA for Simultaneous Activities & GE SSHASP
		Should requirements change during operation and/or unforeseen obstacles occur, then crew shall re-assess and review this process to ensure revised work practice is within limits and safe to continue operation
		If Skid Steer is to be used to assist with installation of utility pole then guidance will be given by Site Superintendent and Site Safety Manager
		Constant communication must be maintained either via walkie talkies and/or equivalent
7. Utility pole in place	Stabilizing Backfilling Working around PME	Please refer to SSHASP JHA for Backfilling & GE SSHASP
		Please refer to SSHASP JHA for Simultaneous Activities & GE SSHASP
		Always ensure that the utility pole has been stabilized with either Excavator, Skid Steer, and/or any other necessary means to ensure stability prior to backfilling the hole.

7. Utility pole in place (continued)		<p>Backfill whole with soil that collected during auger drilling. All remaining soil must be placed in 55-G Drum. Any soils placed in the 55-G drum will be sampled and analyzed to determine the waste stream.</p> <p>Constant communication must be maintained either via walkie talkies and/or equivalent</p> <p>Once backfill is completed, EIC shall inspect and ensure it is safe enough to remove all equipment and supporting apparatuses</p>
8. Removing equipment and loading equipment	<p>Struck By</p> <p>Falls</p> <p>Unqualified Operator or Defective Equipment</p> <p>Noise</p> <p>Dust or flying particles</p> <p>Lifting</p>	<p>Please refer to SSHASP JHA for Loading Equipment & GE SSHASP</p> <p>Please refer to SSHASP JHA for Simultaneous Activities & GE SSHASP</p> <p>Let the bit cool down after use.</p>
<p>Recommended PPE: Wear safety glasses, working gloves, reflective safety vest or other clothing, When cutting or handling sharp items wear proper cut resistant gloves. Approved</p>		
<p>Sessler Representatives</p>		
Developed/Reviewed By: Gustabo Rivera	Signature: <i>Gustabo Rivera</i>	Date: 8/23/22
Developed/Reviewed By: Chadd General	Signature: <i>Chadd General</i>	Date: 8/23/22
Reviewed By: Penny Hanshaw	Signature: <i>Penny Hanshaw</i>	Date: 8/23/22
Reviewed By: Dan Skinner	Signature: <i>Dan Skinner</i>	Date: 8/23/22
Reviewed By: Alaina Hickey	Signature: <i>Alaina Hickey</i>	Date: 8/23/22
<p>Client Representative</p>		
Approved By:	Signature:	Date:





Appendix C

National Grid Construction PHA, Dated July 20, 2022

Worksheet

PHA Method: What-If

Project Name: Demo of Power House and Allen Mill buildings near Hudson Falls NY

Study Dates: 07/15/2022

Company: National Grid

Location: Hudson Falls NY

Facility: Capital Project Delivery

Process: Demolition

Description: Demolition of the deteriorated buildings of Power House and Allen Mill on the river bank of Hudson near Hudson Falls NY.

Chemicals: Asbestos-containing material (ACM), Polychlorinated biphenyl (PCB) waste

Comments: This PHA is a pre-bid PHA to understand the hazards and risk prior to bid out for demo contractor

Purpose: The purpose of this What-If study is to meet National Grid's internal procedures for evaluating and managing process safety risks by conducting a systematic, multi-disciplined team review of the **Demolition of the deteriorated buildings of Power House and Allen Mill on the river bank of Hudson near Hudson Falls NY.**

Scope: **Process Boundaries:**
Scope includes demo of Power House and Allen Mill buildings that are located on the river bank of Hudson near Hudson Falls NY, as well as domino effects from surrounding neighbors.

Details are

Powerhouse
Deteriorated condition of the elevated first floor and roof slabs which are supported almost entirely by the exterior brick masonry walls of the Powerhouse that are also undergoing significant deterioration, demolition will be performed safely.

Allen Mill
~~The Allen Mill building structure is in extremely poor condition. Considering its age, exposure to the elements, and the significant deterioration observed in the roof slab and stone walls, demolition will be performed safely.~~

~~34.5 kV overhead electric lines are located near the site~~

Exclusions:
Non process safety type consequences are not contained in the What-If study.

Objectives: Identify flammable, explosive, electrical exposure and environmental and reactive hazards that could under credible circumstances result in Safety or Environmental consequences and where appropriate identify actions to further identify the risk or to mitigate the risk to tolerable levels.

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Worksheet

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Worksheet

Company: National Grid

Location: Hudson Falls NY

Facility: Capital Project Delivery

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System: 1. Mobilization

Subsystem: 1.1. Utilities (Underground, Above Ground, and/or overhead)

Intention: Identifying the hazards associated with Utilities

What If...	Hazards	Consequences		Safeguards	Risk After Safeguards			Action Items	
		Consequences	Type		S	L	R	Recommendations	By
1. Mobilization	1.1. Potential damage to the overhead (34.5 KV) electric lines due to the construction/heavy vehicle striking the line when passing under and creating immediate arc flash and/or fire. (34.5KV electric lines are located approximately 30 feet overhead at the site pathways). Note, there is need to set up construction equipment by crossing under overhead power line.	1.1.1. Potential Injury/Fatality to Employees.	SAF	1.1.1.1. DAILY JOB BRIEFS: Contractor does Job briefs daily with crews including validating the pathway of the heavy vehicles and identifying the risk involved prior to come to the site	3	2	M	1.1.1.1. Capital Delivery Projects (CDP) require to discuss with Over Head (OH) electric and Contractor to evaluate and identify the minimum approach distance (MAD) of the moving vehicles. It is recommended to install the flags hanging down the lines to visualize the MAD, so that if a boom or hand of excavator and/or any other vehicle and/or equipment come within the MAD will be spotted by the dedicated spotter and will be called for safety stop.	Brian Key / Chris McDonald / Contractor
				1.1.1.2. Dedicated Spotter and/or Supervisor on site to watch all the activities of the operators and will always be in line of site with the moving vehicles and calls safety stop if notices any unsafe and/or upset conditions. Dedicator spotter to maintain minimum clearance distance with overhead power line during equipment movement.				1.1.1.2. CDP require Contractor to identify and mark out the Exclusion zone and/or minimum approach distance from the poles and electric lines on site prior to mobilize the construction vehicles.	Brian Key / Contractor

What If...	Hazards	Consequences		Safeguards	Risk After Safeguards			Action Items	
		Consequences	Type		S	L	R	Recommendations	By
				1.1.1.3. TRAINING: All drivers and qualified vehicle operators are trained per DOT requirements and receive initial and periodic refresher training				1.1.1.3. CDP require Contractor to communicate with the OH electric and follow their guidelines accordingly to mitigate the risk of striking the lines	Brian Key / Contractor
				1.1.1.4. Location of the lines are mapped on the drawings				1.1.1.4. CDP require Contractor to develop emergency response plans in coordination with OH electric prior to mobilize the construction vehicles on site.	Brian Key / Contractor
				1.1.1.5. SAFETY STOP: Contractors and NG personnel have an ALL STOP or SAFETY STOP process in place, which means each worker has the ability and responsibility to call a safety stop and stop the work if there is a safety risk that needs to be resolved.				1.1.1.5. CDP require Contractor to post Emergency OH Electric contact numbers nearer the work areas including inside the contractor / construction trailers	Brian Key / Contractor
				1.1.1.6. Contractor will hire a 3rd party elect qualified person to supervise mobilization under/nearby overhead power line.				1.1.1.6. CDP require Contractor to identify the responsible person who is going to contact OH Electric in case of an event during the work.	Brian Key / Contractor
				1.1.1.7. Contractor will set up goal post under power line to enhance power line visibility during mobilization.					
	1.2. Potential striking of the guide wires and/or the electric pole on the side of the road due to mechanical failure and/or human factors which lead to damage the overhead (34.5 KV) electric lines and creating immediate arc flash and/or fire. (34.5KV electric lines are located approximately 30 feet overhead at the site pathways).	1.2.1. Potential Injury/Fatality to Employees.	SAF	1.2.1.1. DAILY JOB BRIEFS: Contractor does Job briefs daily with crews including validating the pathway of the heavy vehicles and identifying the risk involved prior to come to the site	3	2	M	1.2.1.1. CDP require Contractor to come up with a plan to monitor the site for visibility by following the weather and air-borne dust opacity issues.	Brian Key / Contractor

What If...	Hazards	Consequences		Safeguards	Risk After Safeguards			Action Items	
		Consequences	Type		S	L	R	Recommendations	By
	Note, there is guide wire on the path of mobilization that can not be relocated, so it needs to be protected during the construction period.			<p>1.2.1.2. Dedicated Spotter and/or Supervisor on site to watch all the activities of the operators and will always be in line of site with the moving vehicles and calls safety stop if notices any unsafe and/or upset conditions. Dedicator spotter to maintain minimum clearance distance with overhead power line during equipment movement.</p> <p>1.2.1.3. TRAINING: All drivers and qualified vehicle operators are trained per DOT requirements and receive initial and periodic refresher training</p> <p>1.2.1.4. Location of the lines as well as poles are mapped on the drawings</p> <p>1.2.1.5. SAFETY STOP: Contractors and NG personnel have an ALL STOP or SAFETY STOP process in place, which means each worker has the ability and responsibility to call a safety stop and stop the work if there is a safety risk that needs to be resolved.</p> <p>1.2.1.6. 5 Miles per Hour Speed limit signage will be posted on the sides of the drive ways of the site.</p>				1.2.1.2. CDP require Contractor to come up with a plan to make Guide Wires and/or Poles be more visible to the vehicle operators by placing flags and/or jersey barriers around it etc.	Brian Key / Chris McDonald / Contractor

What If...	Hazards	Consequences		Safeguards	Risk After Safeguards			Action Items	
		Consequences	Type		S	L	R	Recommendations	By
				1.2.1.7. Work will be done during Day Light Only. Visibility of the site would be monitored for Fog and/or for any other visibility issues.					
				1.2.1.8. No Cell Phone use policy will be in place with National Grid and as well as with Contractors and Sub-contractors.					
				1.2.1.9. Site specific traffic management plan will be in place and will be followed by all crew members.					
				1.2.1.10. National Grid's 60 seconds rule will be followed by the Contractor crews to mitigate/prevent the risk of mechanical failure of the vehicles					
	1.3. Underground and above-ground (at some part) sewer line is located within the premises of the site. Steel - 30 inch. Potential excessive load of the construction vehicles could damage the sewer lines and cause heavy equipment tip over. and result in discharging sewer gases and debris.	1.3.1. Potential Injury/Fatality to Employees.	SAF	1.3.1.1. Location of the sewer lines are mapped on the drawings.	3	2	M	1.3.1.1. CDP require Contractor to come up with a plan to distribute the load of the vehicles on the sewer lines by placing steel plates and gravel on the pathways at the location of the sewer lines.	Brian Key / Contractor
				1.3.1.2. Proper load distribution cover will be on the path above the sewer line crossings				1.3.1.2. CDP require contractor to establish emergency and contingency plans/procedures between the owner of the sewer line (City) and Contractor management.	
				1.3.1.3. Pre-analysis of load spread out techniques will be in place prior to work					

What If...	Hazards	Consequences		Safeguards	Risk After Safeguards			Action Items	
		Consequences	Type		S	L	R	Recommendations	By
				1.3.1.4. DAILY JOB BRIEFS: Contractor does Job briefs daily with crews including validating the pathway of the heavy vehicles and identifying the risk involved prior to come to the site					
				1.3.1.5. SAFETY STOP: Contractors and NG personnel have an ALL STOP or SAFETY STOP process in place, which means each worker has the ability and responsibility to call a safety stop and stop the work if there is a safety risk that needs to be resolved.					
				1.3.1.6. TRAINING: All drivers and qualified vehicle operators are trained per DOT requirements and receive initial and periodic refresher training					
		1.3.2. Potential Environmental Impact:	ENV		2	2	L	1.3.2.1. EDP require contractor to come up with a plan of environmental emergency and/or clean up response plan	
	: No other utilities are identified, including underground and/or above-ground Gas, underground electric.								
	1.4. Underground/Above ground Gas lines								
	1.5. Underground/Above ground Water lines								
	1.6. Underground/Above ground Sewer lines								

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System: 1. Mobilization

Subsystem: 1.2. Road/Site Traffic

Intention: To identify the hazards that are associated with site/road traffic

What If...	Hazards	Consequences		Safeguards	Risk After Safeguards			Action Items	
		Consequences	Type		S	L	R	Recommendations	By
	3.3. Cut trees potentially falling on the person due to human factors or equipment failure (mis-directional fall). <i>Note, most of big trees around the power pole are now cleared, but there are a few 1ft diameter trees remaining. This is not catastrophic scenario and process safety consequence, but hazards associated cutting trees should be addressed by HASP.</i>								
	:Cut tree potentially striking nearby electric pole and/or overhead line due to human factors or equipment failure (mis-directional fall) Height of the electric lines is way higher than the the trees on the site. Its highly not credible for striking the electric lines with the cut trees. Location of the electric pole from the trees is not in a tree fall zone. Its very unlikely to striking the electric poles with the trees. <i>Also, this is not credible scenario in 2022, because big trees around the power pole are now cleared.</i>	?1.							
	3.4. Cut tree potentially striking the power house building due to human factors or equipment failure (mis-directional fall), result in uncontrolled collapse of the walls of the powerhouse and/or flying objects/debris striking the nearby workers. <i>Note, the old power house is vulnerable to collapse.</i>	3.4.1. Potential Injury/Fatality to Employees.	SAF	3.4.1.1. DAILY JOB BRIEFS: Contractor does Job briefs daily with crews including validating the work areas and associated hazards prior to work	3	2	M	3.4.1.1. CDP require contractor to reassess the plan of demolition of the powerhouse if any uncontrolled fall of trees happens during the tree cleaning activities.	Brian Key / Contractor

What If...	Hazards	Consequences		Safeguards	Risk After Safeguards			Action Items	
		Consequences	Type		S	L	R	Recommendations	By
				3.4.1.2. SAFETY STOP: Contractors and NG personnel have an ALL STOP or SAFETY STOP process in place, which means each worker has the ability and responsibility to call a safety stop and stop the work if there is a safety risk that needs to be resolved.				3.4.1.2. CDP require contractor to come up with a plan to focus the removal of the trees to extent necessary.	Brian Key / Contractor
				3.4.1.3. Workers will be wearing PPE all the time including high vis-vest					
				3.4.1.4. TRAINING: All workers are qualified and trained as per requirement to perform critical tree cleaning activities and receive initial and periodic refresher training					
				3.4.1.5. Pre-inspection of the equipment will be done prior to work.					
				3.4.1.6. Fall zone will be identified prior and will be planned to let the trees fall in that specific zone. Workers will not be permitted in the fall zone during the tree cleaning activities.					

What If...	Hazards	Consequences		Safeguards	Risk After Safeguards			Action Items	
		Consequences	Type		S	L	R	Recommendations	By
	3.5. Working on uneven surface (sloped with rocks and lose rocks and uneven ground) result in fall and potential for fatal injury due to fall and/or due to the sharp cutting tools. This is not catastrophic scenario and process safety consequence, but occupational safety hazard by working on slope with cutting tool should be addressed by HASP.								
	3.6. Falling trees on the ground could create some amount of vibration on the ground and result in lose bricks falling down at power house could potentially strike a worker. This is not credible scenario, because failling trees will not produce significant ground vibration to undermine power house.								
	3.7. Tree retrieval and loading on the truck: Improper loading result in drop load and potentially striking a worker due to human factors and/or equipment/mechanical failure. This is not catastrophic scenario and process safety consequence, but occupational safety hazards associated with loading trees onto truck should be addressed by HASP.								
	3.8. Rigging activities: Boom of the crane striking the overhead electric line, result in electrocution of a worker and or drop wire across the river.	3.8.1. Potential Injury/Fatality to Employees.	SAF	3.8.1.1. DAILY JOB BRIEFS: Contractor does Job briefs daily with crews including validating the work areas and associated hazards prior to work	3	2	M	3.8.1.1. GDP require contractor to come up with a plan to identify the staging location for loading of the cut trees to mitigate the risk of reaching the boom to the overhead electric lines.	Brian Key / Contractor

What If...	Hazards	Consequences		Safeguards	Risk After Safeguards			Action Items	
		Consequences	Type		S	L	R	Recommendations	By
				3.8.1.2. SAFETY STOP: Contractors and NG personnel have an ALL STOP or SAFETY STOP process in place, which means each worker has the ability and responsibility to call a safety stop and stop the work if there is a safety risk that needs to be resolved.				3.8.1.2. Capital Delivery Projects (CDP) require to discuss with Over Head (OH) electric and Contractor to evaluate and identify the minimum approach distance (MAD) of the moving vehicles. It is recommended to install the flags hanging down the lines to visualize the MAD, so that if a boom or hand of excavator and/or any other vehicle and/or equipment come within the MAD will be spotted by the dedicated spotter and will be called for safety stop.	Brian Key / Chris McDonald / Contractor
				3.8.1.3. Workers will be wearing PPE all the time including high vis-vest				3.8.1.3. CDP require Contractor to communicate with the OH electric and follow their guidelines accordingly to mitigate the risk of striking the lines	Brian Key / Contractor
				3.8.1.4. Dedicated Spotter and/or Supervisor on site to watch all the activities of the operators and will always be in line of site with the moving vehicles and calls safety stop if notices any unsafe and/or upset conditions. Dedicator spotter to maintain minimum clearance distance with overhead power line during equipment movement.				3.8.1.4. CDP require Contractor to develop emergency response plans in coordination with OH electric prior to mobilize the construction vehicles on site.	Brian Key / Contractor

What If...	Hazards	Consequences	Safeguards	Risk After Safeguards			Action Items	
		Consequences		S	L	R	Recommendations	By
			<p>3.8.1.5. TRAINING: All workers are qualified and trained as per requirement to perform critical tree cleaning activities and receive initial and periodic refresher training</p> <p>3.8.1.6. Pre-inspection of the equipment will be done prior to work.</p> <p>3.8.1.7. National Grid's Circle of Safety and/or 60 seconds rule will be performed when loading the cut trees on the trucks to ensure the wheel locks and unnecessary moment of the trucks.</p> <p>3.8.1.8. Overhead electric warning zones: Red lines will be posted on the electric lines to visualize the height location of the lines. Shielding, flagging, guide wires will be provided to visualize the lines and to mitigate the risk of striking the lines.</p>					

What If...	Hazards	Consequences		Safeguards	Risk After Safeguards			Action Items	
		Consequences	Type		S	L	R	Recommendations	By
				3.8.1.9. Contractor will have either electric qualified observer or construction equipment that has no ability of making contact with overhead power line in accordance with National Grid Employee Safety Handbook Section 2.18 "Work on an Near Energized Equipment".					
		3.8.2. Potential Injury/Fatality to Member of the Public. (Southeast on the other side of the river, there is an access point into the river for small boats like canoe and kayak, this location is approximately right underneath of the electric lines)	SAF	3.8.2.1. DAILY JOB BRIEFS: Contractor does Job briefs daily with crews including validating the work areas and associated hazards prior to work	4	1	M	3.8.2.1. CDP require contractor to communicate with local authorities to inform the public about the work that they are performing to mitigate the risk of public impact.	Brian Key / Contractor
				3.8.2.2. SAFETY STOP: Contractors and NG personnel have an ALL STOP or SAFETY STOP process in place, which means each worker has the ability and responsibility to call a safety stop and stop the work if there is a safety risk that needs to be resolved.				3.8.2.2. CDP require contractor to come up with a plan to post work zone signage on the water and/or at the bank of the river to warn public with potential hazards.	Brian Key / Contractor / Brain Cleary
				3.8.2.3. Workers will be wearing PPE all the time including high vis-vest				3.8.2.3. CDP require contractor to communicate with OH electric for wire drop contingency/emergency plan	Brian Key / Chris McDonald / Contractor

What If...	Hazards	Consequences	Safeguards	Risk After Safeguards			Action Items	
		Consequences		S	L	R	Recommendations	By
			3.8.2.4. Dedicated Spotter and/or Supervisor on site to watch all the activities of the operators and will always be in line of site with the moving vehicles and calls safety stop if notices any unsafe and/or upset conditions.					
			Dedicator spotter to maintain minimum clearance distance with overhead power line during equipment movement.					
			3.8.2.5. TRAINING: All workers are qualified and trained as per requirement to perform critical tree cleaning activities and receive initial and periodic refresher training					
			3.8.2.6. Pre-inspection of the equipment will be done prior to work.					
			3.8.2.7. National Grid's Circle of Safety and/or 60 seconds rule will be performed when loading the cut trees on the trucks to ensure the wheel locks and unnecessary moment of the trucks.					

What If...	Hazards	Consequences		Safeguards	Risk After Safeguards			Action Items	
		Consequences	Type		S	L	R	Recommendations	By
				3.8.2.8. Overhead electric warning zones: Red lines will be posted on the electric lines to visualize the height location of the lines. Shielding, flagging, guide wires will be provided to visualize the lines and to mitigate the risk of striking the lines.					
				3.8.2.9. Contractor will have either electric qualified observer or construction equipment that has no ability of making contact with overhead power line in accordance with National Grid Employee Safety Handbook Section 2.18 "Work on an Near Energized Equipment".					
	3.9. Potential for erosion of the river bank due to improper cutting of the trees and/or human factors result in discharge of soil into the water body. This is not credible scenario, because the scope of project does not include removing tree stubs after cutting.								
	:Trees falling on the neighboring buildings is not credible. The nearest building is approx. 100 feet away from the tree cleaning site.								

What If...	Hazards	Consequences		Safeguards	Risk After Safeguards			Action Items	
		Consequences	Type		S	L	R	Recommendations	By
4. Protection of the CSO (Combined sewer overflow)	4.1. The construction activities around the sewer line, approx 20 inch dia, steel (drop load/objects/trees) could potentially damage the line and result in releasing the sewer material on the ground and/or water. This is not catastrophic scenario and process safety consequence.								
5. Tunnel drain System (200 feet below ground and its located beneath the powerhouse) installed by GE to collect the PCB contaminated oil from the bed rock (contained of some pipe lines). (No gas lines are in the tunnel except the pvc lines which carry PCB related material)	5.1. The construction activities around the tunnel could potentially damage the integrity of the tunnel (200 feet deep under the bed rock; bored into the rock) and result in damaging the collection pipes inside (due to vibrations and/or drop loads). This is not credible scenario, because no construction activity in this project has potential to undermine the tunnel that is 200ft deep.								
	5.2. The construction activities around the tunnel could potentially damage the integrity of the tunnel and result in striking the GE employees with the falling debris in the tunnel. This is not credible scenario, because no construction activity in this project has potential to undermine the tunnel that is 200ft deep, and GE employees have no routine work activity inside the tunnel during this project execution period.								

What If...	Hazards	Consequences		Safeguards	Risk After Safeguards			Action Items	
		Consequences	Type		S	L	R	Recommendations	By
	5.3. The construction activities around the tunnel could potentially damage of the vertical drain lines of the tunnel (due to vibrations and/or drop loads). (its a no mans access point, not credible for public impact). This is not credible scenario, because this project does not involve any sub-surface activity that have potential to damage the vertical drain lines of the tunnel.								
6. Controlled Demolition activities of the Power House. (Wrecking ball and/or explosive of any type are not permitted for demo. Water based operations are also prohibited)	6.1. Long reach crane related hazards: crane boom/arm potentially striking the worker on site due to human factors and/or mechanical failure of the excavator. Note, power house demolition will take place with use of two cranes at the same time, one crane will have robot with remote control to demolish the building, the other crane will have man-basket with operator to control the robot, and both crane arms will have physical ability of making contact with each other if human error or equipment failure occurs.	6.1.1. Potential Injury/Fatality to Employees.	SAF	6.1.1.1. DAILY JOB BRIEFS: Contractor does Job briefs daily with crews including validating the crane related activities and associated hazards prior to work	3	2	M	6.1.1.1. CDP required Contractor to have a proper plan/procedure to do controlled demolition of the Power House.	
				6.1.1.2. SAFETY STOP: Contractors and NG personnel have an ALL STOP or SAFETY STOP process in place, which means each worker has the ability and responsibility to call a safety stop and stop the work if there is a safety risk that needs to be resolved.					
				6.1.1.3. Pre-inspection of the crane will be done prior to work to prevent drop loads and/or vibrational impacts.					

What If...	Hazards	Consequences		Safeguards	Risk After Safeguards			Action Items	
		Consequences	Type		S	L	R	Recommendations	By
				6.1.1.4. TRAINING: All crane operators are qualified and trained as per regulation requirements and receive initial and periodic refresher training.					
				6.1.1.5. Two way communication and maintain visual contact with 2 crane operators.					
				6.1.1.6. NY crane operation PE will review the plan for this building demolition include barge installation.					
				6.1.1.7. Only one person is allowed to give direction to both crane operators in order to avoid communication error, and the name of crane operator will be used for communication.					
				6.1.1.8. Minimum approach distance and/or swing zones of the excavator will be identified and marked to prevent the entry of the workers					

What If...	Hazards	Consequences		Safeguards	Risk After Safeguards			Action Items	
		Consequences	Type		S	L	R	Recommendations	By
	6.2. Crane potentially running into the river or the deteriorated building due to the human factors and/or mechanical failure	6.2.1. Potential Injury/Fatality to Employees.	SAF	6.2.1.1. DAILY JOB BRIEFS: Contractor does Job briefs daily with crews including validating the crane related activities and associated hazards prior to work	3	2	M		
				6.2.1.2. SAFETY STOP: Contractors and NG personnel have an ALL STOP or SAFETY STOP process in place, which means each worker has the ability and responsibility to call a safety stop and stop the work if there is a safety risk that needs to be resolved.					
				6.2.1.3. Pre-inspection of the crane will be done prior to work to prevent drop loads and/or vibrational impacts.					
				6.2.1.4. TRAINING: All crane operators are qualified and trained as per regulation requirements and receive initial and periodic refresher training.					
				6.2.1.5. Visual and Physical barriers will be placed around the river bank to prevent the crane to fall/run into the river from the bank.					

What If...	Hazards	Consequences		Safeguards	Risk After Safeguards			Action Items	
		Consequences	Type		S	L	R	Recommendations	By
				6.2.1.6. Excavator tracks orientation will be placed parallel to the river (to prevent running into the river)					
				6.2.1.7. Dedicated Spotter and/or Supervisor on site to watch all the activities of the operators and will always be in line of site with the crane activities and calls safety stop if notices any unsafe and/or upset conditions.					
				6.2.1.8. Load reduction plan will be developed to protect the gravity wall from failure.					
	6.3. Personnel falling out of man basket during demo of power house activities. Potential fatality from falling from man basket onto ground or potential drowning if falling into water. This is not catastrophic scenario and process safety consequence, but occupational safety hazards associated with working from man-basket should be addressed by HASP.								
	6.4. Struck by Hazard due to falling debris. This is not catastrophic scenario and process safety consequence, but occupational safety hazards associated with falling debris should be addressed by HASP.								

What If...	Hazards	Consequences		Safeguards	Risk After Safeguards			Action Items	
		Consequences	Type		S	L	R	Recommendations	By
	6.5. Excavator potentially getting pulled into the deteriorated building due to the human factors and/or mechanical failure and result in fall already covered above.								
	6.6. Crane boom/arm striking the near by electric line (34.5 KV) result in electrocution of the operator already covered above.								
	6.7. Excavator boom/arm striking the electric pole/line (34.5 KV) result in fall of the pole and/or line striking the near by personnel already covered above.								
	6.8. Dropped load of the demo debris on a person while loading on to the truck on ground due to human factor and/or mechanical failure of the loading excavator. Note, demo debris will be transferred from building floor to truck loading area by crane. However, there are two methods (use of remote operated skid steer or lowering employee to transfer debris into waste basket).	6.8.1. Potential Injury/Fatality to Employees.	SAF	6.8.1.1. DAILY JOB BRIEFS: Contractor does Job briefs daily with crews including validating the work areas of the excavator and identifying the risk involved prior to come to the site 6.8.1.2. Dedicated Spotter and/or Supervisor on site to watch all the activities of the operators and will always be in line of site with the excavator and calls safety stop if notices any unsafe and/or upset conditions.	3	2	M	6.8.1.1. CDP require contractor to have rigging and lifting plans as per N-1401 and N-1402 reviewed by National Grid Field Safety prior to work.	Brian Key / Contractor / Brain Cleary

What If...	Hazards	Consequences		Safeguards	Risk After Safeguards			Action Items	
		Consequences	Type		S	L	R	Recommendations	By
				<p>6.8.1.3. TRAINING: All crane operators are qualified and trained as per regulation requirements and receive initial and periodic refresher training.</p> <p>6.8.1.4. SAFETY STOP: Contractors and NG personnel have an ALL STOP or SAFETY STOP process in place, which means each worker has the ability and responsibility to call a safety stop and stop the work if there is a safety risk that needs to be resolved.</p> <p>6.8.1.5. Drop zone will be identified and marked. Personnel will not be permitted in the drop zone.</p> <p>6.8.1.6. Contractor will have engineering to assess building floor condition and determine the appropriate method between use of remote operated skid steer or lowering employee to building floor for removing demo debris.</p>					

What If...	Hazards	Consequences		Safeguards	Risk After Safeguards			Action Items	
		Consequences	Type		S	L	R	Recommendations	By
	6.9. Debris of Power House falling into the river water due to uncontrolled demolition and/or human factor. Result in contaminating the river water. This is not catastrophic scenario and process safety consequence. Floating barges will be deployed around the building to catch failing debris.								
	6.10. Potential for erosion and/or sedimentation of the river bank due to uncontrolled demo of power house and/or human factors result in discharge of soil into the water body.	6.10.1. Potential Environmental Impact.	ENV	6.10.1.1. DAILY JOB BRIEFS: Contractor does Job briefs daily with crews including validating the work areas and associated hazards prior to work 6.10.1.2. SAFETY STOP: Contractors and NG personnel have an ALL STOP or SAFETY STOP process in place, which means each worker has the ability and responsibility to call a safety stop and stop the work if there is a safety risk that needs to be resolved. 6.10.1.3. TRAINING: All workers are qualified and trained as per requirement to perform critical demo activities and receive initial and periodic refresher training	2	2	L	6.10.1.1. CDP require contractor to communicate with National Grid ENV for erosion related emergency and contingency plans	Brian Key / Contractor/Matt Root

What If...	Hazards	Consequences		Safeguards	Risk After Safeguards			Action Items	
		Consequences	Type		S	L	R	Recommendations	By
				6.10.1.4. Pre-inspection of the equipment will be done prior to work.					
				6.10.1.5. Contractor will be installing and maintain sediment and erosion controls.					
				6.10.1.6. Contractor will be installing storm water diversion means (e.g., sandbags, soil berm, and/or trenches)					
	6.11. Personnel falling into the water due to the human factors during the demo of power house activities. Potential drowning of a personnel. This is not catastrophic scenario and process safety consequence. The occupational safety hazard associated with working nearby water body should be addressed by HASP.								
7. Site Preparation for Demo Activities: Barge setup by crane lifting, cutting, welding.	7.1. Drop heavy load due to human error or equipment failure. Note, there is need to lift barges (20klb each) and lower onto water surface for installation. No need to trigger critical lifting plan, because only one crane will be used for lifting one barge at a time.	7.1.1. Fatal injury to on-site employee	SAF	7.1.1.1. Rigging inspection to be conducted by 3rd party and on the day of lifting job.	3	1	M		
				7.1.1.2. Daily job briefing to cover potential hazards associated with shifting/drop loads during lifting.					
				7.1.1.3. Pre-job brief to cover roles and responsibility prior to critical rigging and lifting, and this include use of dedicated spotter.					

What If...	Hazards	Consequences		Safeguards	Risk After Safeguards			Action Items	
		Consequences	Type		S	L	R	Recommendations	By
				<p>7.1.1.4. Contractor has STOP process according to HASP.</p> <p>7.1.1.5. Contractor to ensure personnel responsible for rigging/lifting are trained and qualified per OSHA requirement.</p> <p>7.1.1.6. NY crane operation PE will review the plan for this building demolition include barge installation.</p>					
	7.2. Accidental contact with overhead power 34.2kV on the west side of the construction site during barge lifting and installation.	7.2.1. Potential Injury/Fatality to Employees.	SAF	<p>7.2.1.1. DAILY JOB BRIEFS: Contractor does Job briefs daily with crews including validating the work areas and associated hazards prior to work</p> <p>7.2.1.2. SAFETY STOP: Contractors and NG personnel have an ALL STOP or SAFETY STOP process in place, which means each worker has the ability and responsibility to call a safety stop and stop the work if there is a safety risk that needs to be resolved.</p>	3	2	M	<p>7.2.1.1. CDP require contractor to come up with a plan to identify the staging location for loading of the cut trees to mitigate the risk of reaching the boom to the overhead electric lines.</p> <p>7.2.1.2. Capital Delivery Projects (CDP) require to discuss with Over Head (OH) electric and Contractor to evaluate and identify the minimum approach distance (MAD) of the moving vehicles. It is recommended to install the flags hanging down the lines to visualize the MAD, so that if a boom or hand of excavator and/or any other vehicle and/or equipment come within the MAD will be spotted by the dedicated spotter and will be called for safety stop.</p>	

What If...	Hazards	Consequences		Safeguards	Risk After Safeguards			Action Items	
		Consequences	Type		S	L	R	Recommendations	By
				7.2.1.3. Workers will be wearing PPE all the time including high vis-vest				7.2.1.3. CDP require Contractor to communicate with the OH electric and follow their guidelines accordingly to mitigate the risk of striking the lines	
				7.2.1.4. Dedicated Spotter and/or Supervisor on site to watch all the activities of the operators and will always be in line of site with the moving vehicles and calls safety stop if notices any unsafe and/or upset conditions. 7.2.1.4. CDP require Contractor to develop emergency response plans in coordination with OH electric prior to mobilize the construction vehicles on site. Dedicator spotter to maintain minimum clearance distance with overhead power line during equipment movement.					
				7.2.1.5. TRAINING: All workers are qualified and trained as per requirement to perform critical tree cleaning activities and receive initial and periodic refresher training					
				7.2.1.6. Pre-inspection of the equipment will be done prior to work.					

What If...	Hazards	Consequences		Safeguards	Risk After Safeguards			Action Items	
		Consequences	Type		S	L	R	Recommendations	By
				7.2.1.7. National Grid's Circle of Safety and/or 60 seconds rule will be performed when loading the cut trees on the trucks to ensure the wheel locks and unnecessary moment of the trucks.					
				7.2.1.8. Overhead electric warning zones: Red lines will be posted on the electric lines to visualize the height location of the lines. Shielding, flagging, guide wires will be provided to visualize the lines and to mitigate the risk of striking the lines.					
				7.2.1.9. Contractor will have either electric qualified observer or construction equipment that has no ability of making contact with overhead power line in accordance with National Grid Employee Safety Handbook Section 2.18 "Work on an Near Energized Equipment".					

What If...	Hazards	Consequences		Safeguards	Risk After Safeguards			Action Items	
		Consequences	Type		S	L	R	Recommendations	By
		7.2.2. Potential Injury/Fatality to Member of the Public. (Southeast on the other side of the river, there is an access point into the river for small boats like canoe and kayak, this location is approximately right underneath of the electric lines)	SAF	7.2.2.1. DAILY JOB BRIEFS: Contractor does Job briefs daily with crews including validating the work areas and associated hazards prior to work	4	1	M	7.2.2.1. CDP require contractor to communicate with local authorities to inform the public about the work that they are performing to mitigate the risk of public impact.	
				7.2.2.2. SAFETY STOP: Contractors and NG personnel have an ALL STOP or SAFETY STOP process in place, which means each worker has the ability and responsibility to call a safety stop and stop the work if there is a safety risk that needs to be resolved.				7.2.2.2. CDP require contractor to come up with a plan to post work zone signage on the water and/or at the bank of the river to warn public with potential hazards.	
				7.2.2.3. Workers will be wearing PPE all the time including high vis-vest				7.2.2.3. CDP require contractor to communicate with OH electric for wire drop contingency/emergency plan	
				7.2.2.4. Dedicated Spotter and/or Supervisor on site to watch all the activities of the operators and will always be in line of site with the moving vehicles and calls safety stop if notices any unsafe and/or upset conditions. Dedicator spotter to maintain minimum clearance distance with overhead power line during equipment movement.					

[illegible]

What If...	Hazards	Consequences		Safeguards	Risk After Safeguards			Action Items	
		Consequences	Type		S	L	R	Recommendations	By
				7.2.2.9. Contractor will have either electric qualified observer or construction equipment that has no ability of making contact with overhead power line in accordance with National Grid Employee Safety Handbook Section 2.18 "Work on an Near Energized Equipment".					
8. Sending divers to cover demo debris from river bottom.	8.1. Drowning. This is not catastrophic scenario and process safety consequence. The occupational safety hazard associated diving be addressed by HASP. Also, divers are certified, and contractor will develop rescue plan with standby team who is trained for swift water rescue per regulatory requirements.								

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System: 2. Demolition/Construction

Subsystem: 2.2. ~~Allen Mill Demo~~

Intention: To identify the hazards that are associated with demo of the Allen Mill

What If...	Hazards	Consequences		Safeguards	Risk After Safeguards			Action Items	
		Consequences	Type		S	L	R	Recommendations	By
No worksheet data to print.									

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System: 3. Demobilization

Subsystem: 3.1. Mobilizing the debris offsite

Intention: To identify the hazards that are associated with transporting the demo debris offsite

What If...	Hazards	Consequences		Safeguards	Risk After Safeguards			Action Items	
		Consequences	Type		S	L	R	Recommendations	By
9. already covered in mobilization									

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System: 3. Demobilization

Subsystem: 3.2. Mobilizing the Vehicles offsite after demo

Intention: To identify the hazards that are associated with de-mobilizing the vehicles and equipment offsite

What If...	Hazards	Consequences		Safeguards	Risk After Safeguards			Action Items	
		Consequences	Type		S	L	R	Recommendations	By
10. already covered in mobilization									

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Appendix D

Arcadis COVID-19 Mitigation Plan for National Grid

Appendix D

COVID Mitigation Plan

DRAFT



COVID-19 Mitigation Plan

**Former Powerhouse and Allen Mill
Hudson Falls, New York**

August 2021

COVID-19 Mitigation Plan

**Former Powerhouse and Allen Mill
Hudson Falls, New York**

August 2021

Prepared By:

Arcadis of New York, Inc.
One Lincoln Center, 110 West Fayette Street, Suite 300
Syracuse
New York 13202
Phone: 315 446 9120
Fax: 315 449 0017

Prepared For:

National Grid
300 Erie Boulevard West
Syracuse, New York 13202

Our Ref:

30058171

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SIGNATURES

I have read, understand, and agree to abide by the requirements presented in this COVID-19 Mitigation Plan. I understand that I have the absolute right to stop work if I recognize an unsafe condition affecting my work.

Name Printed

Signature

Date

[illegible]

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Appendix C	National Grid COVID-19 Guidance
Appendix D	General Electric COVID-19 Guidance
Appendix E	Arcadis COVID-19 Guidance

1 Introduction

This COVID-19 Mitigation Plan (plan) provides guidance for the protection of site personnel and the public by establishing measures and procedures to be followed to reduce the potential for COVID-19 related project impacts and in the event the project is directly impacted by COVID-19. This plan has been prepared in support of implementing demolition activities (i.e., the project) at the Former Powerhouse and Allen Mill buildings located on National Grid's property along the Hudson River in the Village of Hudson Falls, New York (the site).

This plan will act as a "living document" and as such, will be updated as the COVID-19 pandemic evolves. As noted below, this plan incorporates Federal, State, and local updates on COVID-19 by reference. Additional updates may be required based on National Grid, the General Electric Company (GE), and/or Arcadis requirements. As such, this document is not intended to serve as a resource for up-to-date information that may otherwise be conveyed by those entities having jurisdiction. This plan will be reviewed with site personnel and updates will be provided and documented and tracked on the cover page.

2 General Measures and Guidance

General information regarding COVID-19 mitigation measures and guidance is provided in the following subsections.

2.1 Comply with Government Directives and Guidelines

All companies and employees involved with the project will follow directives and guidelines issued by the World Health Organization (WHO), Center for Disease Control and Prevention (CDC), the New York State Department of Health (NYSDOH), the New York State Governor's office, and local government entities. These measures are incorporated into this plan by reference, but are not attached to this document due to the continuous nature of the updates being offered. As such, employees shall review information and updates provided by these entities.

NYSDOH guidance for COVID-19 exposure procedures and cleaning and disinfection are included as Appendices A and B.

2.2 Follow Applicable Employer Plans and Policies

Employees are expected to follow current employer plans and policies (i.e., National Grid, GE, Arcadis, and the Contractor and its subcontractors) associated with COVID-19. For convenience, current plans as of the original date noted on the cover of this document from National Grid, GE, and Arcadis are included as Appendices C, D, and E (respectively) .

2.3 Illness

If an employee feels sick or has come in contact with someone who has tested positive for COVID-19, that employee shall 1) notify their employer, 2) stay home, and 3) follow company policy (as applicable) regarding notification procedures, self-quarantining requirements, and COVID-19 testing procedures. Employees are encouraged to stay informed of procedures and requirements established by other entities having authority (as outlined above). COVID-19 symptoms may include fever, cough, and shortness of breath.

2.4 Posting of Preventative Measures

Preventative measures will be posted in all common areas of the site, discussed in morning meetings, and distributed to personnel as applicable.

2.5 Safety Briefings

Various preventative measures will be discussed with site personnel each day during daily safety meetings as a reinforcing measure. These discussions may include measures personnel can take to mitigate risks outside of the site (i.e., such as avoiding congregations, social distancing, etc.).

3 Site-Specific Measures

COVID-19 mitigation measures to be implemented at the site consist of the following:

- **Site Sign-in and Sign-out Sheet** – The site sign-in and sign-out sheet will be managed by a designated individual from the Contractor (e.g., the Contractor's Safety Representative). This individual will sign all personnel in and out of the site.
- **Social Distancing and Face Coverings** – Social distancing is critical and required. Site personnel will take precautions to stay at least six feet from other people and each other. If an employee must be closer than 6 feet to another person, pause work and don a face covering consistent with health official guidelines (i.e., constructed of recommended materials and completely covering the nose and mouth), and limit the task duration to the extent possible. Face covering selection and use must allow for the safe completion of the task being performed.
- **Site Visitors and Meetings** – Until further notice, only essential personnel necessary to implement the project will be present at the site. Site meetings among on-site personnel will utilize social distancing (i.e., be held outside while maintaining 6-foot distance between attendees). Other project update meetings will utilize available teleconference and/or video conference methods to reduce the number of personnel at the site.
- **Avoid Congregating During Breaks** – Personnel are to avoid congregating during breaks to maintain social distancing. Instead, personnel are encouraged to use personal or company-owned vehicles (without others in the vehicle) or use other means to take necessary breaks during the day.
- **Nitrile/Latex Disposable Gloves** – Nitrile and latex gloves will be made available to site personnel. Both gloves will be made available in the event an individual has an allergy to a specific glove type. Personnel are encouraged to use these when using common spaces (such as portable sanitary facilities) and as desired.
- **Dedicated Sanitary Facilities** – Project-dedicated sanitary facilities (e.g., for the Contractor and Engineer/Owner) will be provided to further encourage on-site social distancing. All sanitary facilities will be located six feet apart and disinfected daily by the Contractor. Disinfection with wipes or disinfectant spray by employees prior to and after each use should be conducted.
- **Hand Wash Stations** – Portable hand wash stations will be made available and located near the office trailers and sanitary facilities. The hand wash stations are intended to serve as an initial measure for cleaning hands. Antibacterial soap will be included at each hand wash station. All handwash stations will be located six feet apart and disinfected daily by the Contractor.

- **Hand Sanitizer** – Hand sanitizer will be provided by the Contractor and serve as a secondary measure for cleaning hands. Hand sanitizer will be located (at a minimum) at each hand wash station, in all site trailers, and at the sign-in/sign-out sheet.
- **Sanitizing Wipes or Other Cleaning Supplies** – Sanitizing wipes will be provided by the Contractor and made available in all trailers, hand wash stations, and at the sign-in/sign-out sheet for use by on-site personnel to wipe surfaces and commonly touched items (e.g., desk surfaces, tabletops, doorknobs/handles, common keyboards, equipment controls, etc.).
- **Cleaning** – Common areas including but not limited to trailers, tables, portable wash stations, and sanitary facilities will be cleaned by the Contractor after each workday in accordance with NYSDOH guidance (refer to Attachment B).

4 Response Measures

Each day, the site will be secured to the extent possible with the anticipation that the site could be shut down (i.e., due to COVID-19) starting the next day. The site must be maintained in an orderly and clean manner.

The following response measures have been developed to maintain continuity based on potential impacts to the site from COVID-19.

4.1 Sick Personnel without Confirmation

At this time, the site will not be shut down if an individual(s) is ill, but the illness is not confirmed to be associated with the COVID-19 virus. This situation will be monitored by the site management team (i.e., National Grid, Arcadis, and the Contractor) and is subject to change at their discretion.

4.2 Confirmed COVID-19 Case

Arcadis and/or the Contractor will implement stop work authority if a confirmed case of COVID-19 is reported for a site worker or site visitor. Site activities will not resume until National Grid, GE, and the project management team (i.e., the Contractor and Arcadis) reviews the situation and offers a clear and concise path forward in response to the circumstances. National Grid will be informed of the initial stoppage of work and the decision made by the project management team. If activities at the site are suspended, personnel will be notified to the extent possible. Furthermore, senior leaders of each entity will be notified promptly via email. Communications will be provided to notify team members when the decision is made to resume activities at the site. During any suspension of work, site security will be maintained, and the site will be subject to cleaning that will focus on addressing common surfaces.

4.3 Outside Action Requiring Site Shut-Down

If an outside action from Federal, State, or local agencies dictates that the site be shut down due to COVID-19, site personnel will follow the requirements of such action.

Appendix A

NYSDOH Interim Guidance for Procedures when Identifying an Employee with Concerns for COVID-19 Exposures



Interim Guidance for Procedures When Identifying an Employee with Concerns for COVID-19 Exposures

March 11, 2020

Background:

In December 2019, a new respiratory disease called Coronavirus Disease 2019 (COVID-19) was detected in China. COVID-19 is caused by a virus (SARS-CoV-2) that is part of a large family of viruses called coronaviruses.

To help prevent spread of COVID-19, procedures and supplies should be in place to encourage proper hand and respiratory hygiene and avoid close contact with people who are sick, and including staying home when you are sick.

Hand Hygiene:

Signage with handwashing procedures should be posted in prominent locations promoting hand hygiene.

- Regular hand washing with soap and water for at least 20 seconds should be done:
 - Before and after eating.
 - After sneezing, coughing, or nose blowing.
 - After using the restroom.
 - Before handling food.
 - After touching or cleaning surfaces that may be contaminated.
 - After using shared equipment and supplies like electronic equipment such as keyboards, mice and phones.
- If soap and water are not available, use an alcohol-based hand sanitizer that contains at least 60% alcohol.

Respiratory Hygiene:

- Covering coughs and sneezes with tissues or the corner of elbow.
- Disposing of soiled tissues immediately after use.

Procedures for Addressing Employees with Concerns for COVID-19 Exposures:

For purposes of coronavirus, there are both a mandatory quarantine protocol and a precautionary quarantine protocol. By definition, mandatory quarantine is the classification which can be directed by legal order if not complied with. LHDs must utilize the following definitions in determining whether or not to institute a mandatory or precautionary quarantine:



- Status for Required Mandatory Quarantine – Person has been in close contact (6 ft.) with someone who is positive, but is not displaying symptoms for COVID-19; or person has traveled to China, Iran, Japan, South Korea or Italy and is displaying symptoms of COVID-19;
- Status for Required Mandatory Isolation – Person has tested positive for COVID-19, whether or not displaying symptoms for COVID-19. LHDs must immediately issue an order for Mandatory Quarantine or Isolation once notified, which shall be served on the person impacted. Given the virulence of COVID-19, we also have precautionary protocols.
- Status Required for Precautionary Quarantine – Person meets one or more of the following criteria: (i) has traveled to China, Iran, Japan, South Korea or Italy while COVID-19 was prevalent, but is not displaying symptoms; or (ii) is known to have had a proximate exposure to a positive person but has not had direct contact with a positive person and is not displaying symptoms.

Symptoms of COVID-19 include fever or new or worsening respiratory symptoms including cough or shortness of breath. Anyone who feels they may meet the above criteria for quarantine should immediately contact their local health department in the county in which they reside. **If the employee also has symptoms associated with COVID-19, they should be instructed to also immediately call their healthcare provider for further guidance.**

Employers may discuss opportunities for employees to work at home if possible if they require quarantine or isolation as determined by the local health department but are asymptomatic.

Guard Against Stigma:

As new information emerges, please remind your employees that the risk of novel coronavirus is not connected with race, ethnicity or nationality. Stigma will not help to fight the illness. Do not make determinations of risk based on race or country of origin and be sure to maintain confidentiality of people with confirmed coronavirus infection.

Sharing accurate information during a time of heightened concern is one of the best things we can do to keep rumors and misinformation from spreading.

More information:

New York State Department of Health's COVID-19 Webpage:
<https://www.health.ny.gov/diseases/communicable/coronavirus/>

Listing of Local Health Departments:



Department of Health

ANDREW M. CUOMO
Governor

HOWARD A. ZUCKER, M.D., J.D.
Commissioner

SALLY DRESLIN, M.S., R.N.
Executive Deputy Commissioner

https://www.health.ny.gov/contact/contact_information/

Centers for Disease Control and Prevention Webpage:

<https://www.cdc.gov/coronavirus/2019-ncov/>

Appendix B

Interim Guidance for Cleaning and Disinfection of Public and Private Facilities for COVID-19



ANDREW M. CUOMO
Governor

Department of Health

HOWARD A. ZUCKER, M.D., J.D.
Commissioner

LISA J. PINO, M.A., J.D.
Executive Deputy Commissioner

Interim Guidance for Cleaning and Disinfection of Public and Private Facilities for COVID-19

August 12, 2020

To help prevent spread of COVID-19, procedures and supplies should be in place to encourage proper hand and respiratory hygiene as well as routine cleaning and disinfection of high-risk locations. This guidance is provided for any local or state public or private facility so that owners, operators and other individuals can incorporate these procedures into their facility protocols.

Background:

In December 2019, a new respiratory disease called Coronavirus Disease 2019 (COVID-19) was detected in China. COVID-19 is caused by a virus (SARS-CoV-2) that is part of a large family of viruses called coronaviruses.

Hand Hygiene:

Signage with handwashing procedures should be posted in prominent locations promoting hand hygiene.

- Regular hand washing with soap and water for at least 20 seconds should be done:
 - Before and after eating.
 - After sneezing, coughing, or nose blowing.
 - After using the restroom.
 - Before handling food.
 - After touching or cleaning surfaces that may be contaminated.
- After using shared equipment and supplies like electronic equipment such as keyboards, mice and phones.

What steps should be taken to clean and disinfect against COVID-19?

Now:

All settings should continue performing routine cleaning. High-risk locations (see below) warrant cleaning and disinfection on a regular schedule.

If an individual with laboratory confirmed COVID-19 was symptomatic while in a facility:

Clean and disinfect throughout the area.

If soap and water are not available, use an alcohol-based hand sanitizer that contains at least 60% alcohol. Use of alcohol-based hand sanitizers by children should always be supervised by adults.

Respiratory Hygiene:

- Wear a face covering when in public.
- Cover coughs and sneezes with a tissue and dispose of soiled tissues immediately after use.

Routine Cleaning:

As part of standard infection control practices, routine cleaning should be rigorous and ongoing, and time should be allocated for individuals to routinely clean. Surfaces touched most frequently should be prioritized for routine cleaning because these surfaces can be reservoirs for germs and an exposure pathway for transmission to people through contact with these surfaces.

Examples of priority areas for routine cleaning include:

- High contact surfaces that are touched by many different people, such as light switches, handrails and doorknobs/handles.
- Dust- and wet-mopping or auto-scrubbing floors.
- Vacuuming of entryways and high traffic areas.
- Removing trash.
- Cleaning restrooms.
- Wiping heat and air conditioner vents.
- Spot cleaning walls.
- Spot cleaning carpets.
- Dusting horizontal surfaces and light fixtures.
- Cleaning spills.
- Regular cleaning and laundering of linens.

Identify and routinely clean and disinfect high- risk locations even before a confirmed case of COVID-19 occurs.

Examples of high-risk locations include:

First Aid Station / Health Office:

- Clean and disinfect health cots regularly (after each use)
- Cover treatment tables and use pillow protectors
- Discard or launder coverings after each use

Restrooms

- Clean and disinfect all restroom surfaces, fixtures, door knobs, push plates, and switches (at least once daily).

Examples of frequently touched surfaces:

- Desks and chairs;
- Counters, tables and chairs;
- Door handles and push plates;
- Handrails;
- Kitchen and bathroom faucets;
- Appliance surfaces;
- Light switches;
- Handles on equipment (e.g., carts);
- Remote controls;
- Shared telephones;
- Shared computers, keyboards and mice
- Shared electronics and phones
- Shared computer keyboards and mice.

Note: Computer keyboards are difficult to clean due to the spaces between keys and the sensitivity of its hardware to liquids. When shared, they may contribute to indirect transmission. Locations with community use computers should provide posted signs regarding proper hand hygiene before and after using the computers to minimize disease transmission. Also, consider using keyboard covers to protect the hardware against spills and facilitate cleaning.

Dining Areas

- Clean and disinfect counters, tables, and chairs regularly (at least once daily).

Other Frequently Touched Surfaces

- Clean and disinfect frequently touched surfaces on a periodic schedule as operational considerations allow, which may range from at least daily to up to 72 hours.

Cleaning and Disinfection:

Cleaning removes germs, dirt and impurities from surfaces or objects. Disinfecting kills germs on surfaces or objects.

Individuals should use any protective equipment (e.g. gloves) as recommended on product labels. Carefully read and follow all label instructions for safe and effective use.

Step 1: Cleaning: Always clean surfaces prior to use of disinfectants in order to reduce soil and remove germs. Dirt and other materials on surfaces can reduce the effectiveness of disinfectants. Clean surfaces using water and soap or detergent to reduce soil and remove germs. For combination products that can both clean and disinfect, always follow the instructions on the specific product label to ensure effective use. In New York State, all state agencies and state authorities are required to use green cleaning products. For additional information on the laws regarding the use of green cleaning products, see the [Policies, Guidelines and Report](#) section of NY's Green Cleaning Program website.

Step 2: Disinfection: Cleaning of soiled areas must be completed prior to disinfection to ensure the effectiveness of the disinfectant product. Use the DEC [list of products](#) registered in New York State identified as effective against COVID-19. This list corresponds those identified by the EPA.

If these products are unavailable, disinfect surfaces using an EPA- and DEC*-registered disinfectant labeled to be effective against rhinovirus and/or human coronavirus. If these commercial products are unavailable, it is also acceptable to use a fresh 2% chlorine bleach solution (approximately 1 tablespoon of bleach in 1 quart of water). Prepare the bleach solution daily or as needed.

- Label directions must be followed when using disinfectants to ensure the target viruses are effectively killed. This includes adequate contact times (i.e., the amount of time a disinfectant should remain on surfaces to be effective), which may vary between five and ten minutes after application. Disinfectants that come in a wipe form will also list effective contact times on their label.
- For disinfectants that come in concentrated forms, it is important to carefully follow instructions for making the diluted concentration needed to effectively kill the target virus. This information can be found on the product label.

Step 3: Disposal: Place all used gloves and other disposable items in a bag that can be tied closed before disposing of them with other waste. Wash hands with

soap and water for at least 20 seconds immediately after removing gloves or use an alcohol-based hand sanitizer if soap and water are not available. Soap and water should be used if hands are visibly soiled.

Procedures and Training:

If a laboratory confirmed case of COVID-19 was in a facility, perform cleaning and disinfection of all surfaces throughout the area. Cleaning and disinfection should be conducted by individuals who have been trained to use products in a safe and effective manner. Training should be ongoing to ensure procedures for safe and effective use of all products are followed. Training assures that individuals are reminded to read and follow use and safety instructions on product labels. It should also identify the location of all personal protective equipment (e.g., gloves) that should be used.

*NYSDEC registration will not be listed on disinfection product labels. Information about disinfection product registration with NYSDEC can be found at: <http://www.dec.ny.gov/nyspad/products>. If you have any questions about NYSDEC pesticide registration, please call the NYSDEC Bureau of Pesticide Management at 518-402-8748.

More information:

New York State Department of Health's COVID-19 Webpage:
<https://www.health.ny.gov/diseases/communicable/coronavirus/>

Centers for Disease Control and Prevention
Webpage: <https://www.cdc.gov/coronavirus/2019->

Appendix C

National Grid COVID-19 Guidance

Appendix C1

**National Grid Safety Procedure A-116
COVID-19 Health and Safety Plan**

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FORWARD

National Grid's vision is to be a world-class safety organization, with zero injuries every day. A critical component of achieving this vision is the careful development, implementation and maintenance of safety procedures. This guidance document, COVID-19 Health and Safety Plan, describes pandemic response measures, taken by National Grid, to help prevent the spread of COVID-19.

Questions regarding this guidance should be referred to National Grid's Safety Department.

Record of Change

Revision	Date	Description
Initial	4/28/2020	Initial creation
1	5/06/2020	Updated Job Brief Checklist to reflect current face covering requirements, vehicle cleaning guide correction
2	6/18/2020	Updates made to add the daily symptom check process, removed the job brief checklist, updated face covering requirements, and state requirements.

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1.0 SCOPE OF HEALTH & SAFETY PLAN

National Grid has developed the following Health & Safety Plan to uniformly apply pandemic response measures to help prevent the spread of the COVID-19 virus. National Grid field personnel and crews have been provided the included information and communications.

2.0 PROJECT PERSONNEL

2.1 Roles and Responsibilities:

National Grid shall be responsible for the safety of all its employees and will ensure COVID-19 pandemic measures are in place. Key National Grid personnel are as follows:

Incident Command Structure

The National Grid Incident Command Structure (ICS) was activated within all Business Units of National Grid's US Operations to respond to the COVID-19 pandemic in March 2020. Members of the ICS reviewed and approved all operational decisions, with the Incident Commander ultimately responsible for these decisions. The Incident Commander relied upon subject matter experts within the ICS, including the Operations Officer, the Safety and Health Officer, to help set standards and guidance for protective measures to be used to limit the spread of the COVID-19 virus. These Officers, in turn, utilized the expertise of other members of the organization within Operations, Safety, and Health, to assess risks associated with the work being performed and provide guidance on the most effective measures to be used by employees to protect themselves, their coworkers, our customers, and members of the public.

Oversight responsibilities of the Incident Command Structure (ICS) were transitioned to the Plan Forward team upon ICS dissolution in May 2020. Responsibility for recommendation of standards and guidance was transferred to the Safety and Health teams at National Grid, in conjunction with input from Operations and Support Services teams, as necessary.

Field Supervisor

The Field Supervisor shall have the responsibility for monitoring and enforcing National Grid COVID-19 pandemic measures and shall ensure that all employees have received and reviewed this Health & Safety plan.

- Serve as the appointed supervisor to oversee field personnel and ensure pandemic measures are being followed
- Ensure field personnel have the appropriate pandemic supplies

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- Disseminate all new National Grid COVID-19 communications to all field employees
- Where non-compliance is observed, take prompt corrective action; and
- Have the authority to order a safety stop in the event of a serious safety issue.

Crew Leader

The National Grid crew leader shall be in charge of the day-to-day details of the work to be performed, effectively acting as COVID-19 Safety Officer for the site; they shall ensure that work is performed in accordance with National Grid COVID-19 pandemic measures.

- Walk the job site at the start of each day to ensure a safe work environment;
- Where non-compliance is observed, take prompt corrective action; and
- Have the authority to order a safety stop in the event of a serious safety issue.
- Perform the daily job safety briefing before commencing work, whenever a visitor arrives to the job site and if there is a significant change in the work or extended break.

Employees

National Grid employees are responsible for following all COVID-19 pandemic measures;

- Each employee is responsible for reporting to supervision any symptoms of COVID-19, any direct contact with an individual confirmed to have COVID-19 or is in quarantine.
- Each employee is obligated to call a safety stop when a hazardous condition is observed.
- All workers shall conduct a self-assessment utilizing the COVID-19 daily symptom checklist (App A) and adhere to the guidance outlined in this plan.

National Grid Field Safety Representative

National Grid Field Safety Representative's conduct routine and random crew visits to National Grid job sites. The National Grid Field Safety Department shall act as a resource for National Grid Field Personnel to effectively implement this COVID-19 Health & Safety Plan and will be available on an as needed basis for inquiries related to this plan.

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3.0 COVID-19 PANDEMIC RESPONSE MEASURES

3.1 COVID-19 Symptoms

COVID-19 Symptoms may include the following:

- Cough, shortness of breath, or difficulty breathing
- Chills, feverish or fever of 100.3 or greater
- Generalized muscle pain or aches, fatigue or headaches

Other possible symptoms include; sore throat, runny/stuffy nose, or recent loss of taste or smell, nausea, vomiting, or diarrhea.

ZERO Tolerance for sick employees:

If you, or a person in your home, is experiencing any of the above symptoms or are feeling sick please do not come to work.

3.2 Hygiene and Social Distancing

- Wash your hands often with soap and water for at least 20 seconds, especially after using the restroom, before eating, and after blowing your nose, coughing, or sneezing. Hand washing is the best way to prevent the spread of viruses.
- If soap and water are not readily available, use an alcohol-based hand sanitizer with at least 60% alcohol. Always wash hands with soap and water if hands are visibly dirty.
- If drying of hands is necessary, single use disposable towels or rags shall be used. No sharing of these drying materials should be allowed amongst crew members and used materials should be disposed immediately after use.
- Proper hand washing/sanitizing products will be provided to all employees.
- Maintain a minimum of 6' social distance from other employees on site while performing work and during routine breaks. When work tasks prevent this ensure proper face coverings are continued to be worn and proper hygiene.
- During routine breaks, when face coverings are removed for eating and drinking, maintaining 6' social distance will be enforced by crew members.
- Be sure to use your own water bottle. Do not share. Avoid touching your eyes, nose, and mouth.
- Cover your cough or sneeze with a tissue, then throw the tissue in the trash.
- Clean and disinfect frequently touched objects and surfaces, including vehicles and equipment, using a disinfecting cleaning spray or wipe, if not available use soap and water solution.
- All cleaning product trash and potentially contaminated PPE will be stored in a trash bag and immediately disposed of at a National Grid facility at the end of each shift, trash should not accumulate in any National Grid vehicle. Immediately

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wash hands upon disposing of trash bag.

3.3 COVID-19 PPE and Face Coverings

- Face coverings are a requirement for all National Grid employees. Face coverings must be worn by all employees:
 - When working in public/outdoor places face coverings must be worn when 6-ft social distancing cannot be maintained at all times. (Unless required by a local mandate)
 - Even when maintaining social distancing is possible, a face covering must always be in your possession. (your hand, pocket, around your neck, etc.)
 - When working in a customer's premises.
 - When 6-ft social distancing is not able to be maintained with a co-worker, customer or member of the public in a National Grid facility, barn/yard, work location or company vehicle.
- Non-Fire-Retardant/Arc Rated Face Covering– use when there is no potential for a gas ignition or electric arc flash (company supplied or personal face covering)
- Fire Retardant Face Covering – use when there is potential for a gas ignition or electric arc flash
- Additional COVID-19 PPE guidance is provided in the attached Premise Entry Guidelines
- Massachusetts Only: All construction workers will be required to wear cut-resistant gloves or the equivalent, except where state or safety mandates state otherwise

3.4 COVID-19 Virus Risk Assessment and Adopted Measures

National Grid's prescribed measures (work practices, PPE, hygiene) were selected based upon the risk assessments completed by subject matter experts and reported up through the ICS for approval. They are based upon CDC and OSHA guidance, as well as input from Operations, Safety, and Health team members, and are believed to address all risks posed to our workforce, as well as to our customers and members of the public, when jobs are conducted in public places. These measures are reviewed on a continuous basis, for both effectiveness and to ensure the latest guidance is incorporated, with changes made, as necessary, after these reviews.

3.5 Worksite Travel

Employees should attempt to travel to and from worksites in separate vehicles if practical and sufficient parking exists.

When separate travel is not an option employees should:

- Limit to 2 people in a vehicle if possible

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- Be seated as far apart as possible
- Must wear face coverings
- Drive with open windows if possible

4.0 COVID-19 REPORTING PROCESS

4.1 COVID-19 Daily Symptom Checklist

All employees shall utilize the daily COVID-19 symptom check via myCority or IVR, which replaces the existing similar review (job briefs) that had been taking place. All visitors to the job site will likewise be required to complete a COVID-19 symptom check prior to entry on the job site. Please refer to the COVID-19 Daily Symptom Check guidance document in App A.

4.2 COVID-19 Incident Reporting

To ensure the safety of all employees and the public any employee shall immediately contact their Supervisor and National Grid Employee Services if one of the following conditions occur:

- Employee is exhibiting symptoms of COVID-19
- Employee has been in close contact of another individual with COVID-19
- Employee has been in close contact of another individual who is currently being quarantine for a suspected case of COVID-19

Close contact is defined as being within 6' of a sick individual for more than 15 minutes.

Please refer to the COVID-19 Suspected/Confirmed Positive Process guidance document in App A.

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Appendix A – National Grid COVID-19 Communications

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COVID-19 Daily Symptom Check

All employees who are not working from home, must undergo a daily symptom checking protocol to monitor potential symptoms and/or exposure to COVID-19. Employees working from home, must identify themselves as such daily. Visitors, contracted employees and contractors working at our facilities must also perform symptom checks.

In addition to state mandates and CDC guidance regarding symptom checks, scientific evidence shows that adherence to daily monitoring can be highly effective in promoting individual awareness of mild symptoms and help ill individuals prevent the spread of the virus to others. As a community, daily adherence by all will also provide a level of assurance to all employees regarding their welfare in the workplace.

If you have a network sign-on and have access to a company device:			
And <u>today</u> you are working....	Is a daily symptom check required?	Symptom Check Method	Additional Time Entry Instructions
At home	No	N/A	(1) Each day you work at home, you must enter "home" in the comments section of your time entry
At a NG office, or entering a NG office for any length of time or working at a NG facility, jobsite or field location	Yes	(2) Web-based questionnaire	N/A
If you do not have a network sign-on or do not have access to a company device:			
And today you are working....	Is a daily symptom check required?	Symptom Check Method	Additional Time Entry Instructions
At a NG office, or entering an NG office for any length of time or working at a NG facility, jobsite or field location	Yes	(3) Phone questionnaire (IVR)	N/A

Symptom-checks must be performed either before leaving home or immediately upon arrival at the workplace. Self-checks are only required once per day and do not need to be repeated if you are called back to work, unless you develop symptoms.

If you answer yes to any questions, stay home or leave the workplace, notify your supervisor and call Employee Services at **888-483-2123** to be referred to a company Nurse Practitioner.

It is important that every employee perform their applicable activity (either a symptom check or time entry with comments of "home") each and every work day.

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COVID-19 Daily Symptom Check – IVR

To Complete the COVID-19 symptom check by phone (IVR), have your Employee ID number ready and follow the instructions below. If you don't know your Employee ID number, please contact your supervisor.

- Call 833-986-1441
- When prompted enter your Employee ID number. Once your Employee ID number is verified, you will be prompted to answer the questions below. Please note, that these questions may change in response to scientific or government guidance.
- If your Employee ID number is not verified, you will be prompted to re-enter your Employee ID number. If still not verified, you will be instructed to contact your Supervisor to obtain a valid Employee ID number and the call will disconnect.
- You must answer all questions by:
 - **Saying Yes or pressing 1**
 - **Saying No or pressing 2**

In the past 14 days:

1. *Have you been experiencing any cough, shortness of breath, or difficulty breathing?*
2. *Have you been experiencing any chills, felt feverish, or had a fever of 100.3 or greater?*
3. *Have you been experiencing any (generalized) muscle pain/aches, fatigue, or headaches?*
4. *Have you been experiencing any sore throat, runny/stuffy nose, or recent loss of taste or smell?*
5. *Have you been experiencing nausea, vomiting, or diarrhea?*
6. *Have you tested positive for COVID-19 in the past 14 days?*
7. *Have you been in close or proximate contact (less than 6 feet) in the past 14 days with anyone who has tested positive for COVID-19 or who has or had symptoms of COVID-19?*
8. *Have you been directed to quarantine or isolate by the any Department of Health or a healthcare provider in the past 14 days?*
9. *For Rhode Island Employees - Have you returned to Rhode Island from an area still under a stay-at-home order or another similar type of restriction in the past 14 days?*

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Once complete you will hear the following message:

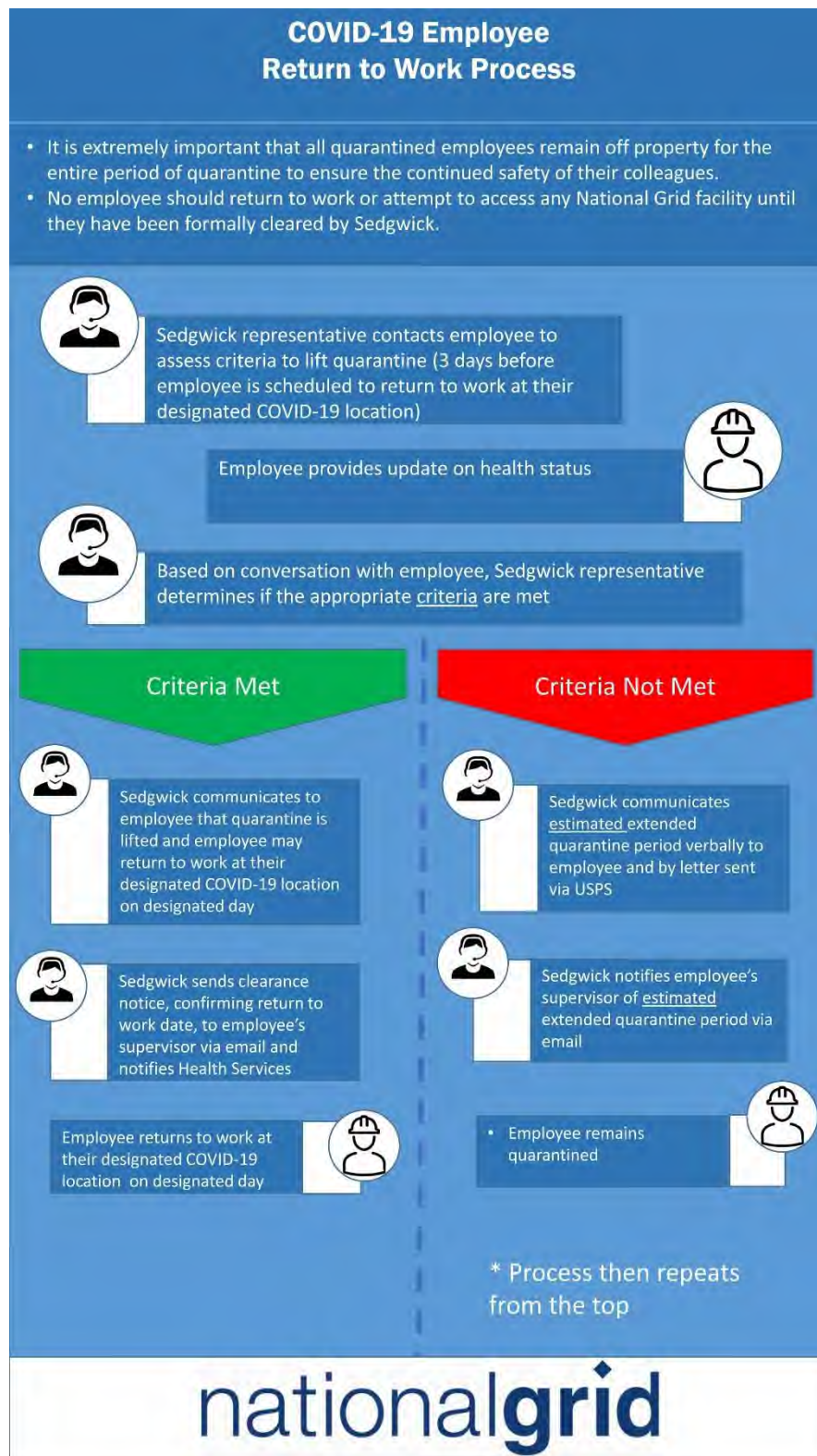
If you answer “Yes” to any of the questions, please leave the work location, contact your supervisor and call Employee Services at (888) 483-2123. If you feel that you have symptoms related to COVID-19 please contact your healthcare provider. Thank you and have a nice day. (The call will then disconnect).

All responses collected will be maintained in a secure and confidential manner in accordance with applicable laws.

For technical issues, please check the [IT Portal](#) visit the [Virtual Techbar](#), or call the

IT Service Desk at 1-877-373-1112

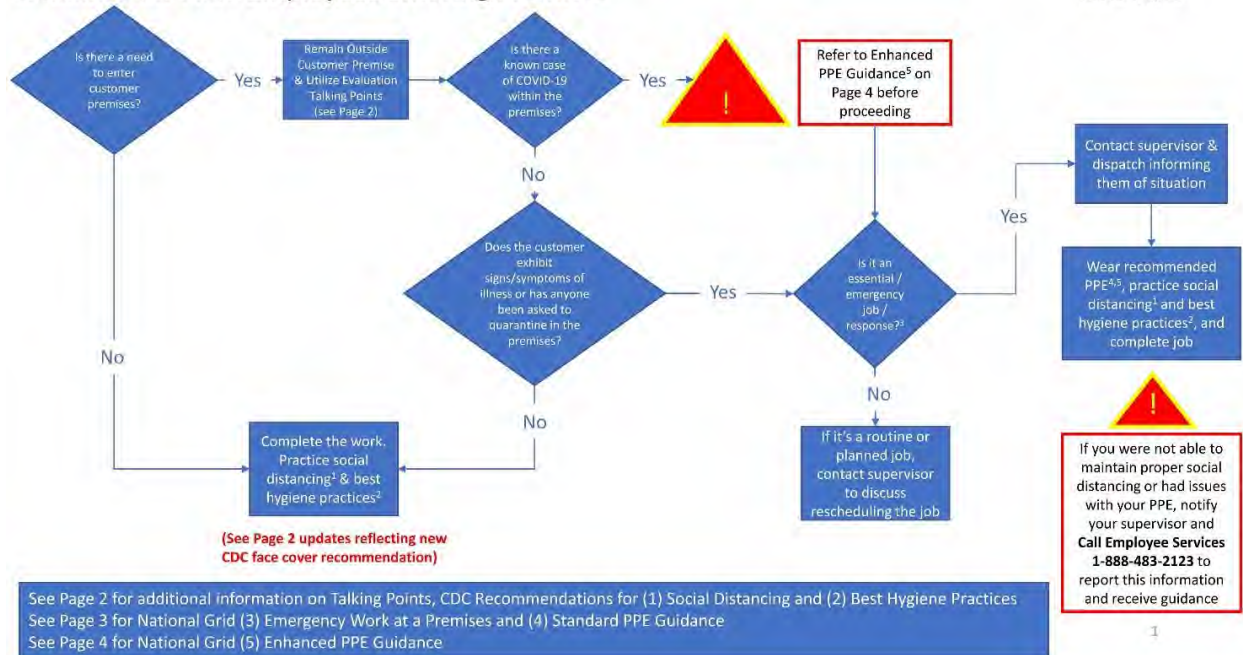
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Guidance for Field Employees Entering Premises

Issued 4/7/20



Issued 4/8/20

Talking Points - Engage Customer

Prior to entry, engage the customer and advise of social distancing practices. Here are some questions and statements.

- Does someone within the premises have a known case of COVID-19? Has someone within the premises tested positive for the COVID-19 virus?
(IF ANSWER IS 'YES' TO EITHER OF THE ABOVE QUESTIONS, REFER TO ENHANCED PPE GUIDANCE ON PAGE 4)
- Do you mind if I follow the social distancing practice today?
- Is anyone currently sick inside the premises?
- If you are feeling sick, would you mind remaining in another room while I am working. This is a best practice policy my company is recommending. Can you tell me where your equipment is located?
- I will do my job, keep you updated and tell you when I am done

(1) Social Distancing

- Maintain at least 6 feet distance between yourself and the customer at all times
- Where social distancing measures cannot be maintained, face cover can be worn to help limit the spread of the virus (see National Grid's Face Cover Guidance for details)

(2) Best Hygiene Practices

- Face covering can be worn in public settings where social distancing measures cannot be maintained (see National Grid's Face Cover Guidance for details)
- Use alcohol-based hand sanitizer (at least 60% alcohol), before and after each home visit; OR wash hands using soap and water for 20 seconds

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(3) Emergency Work at a Premises

On arrival, assess the premise/situation in its entirety and consider these questions.

- Is it a multi-unit building?
 - Is the unit where work is required affected?
- What work can be done without interaction/entry?
- Is entry through a side or back door possible to limit exposure?
- Can make safe actions be taken without interaction/entry?
 - Securing Outside Meter/Curb Valve
- Would a hardship be caused by isolating the service?

Note: These questions and considerations are meant to help guide in the decision making process. There may be instances where access to a premise cannot be avoided in order to address immediate public safety concerns. Please reference the Social Distancing and applicable PPE Guidance in all situations.

(4) Standard PPE Guidance for Entering a Premises (No Known COVID-19 cases are present)

- Avoid touching ANYTHING in customer premises other than company equipment and customer equipment related to the job
- Wear disposable latex or nitrile gloves to prevent touching contaminated surfaces
- Latex or nitrile gloves should be donned before entering the home
 - If work gloves are needed to perform the task, remove disposable latex or nitrile gloves and dispose of them. Don work gloves and perform task. Once task is complete remove work gloves and store them. Don a new pair of disposable latex or nitrile gloves to exit the home.
- Remove latex or nitrile gloves and dispose in way that won't create other opportunities for exposure
- Immediately wash / sanitize hands after removing latex or nitrile gloves
- All other PPE normally required for the work being performed should be used

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(5) Enhanced PPE Guidance for Entering a Premise (Where a Known COVID-19 Case is Present)

The most effective way to protect the employees from contracting the virus is physical distance; if at all possible, the customer diagnosed with COVID-19 should be asked to move to a separate room before premises entry. When available and practicable, the following PPE items may be used at the premises with a known COVID-19 case present. These PPE items can be used in combination with our Social Distancing and Best Hygiene Practices to limit the spread of the virus.

- N-95 / KN-95 mask (see Page 5 for pictures of typical N-95 / KN-95 masks available)
- Reusable Face Shield
- Disposable Surgical Gloves (nitrile or latex)
- All other PPE required for doing the work (i.e. safety glasses, hard hat, etc.)
- If desired, FR-rated balaclava may be worn to provide additional protection while working

The following steps should be taken while conducting work in the premises:

- Prepare a paper or plastic bag for disposal of used PPE prior to entering the premises.
- Avoid touching ANYTHING in customer premises other than company equipment and customer equipment related to the job.
- Wear disposable latex or nitrile gloves to prevent touching contaminated surfaces.
- Any PPE should be donned before entering the home.
- If a mask is in use, avoid touching your face or adjusting the mask.
- If work gloves are needed to perform the task, remove disposable latex or nitrile gloves and dispose of them. Don work gloves and perform task. Once task is complete remove work gloves and store them. Don a new pair of disposable latex or nitrile gloves to exit the home.

Once work is completed in the home, follow these steps to safely remove the PPE items

- Remove face shield, taking care to avoid touching your face. Clean / disinfect and store properly.
- Remove mask from the back of the head first, taking care to avoid touching your face. Place used mask in a bag and dispose in normal trash.
- If balaclava has been worn, remove covering from back of head, similar to removal of mask.
- Remove latex or nitrile gloves (turn inside out while removing) and place in a bag. Dispose of bag in normal trash.
- Immediately wash / sanitize hands after removing latex or nitrile gloves, following Best Hygiene Practices.

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Typical N-95 / KN-95 masks



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****Where N-95 face coverings are mandated, training will be provided in accordance with OSHA guidelines.**

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Now, more than ever, with COVID-19, precautions to safeguard your vehicle when transferring the vehicle to another employee, or when taking your vehicle in for maintenance, is very important.

Here are some high-touch areas that should **never** be missed:

<ul style="list-style-type: none"> • Mirror • Center controls • Keys and fob • Wiper control • Climate control • Audio controls • Hand brake • Seats (driver/passenger)/Seatbelts • Fuel door opener • Windows • Headrests • Armrests 	<ul style="list-style-type: none"> • All mounted devices (<i>any and all electronic devices used - i.e. iPad, laptop, radio, GPS, phone chargers</i>) • Steering wheel • Headlight • All cabin lighting controls • Shifter • Cup holder • Door handle(<i>inside and out</i>)/Window control/locks • Air vent • Sun visors
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Use disinfectant wipes, diluted bleach solution, or damp soapy water wipes when cleaning all hard surfaces throughout the vehicle.


To guide your efforts when cleaning the vehicle, think about where droplets would fall when you sneeze or cough (*for example: do you turn your head to the side?*) and remember to think about your own personal safety:

- Be sure to wash your hands for **20 seconds** after completing the cleaning process.
- If you take your vehicle home at night, be sure to lock it to prevent it from being compromised.
- Make sure you have a mask and gloves (when/where appropriate).



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Before you leave or enter the vehicle – here's a checklist to keep you safe and your team members safe as well:

Activity to Safeguard	
Keys / Fob	
Door Handles (interior/exterior)	
Steering Wheel, Shift Lever, Brake Lever, Wiper Stalk, Turn Signal Stalk	
Air Vents, Console, Dashboard, Cup Holder	
Exterior and Interior Fueling Latch, Cover, Cap	
Seats, Seatbelts, Headrests	
Mirrors, Windows, Window Controls	
Interior Lights	
Sun Visors	
Passenger and Driver Door Armrests, Grab Handles, Seat Adjusters	
All Electronic Devices used while in vehicle (iPads, Navigation Systems, Phone Chargers, Laptops, etc.)	

Additional considerations for crew trucks:

Handles on bin doors	
Equipment controls within Bucket (lower / upper) or Digger	

** Please consider any other touch point identified by a crew member but not listed*

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Contract Employees COVID-19 Reporting Process

Health Services does not typically manage the absences of our contract employees, "contractors". However, to protect our employees, we are screening sick/exposed contractors to determine if they have come into contact with National Grid employees, or if a facilities/vehicle deep cleaning is required. Contract employees are required to call Employee Services (ES) (888) 483-2123 directly. If the contractor does not call Employee Services, the National Grid supervisor may call ES to report the contractor out of work and to initiate contact tracing.

Contractors must be cleared to return to work (RTW) at National Grid by their employer. Per National Grid best practices, we are recommending a 14-day quarantine beginning on the date of notification for all contractors who are sick or believe they have been exposed to COVID-19.

Reporting Process:

1. Contractors call Employee Services (888) 483-2123 for screening.
2. Nurse Practitioner (NP) screens the contractor to determine National Grid close contacts, or if a National Grid facility or vehicle requires deep cleaning. NP obtains employer name and contact email from contractor.
3. NP advises contractor to contact their doctor and their employer.
4. An email will be sent to National Grid supervisor and the contractor's employer with quarantine start and end date (see email below).
5. Contractor must follow employer's RTW process and complete recommended quarantine (and be symptom free for 3 days).
6. NP will notify any National Grid close contacts to quarantine for 14 days and email National Grid supervisor(s).
7. After 14 days have elapsed, the contractor's employer must send an email to NP confirming that the contractor has returned to work. i.e. all RTW notifications and documentation must be forwarded to Mary Brown, NP Mary.Brown2@nationalgrid.com

Supervisor:

If you are calling Employee Services to report a contractor out of work so that we may initiate contact tracing, or a facilities deep cleaning, please be prepared to answer the following questions when speaking with the NP regarding your contractor:

- Contract employee name
- Contract Employer
- Contract Employer supervisor and email address
- Last date contractor was on National Grid worksite
- National Grid employees the contractor has been in close contact with
- Facilities/vehicle deep cleaning required

email sent to supervisor when contractor is taken out of work for quarantine:

RE: Quarantine	Confidential
<p>The contract employee "contractor" listed below has been quarantined and cannot report to a National Grid worksite until they have completed the recommended quarantine. This contractor will follow their employer's process for return to work. After the recommended quarantine has elapsed, and the contractor has been cleared to return to work by their employer, please send email to Mary.Brown2@nationalgrid.com to let us know the contractor is back on site.</p>	
<p>Contract Employee Name: Department/Contractor company: National Grid Supervisor: Quarantine start date: End Date:</p>	

Appendix C2

COVID-19 Daily Symptom Check – Visitors

COVID -19 Daily Symptom Check – Visitors

All Visitors must complete the Daily Symptom Check by using the Visitor Health App using the link or QR Code below.

A Paper copy is only to be used as a backup if there are issues with the app.

<https://visitorhealth.nationalgrid.com>



Name: Click or tap here to enter text.

Date: Click or tap here to enter text.

Company name: Click or tap here to enter text.

Contact phone number: Click or tap here to enter text.

Person planning to see: Click or tap here to enter text.

NGrid location visited: Click or tap here to enter text.

To do our part in preventing the spread of COVID-19 in our community and workplace, we are restricting access to this facility for anyone who may have recently been exposed to the virus. Please read this carefully.

By entering this facility, you are **affirming and attesting that:**

1. You have **NOT** in the last 14 days had any close contact with anyone who is either confirmed or suspected of being infected with COVID-19, including anyone who was experiencing or displaying any of the known symptoms of COVID-19 (see below);
AND
2. You have **NOT** in the last 30 days traveled to a restricted area that is under a Level 2 or 3 Travel Advisory according to the U.S. State Department (including China, Italy, Iran and most of Europe);
AND
3. You do **NOT** currently experience or display, and you have not in the last 14 days experienced or displayed, any of the following symptoms:
 - Elevated temperature or fever of 100 degrees or higher
 - Cough
 - Shortness of breath and/or difficulty breathing
 - Loss of smell and/or taste
 - Sore throat
 - Congestion or runny nose
 - Nausea, vomiting and/or diarrhea
 - Fatigue, muscle aches, chills, shaking
 - Persistent headaches

I have read the above list of COVID-19 exposures and symptoms and attest that:

☐ **I DO NOT** have any of the listed exposures or symptoms, NOR have I been directed to quarantine or isolate by any Department of Health or a healthcare provider.

☐ **I MAY HAVE** one or more exposures or symptoms. Please refer to instructions below*

****If you have one or more of the listed exposures or symptoms, please do not enter in the building, isolate yourself from others and call our COVID-19 hotline at (888) 483-2123 to be connected to a National Grid Nurse for review.***

Appendix D

GE COVID-19 Guidance

Appendix D1

GE Corporate COVID-19 Level II Site Operations Guidelines



GE Corporate
COVID-19 Level II Site Operations Guidelines
Effective Date: April 24, 2020

Revision 00

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I. Purpose

This document provides GE safety guidance and expectations across our fixed sites transitioning to or operating at “Level II” of **GE Corporate COVID-19 Safety Roadmap for Transitioning to Increased Site Utilization** (limited access link <https://ge.box.com/s/g9drtoffsyg8hfx2mop0uyh0zftvj1io>). The guidance provided is accompanied by recommendations to accomplish the expectations.

These guidelines will be continuously updated, and effort should be made to consult the most current version. When implementing, view the most recent version on the GE COVID-19 web portal: <https://www.ge.com/covid19/>. The fundamental principles driving this guidance are the following:

- The number one priority is the health and safety of our employees and contractors doing the essential work of GE, and the communities and neighborhoods where we operate, and additional focus be given to protecting vulnerable workers and populations.
- A key consideration on whether to continue or resume site operations is federal, state/provincial, local, and landlord direction or instruction. Sites should monitor information and understand specific restrictions and allowances associated with businesses, schools and local institutions BEFORE changing current operational utilization. Where facilities have been ordered to close by local regulations, facilities may not reopen until local regulatory permission is available. Where local and other applicable requirements are more stringent or protective than this guidance, those requirements should be followed.
- When local regulations allow sites to increase operations or employee site utilization, sites first must develop and submit to GE Corporate a Safety Operating Plan consistent with these Guidelines. For sites already operating at or near Level II, they shall create a Safety Operating Plan consistent with these Guidelines or promptly perform a gap analysis for existing plans. Operating plans should be uploaded using the **COVID-19 GE Forms Tool** for each site.
- This effort and should be treated as a continuation of the crisis management operating model currently underway. It should *not* be viewed as a return to business as usual. As conditions change, new guidance will be developed, updated and shared.
- The recommended preventative measures against COVID-19 should continue and be actively encouraged, including washing your hands frequently, avoiding touching your eyes, nose and mouth with your hands, avoid handshakes and greetings that require close contact, wearing appropriate face covering where instructed, staying home when you are sick or have been near others who are sick or symptomatic, and practicing physical distancing where possible.



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- Many of the medical concerns, including testing, tracking, and tracing, will be coordinated between local regulatory authorities and GE Medical in partnership with Legal and HR and are not covered in this guidance document. Refer to: **GE Corporate COVID-19 Return to Work Medical Guidance** (limited access link <https://ge.box.com/s/6hltsynv1yz3aevqgmhit34g97jqifh>) returning employees to work from a clinical standpoint.

II. **Scope**

GE sites: This guidance applies to all people at **all GE fixed sites**, including, but not restricted to, GE employees, contractors and visitors.

Leased sites: When occupying leased space or co-located with non-GE tenants, site leadership should implement these guidelines. For GE occupied space, communicate plans with building owners or property management companies. When not permitted or feasible, site leadership should develop alternative procedures in cooperation with business leadership and building owners to realize the equivalence of this guidance.

Business travel: Currently GE travel is limited to business essential only. This guidance presumes there will be limited travel. If an employee completes company approved essential or personal travel prior to returning to a work location, the employee should follow GE and government quarantine guidelines and recommendations. If there is any question, consult with GE Medical Staff.



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III. Leadership Oversight Prior to Re-Occupancy

- **[REQUIRED]** Each site shall identify an individual responsible located at the site for the execution of this guidance ("Site COVID-19 Leader").
- **[REQUIRED]** The Site COVID-19 Leader should be supported in this effort by a team ("Site COVID-19 Team") that includes members who have knowledge or responsibility for site management, security, EHS, HR, communication and employee representation to ensure the site guidance is met, and questions from employees and contractors regarding the process can be answered with consistency.
- **[REQUIRED]** The Site COVID-19 Leader should work with the Site COVID-19 Team to prepare a COVID-19 Operating Plan to implement this guidance on the site. Prior to starting operations or for those with active operations (Level II), the Site COVID-19 Leader shall update the COVID-19 GE Forms Tool inputting information on readiness, operation level, and Operating Plan. For sites already operating at or near Level II, they shall create a Safety Operating Plan consistent with these Guidelines or promptly perform a gap analysis for existing plans.
- **[RECOMMENDED]** It is recommended that the Site COVID-19 Leader should have a daily pulse of the Site COVID-19 Team to assist in implementation of this guidance.

IV. Planning and Preparing for Employee Return Prior to Site Re-Occupancy

- **Employee return to work assessment:** In order to reduce density and define timing for possible return to work, the Site COVID-19 Team should:
 - **[REQUIRED]** evaluate local laws and requirements to understand when employees are permitted to return to their work location;
 - **[REQUIRED]** review a start-up schedule with business leadership to define a timeline for resuming operations;
 - **[REQUIRED]** identify those employees who should return to their work location and determine return date. Leadership should consider whether those employees who initially can continue to work from home should do so and whether some employees can operate in a reduced on-site schedule. In doing this assessment, give consideration toward being conservative when bringing employees back to the site. Evaluate local infrastructure and workload demands that would justify an increase in on-site presence vs. working from home;
 - **[REQUIRED]** work with HR and Medical to ensure a process for accommodating those employees with high-risk for severe COVID-19 infection due to age or an underlying medical condition, up to and including recommending they work from home if possible;



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- **[REQUIRED]** perform a site assessment of where physical distancing may not be feasible due to site operations and space constraints, and to consider enhanced procedures and PPE for such areas;
 - **[RECOMMENDED]** consider whether to stagger start times to reduce volume upon entry; and
 - **[RECOMMENDED]** take into consideration local commuting infrastructure to ensure support functions such as bus and train service, and local parking capability is sufficient to safely support the returning population. Avoid peak travel periods when determining employees' daily schedules.
 - **Site preparation:** In order to help establish continuing operations and avoid disruption, the site COVID-19 Team should:
 - **[REQUIRED]** ensure adequate stock and inventory of cleaning materials, sanitizer, disinfecting products and PPE;
 - **[REQUIRED]** ensure a minimum of 2 weeks of safety stock of materials in inventory to maintain continuing operations and a reliable supply chain going forward and a clear understanding of vendor capability; and
 - **[REQUIRED]** complete appropriate cleaning and disinfection of the site with focus on high traffic areas, restrooms, gathering locations and high touch areas.
 - **Communications plan:** In order to ensure that the employees and contractors are aware of the requirements and expectations, the Site COVID-19 Team should work with the communications team to:
 - **[REQUIRED] organize a "First Day"** teleconference meeting or communications for all employees who will be returning to the site with welcome message, instructions, including "re-orientation information about site safety (fire evacuation, first aid, identification of 'red hat' resources) site work hours, and reminders about work rules;
 - **[RECOMMENDED]** communicate a process that will reduce lines and queuing to maintain physical distance when employees are returning to their work location. This may include signage, designated entrance areas, and various start times;
 - **[REQUIRED]** prior to returning to work location, assign to all employees the **Pandemic Awareness - COVID-19 Employee Training** (GE course number GE-EHS-534) *Note:* Credit may be given for comparable training delivered prior to 4.24.2020 which was delivered to comply with local regulatory requirements or business policy, provided records of attendance are available;



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- [RECOMMENDED] regularly communicate and provide instructions, with review by site leadership, to address:
 - Updates to employees on the work that has occurred during the temporary idle period, *i.e.*, cleaning, PPE and planned precautions;
 - Personal Protective Equipment (PPE) requirements, availability and use (refer to business guidance);
 - Entrance and exit processes: location, queuing, temperature screening, etc.;
 - Cleaning/disinfection availability and instruction;
 - Canteen, cafeteria, food preparation information;
 - Shuttle arrangements (where applicable);
 - Advice on the use and availability of public transportation;
 - Limiting access or availability to other employee services (childcare, fitness center, convenience store, coffee shop, etc.); and
 - How employees can help (cleaning of personal space and equipment, physical distancing, etc.).
- [REQUIRED] Encourage the use of the GE Ombuds process to elevate concerns about compliance with the Operating Plan or site safety.

V. Site Operation

Employees, contractors and visitors screening

- [REQUIRED] When feasible, employees should perform personal temperature checks from home before commuting to the site. The GE guideline is if employee temperature exceeds 37.5°C / 99.5°F (or if a higher or lower temperature threshold is required by local authority), the worker should communicate with their manager and not travel to work.
- [REQUIRED] GE requires active temperature screening at all sites as outlined in GE Corporate COVID-19 Active Screening (Temperature Checks) Guidance (limited access link: <https://ge.box.com/s/itbx3nqlgpne73lwxtkfpqxccxheu3p>). If the Site COVID-19 Leader believes it is not feasible or necessary to perform active temperature screening, **the site must receive written approval from the GE Senior Vice President, Chief Human Resources Officer.**
- [REQUIRED] For operations with less than 100 workers on site, when active temperature screening is not feasible, and the site density allows for necessary physical distancing, a passive screening procedure can be used. For passive screening, at the point of entry, either a verbal interview (conducted by security, medical or HR) or a written self-disclosure process should be used to allow entrance. If any known signs or symptoms are identified, employee should return home and contact their medical provider. Daily review should be conducted by site COVID-19 leader. **COVID-19 Passive Screening Poster** (link: <https://ge.box.com/s/1wewz2xavxxk3can4easxdb3a081wg7s>).



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General site recommendations

- **[REQUIRED]** Where physical distancing is unable to be consistently maintained (6 ft/2M or 3 ft/1M depending on local guidance) or where regulations require use, GE provided single-use face covering shall be used, according to GE Corporate COVID-19 Face Covering Guidance (link: <https://ge.box.com/s/hqyf11m9yuzy10xsl822urez9kbhya1>).
- **[RECOMMENDED]** GE provided hand sanitizers should be available to allow easy access and near areas of high employee use/traffic such as entrances/exits, bathrooms, canteens, etc.
- **[RECOMMENDED]** GE provided sanitizing disinfectant (wipes, towels, sprays, etc.) should be readily available for use by employees, with posted instructions on appropriate use and incapability with materials.
- **[REQUIRED]** Establish a reliable supply chain of disinfectant supplies and PPE, conducting inventory regularly to ensure the site has at least 2 weeks of safety stock and a clear understanding of vendor capability.
- **[REQUIRED]** General site cleaning must be completed, at a minimum, before the beginning and at end of each shift when not otherwise specified in this Guidance.
- **[REQUIRED]** Follow enhanced protocol/procedure for cleaning services, follow local regulations and requirements, and **GE Corporate COVID-19 Facility Cleaning and Decontamination Guidance** (link: <https://ge.box.com/s/3rbozuzrslthfrcun8ny8kceb9ccvi1>).
- **[RECOMMENDED]** Establish a frequent communication rhythm to employees to include:
 - Posters, flyers, electronic messaging outlining instructions and reminders on how to reduce potential transmission;
 - Encourage employees to utilize the GE Ombuds process to elevate concerns regarding compliance with the Operating Plan or site safety;
 - Regular e-mail updates to stay connected with employees; and
 - Communicate the availability of employees' access to EAP services.
- **[REQUIRED]** Prepare emergency procedures as necessary to respond to a potential new COVID-19 case at the site, including local recordkeeping and notification requirements, testing, additional training for personnel, and site operation adjustments - Refer to **GE Corporate COVID-19 Event/Concern/Emergency Response Guidance** (Link will be provided in future version)
- **[RECOMMENDED]** Evaluate HVAC systems and determine a method or procedure to reduce the possible risk of virus transmission. This may include, but is not limited to, replacing filtering systems, disinfection of equipment or eliminating air recirculation – 100% outside air makeup, increase air exchange or changes in system operation.



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Additional recommendations for specific areas

- **General workspaces** (huddle rooms, conference rooms, outdoor spaces, locker rooms):
 - **[REQUIRED]** Close or limit access to common areas (break rooms, canteen sitting areas, etc.) where feasible and communicate restrictions on communal gathering spaces and safety protocols while in common spaces;
 - **[RECOMMENDED]** Increase frequency of cleaning & disinfection (minimally two times per shift);
 - **[RECOMMENDED]** Limit use of in-person group meetings to essential meetings, maintain physical distancing and limit number of individuals depending on room size;
 - **[REQUIRED]** Avoid large gatherings or meetings where physical distancing cannot be maintained; and
 - **[RECOMMENDED]** Include GE provided hand sanitizers, wipes or disinfectants in rooms with instructions to clean upon departure (special attention to those areas of frequent personal contact).

- **Entrance, exit, reception, security desk, elevators:**
 - **[REQUIRED]** Distribute PPE (mask, gloves) at site entry point, when required and if individuals have their own PPE, verify it meets requirements;
 - **[REQUIRED]** If location will be following active temperature screening, setup station in accordance with the **GE Corporate COVID-19 Active Screening (Temperature Checks) Guidance** (limited access link: <https://ge.box.com/s/itbx3nqlgpne73lwxtkfpqxccxheu3p>). Allow space for staging and evaluation;
 - **[RECOMMENDED]** Establish means to maintain physical distance, for example:
 - Re-configuring entrance areas to allow for staggered reporting schedule;
 - Install visual markings, additional staging rooms or physical barriers; and
 - Use alternate entry and exit locations; and
 - **[RECOMMENDED]** Train personnel on screening procedure and methods to answer questions; and
 - **[RECOMMENDED]** Post signage to limit number of personnel in elevators to maintain physical distance. Number should be determined based upon size of elevator.



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- **Canteen, coffee stations, refrigerators, vending, fitness areas:**

- **[REQUIRED]** Where/when food is provided, grab-and-go meals only;
- **[REQUIRED]** For high touch surfaces like vending/coffee machines/refrigerators minimize risk of virus transfer, post signage and provide disinfectant wipes to use after touching;
- **[RECOMMENDED]** Rearrange or remove seating or equipment to maintain physical distance, post signage encouraging adherence to recommendations;
- **[RECOMMENDED]** Amend established meal breaks to minimize occupancy, clean/disinfect area between breaks;
- **[RECOMMENDED]** Specific cleaning/disinfection focus should be given to those areas frequently touched; and
- **[RECOMMENDED]** Continue to keep fitness centers closed until further notice.

- **Restrooms:**

- **[RECOMMENDED]** Increase frequency of cleaning and removal of waste materials, minimally three times per shift;
- **[RECOMMENDED]** Include the availability of disinfectant solutions, wipes and sanitizers near exits and high touch areas;
- **[RECOMMENDED]** Consider removing access to portions of restrooms to increase physical distance (ensure local regulations/requirements are maintained); and
- **[RECOMMENDED]** Post instructional signage on proper procedure for hand washing.

- **Personal work area, workstations, desks, personal spaces:**

- **[RECOMMENDED]** Encourage employees to use appropriate GE provided cleaning/disinfecting materials to clean workstations prior to beginning work and throughout the day;
- **[RECOMMENDED]** Where facility layout and furniture allow, rearrange/remove seating to maintain physical distance;
- **[RECOMMENDED]** Communicate proper procedure for disinfection of sensitive electronic equipment; and
- **[RECOMMENDED]** If eating at the workstation, encourage proper hand washing and workstation cleaning before and after consumption.



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- **Mail room, receiving areas:**
 - **[REQUIRED]** Follow applicable regulation/requirements on handling packages, mail and received goods;
 - [RECOMMENDED] Use GE provided gloves and single-use face covering while handling receiving materials;
 - [RECOMMENDED] If possible, hold received goods for 24 hours prior to handling to minimize potential exposure. If incoming material is time sensitive, utilize appropriate disinfecting process to lower the risk of exposure;
 - [RECOMMENDED] Develop receiving protocol to meet physical distancing requirements and minimize exposure between delivery personnel; and
 - [RECOMMENDED] Evaluate temperature screening procedure and, if required, establish active screening of delivery personnel, according to **GE Corporate COVID-19 Active Screening (Temperature Checks) Guidance** (limited access link: <https://ge.box.com/s/itbx3nqlgpne73lwxtkfpqxccxheu3p>).



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VI. Visitor and Contractor Protocol

- **[REQUIRED]** Contractors and visitors must abide by site screening protocol prior to entry. Any contractor or visitor who fails to meet or refuses to participate in passive or active entry screening shall be prohibited from entering the site.
- **[REQUIRED]** Contractors and visitors shall comply with travel requirements and applicable regulatory quarantine(s) before admittance.

Contractors

- **[REQUIRED]** In addition to the above screening and cleaning guidelines, contractors shall receive training and instruction on actions to reduce exposure to COVID-19 prior to entry including:
 - Physical distancing;
 - Personal hygiene in the workplace;
 - PPE requirements; and
 - Mechanism to report concerns.
- **[REQUIRED]** Frequent monitoring of contractor behavior and adherence to site practices shall be conducted and any contractor unable to meet expectations must be removed from the site.

Visitors

- **[REQUIRED]** Limit visitors to business-essential only.
- **[REQUIRED]** Visitors must receive instruction around the newly established rules/guidelines.
- **[REQUIRED]** Visitors should continue to be sponsored, registered, badged and escorted per the normal process.



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VII. References

- **GE Corporate COVID-19 Active Screening (Temperature Checks) Guidance** (limited access link: <https://ge.box.com/s/itbx3nqlgpne73lwxtkfpqxccxheu3p>) – to review guidance consult with medical, HR or security
- **GE Corporate COVID-19 Facility Cleaning and Decontamination Guidance** (link: <https://ge.box.com/s/3rbozuzrslthfrcun8ny8kceb9ccvi1>).
- Getting Your Workplace Ready for Covid-19: <https://www.who.int/docs/default-source/coronaviruse/getting-workplace-ready-for-covid-19.pdf>
- **GE Corporate COVID-19 Resuming Site Operations Guidance Checklist** (link: <https://ge.box.com/s/xwljboxfk2ydysri8z2o8e8nzz79r77b>).

Appendix D2

Project Coronavirus Response Plan

Hudson Falls & Fort Edward Water Treatment Plants

Project Coronavirus Response Plan

Project Name: Hudson Falls & Fort Edward Water Treatment Plants

Project Location: Hudson Falls & Fort Edward, NY

Project Owner: General Electric (GE)

Ramboll Project Manager: Mark Byrne & Stephen Phelps

Client Project Manager: Laurie Scheuing

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1. Introduction

Ramboll’s fundamentals require that “we put health and safety first through a zero-harm culture.” In that context, Ramboll is providing guidance to reduce the Coronavirus risk at this project site. This plan is consistent with the approach currently utilized by Ramboll for our offices and is aligned with recommendations published by various public health organizations. Mitigation measures focus on the following three elements:

- **Communication & Travel Planning** – Notify clients, employees, subcontractors and other visitors of Ramboll’s expectations related to reducing the risk of Coronavirus at our project sites. Consider travel risks and government restrictions on our ability to safely and legally travel to the project site.
- **Exposure Risk Management** – Identify measures to be implemented to reduce exposure risk.
- **Case Management** – Outline notifications and response if a confirmed or suspected case of Covid-19 occurs in our workplace.

The Project Owner and Project Manager are responsible to implement this plan in a manner that is commensurate with the size and complexity of their project. Please contact Kem Jones, Chester Seaman Jr., Ron Benderski, or a member of the HSS Americas team with any questions.

2. Travel Planning

Travel planning includes consideration of local legal requirements which may restrict travel, COVID activity, and the safety of travelers while in transit. The following are specific travel planning actions to minimize COVID travel risk associated with this project.

2.1 Pre-prerequisite Letter

Prior to visiting either facility the employer shall provide a letter for each employee, verifying the employee:

- has not recently traveled outside of New York State (NYS) to a “high COVID risk” state, as currently defined by the NYS Department of Health (coronavirus.health.ny.gov), or
- has recently traveled outside of NYS to a high COVID risk state (identify state(s)) and has successfully completed a fourteen (14) day self-quarantine upon returning to NYS, or
- has recently traveled outside of NYS to a state not currently identified as a high COVID risk state (identify state(s)) and is not required to self-quarantine, or
- has recently traveled outside of NYS to or through a high COVID risk state, but is exempt from NYS self-quarantine requirements as the employee is considered exempt and has complied with the latest NYS requirements for essential employees (coronavirus.health.ny.gov), and
- has not been in contact with a person with a confirmed or suspected case of COVID, and
- is not currently experiencing any of the following:
 - Flu-like symptoms including fever, coughing, sore throat, fatigue, or shortness of breath.

2.2 Critical Work Classification (Essential Services)

This applies when business or travel is restricted in each area by executive order from local authorities having jurisdiction. Determine if fieldwork is classified as critical by the client and/or by local authorities and if Ramboll staff need travel papers to reach project locations.

- Much (not all) of Ramboll’s fieldwork falls under “essential services” as defined by the federal government (www.cisa.gov). Confirm with the client. Consult Ramboll Legal (Eric Gernant) if necessary.
- If work is not essential, then Ramboll employees may not travel to (or from) locations **where travel restrictions are implemented, or non-essential business activities are suspended by local authorities**. No Coronavirus Response Plan is necessary for non-essential projects because fieldwork is suspended.

2.3 Route of Travel

Consider travel and business restrictions from point of origin through to the destination.

- Refer to the [interactive COVID-19 map](#) maintained by the National Association of Counties which show which counties have enacted emergency declarations and includes links to both state and county documents.
- Safety Ambassadors are tracking and posting executive orders on the Safety Ambassador Teams Site in the “[Government Orders](#)” folder. Consult this as necessary to be aware of the latest restrictions and requirements imposed by local authorities.
- COVID-19 risk associated with travel to project sites will be evaluated in accordance guidance provided by applicable public health agencies and government restrictions. Individual circumstances will be considered when assessing COVID-19 risk. The “[COVID-19 Global Cases](#)” interactive map and dashboard maintained by Johns Hopkins University is a useful tool to evaluate COVID-19 activity throughout the world. Project teams can use this map to help evaluate whether project personnel are traveling to, or from, potential “hot spots.”
- Also refer to requirements under [Minimize COVID Risk during Travel to and from Projects](#) within the [Exposure Risk Management](#) section for

2.4 Hotel Stays

For travel that requires **overnight hotel stays**, contact the hotel operator and confirm that they have COVID cleaning and disinfection practices in place. All major hotel chains have implemented elevated

cleaning and disinfection practices. Implement market (E&H, Energy, and Water) requirements (if any) for approval of overnight hotel stays.

2.5 International Travel

International travel requires approval and a travel risk assessment per Ramboll requirements posted on the Rambla [Travel Risks](#) page.

2.6 Travel Papers

"Travel papers" [☐ **will** | ☒ **will not**] be required for this project.

Ramboll employees should carry "travel papers" in communities where travel restrictions exist. Ideally, letters should be obtained from the client but can be issued by Ramboll, in consultation with Legal, where not otherwise prohibited by local authorities. **Examples of travel paper verbiage are posted with this template for reference.**

3. Communication

This section outlines key communications to ensure that the entire project team is on aware of key COVID-19 exposure mitigation measures.

3.1 Notify Project Personnel that Working When Ill is Prohibited

The Project Manager will **notify** the client, subcontractors, and other visitors that persons who are ill with flu-like symptoms or have a significant risk of coronavirus exposure must not travel to Ramboll work locations. A sample notification is provided for this purpose and should be sent to key contact(s) for each of Ramboll's business partners (clients, subcontractors, vendors, etc.)

3.2 Read Communications from Ramboll Americas Coronavirus Task Force

The Project Owner and Project Manager will **read Coronavirus updates** distributed by the Americas Coronavirus Task Force and adapt this plan (if necessary) to the latest guidance.

- Guidance related to Coronavirus may change suddenly including changes to countries or regions designated as "high risk" travel destinations by public health organizations or Ramboll.
- Ramboll communications are **aligned to public health organization recommendations** at a minimum, but more stringent recommendations may be implemented if deemed necessary to protect employees, business partners, and the public.

3.3 Client Communication

The Ramboll PO/PM should **communicate regularly with the client** to understand the priority of Ramboll's work at the site. The intent is to know if the client classifies Ramboll's work as "critical" which must continue through the Coronavirus pandemic or is classified as "non-critical" where site operations may be suspended. For projects deemed non-critical and suspended by the client, the PO/PM may have to identify temporary work assignments for project team members.

3.4 COVID Safety Leader

GE requires that a Site COVID-19 Leader be identified for each facility. The Site COVID-19 Leader is responsible for the implementation of this plan and communicating COVID-19 related concerns to the proper individuals. The Site COVID-19 Leader will be supported by the Site COVID-19 Team.

- GE Site COVID-19 Leader – Laurie Scheuing
- Ramboll Site COVID-19 Leader – John McDougall
- Site COVID-19 Team – Anthony Pliscofsky and Dave TenEyck

3.5 Training

Employees will review and acknowledge this plan.

3.6 Morale & Anxiety

The Project Manager will **monitor project team morale and anxiety** levels. Human Resources can provide guidance to help managers address fear and anxiety in their teams.

4. Exposure Risk Management

This section outlines COVID-19 exposure risk management practices that are aligned to public health recommendations and regulatory requirements and are commensurate with the size and complexity of the project.

4.1 Respiratory Etiquette & Hand Hygiene

Implement respiratory etiquette and hand hygiene practices which have been communicated by public health agencies as well as Ramboll Group and the Americas Coronavirus Task Force.

- Refer to Ramboll's *Prevent Infection* poster (**attached**).
- **Post respiratory etiquette and hand hygiene requirements** on the job site as a reminder to employees, subcontractors, clients, and visitors. Refer to Ramboll's *Prevent Infection* poster (**attached**).

4.2 Social Distancing

Implement social distancing during personal and work-related activities. Social distancing on this project is possible but takes planning and constant vigilance by the project team. Social distancing precautions include:

- Maintaining a minimum distance of 6 feet from other persons;
- Limiting meetings (including morning safety/tailgate meetings) to 10 or fewer individuals;
- Limiting the number of individuals in common areas (restrooms, break areas, etc.);
- Staggering work start/stop times and lunch breaks;
- Avoiding shaking hands;
- Eliminating non-essential site meetings;
- Eliminating site visits by non-essential persons;
- Reducing the number of persons attending meetings in-person;
- Increasing the use of virtual communications (e.g., WebEx, Skype, telephone, and other mobile communication technologies);
- Postponing tasks that require multiple people working in close proximity;
- Altering the use of tools or work methods that allow tasks to be performed by one person and/or maintain separation ($\geq 6'$) by those who are performing the task; and
- Reducing or eliminating the sharing of tools and equipment to the extent feasible.

4.3 Masks & Face Coverings

Masks/face coverings may also be required by local executive order. Hyperlinks listed above under "[Route of Travel](#)" (or similar resources) were consulted for mask/face covering requirements.

- Kevin Schew (856-577-7963) can be contacted to provide face coverings/masks (cloth, surgical-style, and N95) depending on internal stock and supply chain availability.
- Masks/face coverings (cloth, surgical-style, or N95 will be worn: **(check most appropriate)**
 - ☒ When tasks cannot be postponed, and social distancing cannot be maintained
 - ☐ At all times unless the use of a mask cause respiratory distress, blocks vision, or creates another hazard. This includes heavy equipment operators and other construction personnel working outdoors.
 - ☐ Other:
- Cloth coverings and surgical-style masks are not classified as respirators and are not subject to OSHA respirator requirements. Their purpose is to protect others surrounding the wearer from exhaled droplets.
- N95 masks are classified as respirators and will be provided to employees in accordance with OSHA's "Voluntary Use" provision where training, medical surveillance and fit testing are not required. However, users are encouraged to review [Appendix D](#) to OSHA's respirator standard.
 - N95 masks protect the wearer.
 - N95 masks only protect others if the mask is NOT equipped with an exhalation valve. For that reason, N95 masks without exhalation valves are preferred unless breathing resistance is too uncomfortable for the wearer.
 - Non-NIOSH masks approved for use under the Food and Drug Administration's [Filtering Facepiece Respirator Emergency Use Authorization \(EUA\)](#) may be used for protection against Coronavirus exposure until the EUA is withdrawn.
 - With respect to masks produced in China, use only [authorized masks](#) and avoid [non-authorized masks](#).
- Limited-use or disposal masks may be re-used during the pandemic due to limited supplies. Refer to the CDC's "[Recommended Guidance for Extended Use and Limited Reuse of N95 Filtering Facepiece Respirators in Healthcare Settings](#)." Although Ramboll projects generally occur outside healthcare settings and Ramboll employees do not function as healthcare providers, much of the guidance is applicable and will be applied to Ramboll's work. Periodic site walkthroughs will be performed by the COVID Safety Coordinator (or designee) for proper use mask/face coverings.
 - Avoid frequently frequent donning and doffing of masks/face coverings
 - Avoid touching the surface of the mask/face covering
 - Do not share masks/face coverings
 - Discard damaged or heavily contaminated (blood, nasal secretion, etc.) masks/face coverings
 - Wash hands before and after handling a mask/face covering
 - Launder cloth face coverings daily

- Store in a breathable bag or container to allow mask to dry between uses
- The following are specific tasks or areas where masks/face coverings are required because [social distancing](#) precautions cannot be implemented:
 - Americas HSS can be contacted to provide face coverings/masks (cloth, surgical-style, and N95) depending on internal stock and supply chain availability.

4.4 Physical Distancing

Some states are incorporating “physical distancing” requirements for indoor work on top of social distancing requirements as part of their re-opening plans. The following physical distancing measures will be implemented on this project.

applicable to the project or indicate that “No physical distancing measures are required at this time.”>

- For enclosed spaces (elevators, hoists, vehicles, etc.), **occupancy will be reduced to 50%** of the maximum capacity even if masks/face coverings are used.
- Narrow aisles and hallways will be converted to **one-way foot traffic** with directional arrows and signage posted to clearly mark traffic flow.
- **Signage and/or distance markers** advocating social distance spacing (6’) will be posted in areas where people may congregate or form lines. Examples include entry gates and toolbox safety meeting areas.

4.5 Minimize COVID Risk during Travel to and from Projects

Avoid public transportation (planes, buses, and trains) if possible. If not possible, implement feasible social distancing precautions and follow proper hand hygiene.

- Employees should bring their own cleaning supplies (alcohol wipes) as an additional precaution to wipe down frequently contacted surfaces in hotels, airplanes, buses, etc.
- Social distancing is difficult between persons who are carpooling in the same vehicle or using public transportation. Carpooling increases the risk that multiple persons may become ill or require quarantine. Be aware of the risk.
 - Public transportation or multiple people travelling in the same vehicle (ridesharing) will be avoided, if feasible.
 - If people must share a vehicle, then the following will be implemented.
 - Reduce vehicle occupancy by 50% and implement a “checkerboard” seating arrangement to achieve as much separation as possible. For example, a person will drive and a second will be in the back-seat passenger side.
 - Vehicle windows will be opened, and the ventilation system set to introduce outdoor air (not recirculate).
 - Occupants will wear a mask/face covering.
 - Vehicle surfaces must be disinfected daily to the extent feasible. Consider adding vinyl seat covers over upholstered seats for easier cleaning of shared vehicles.

4.6 Monitor Site Access

Monitor site access and verify on a daily basis that vendors, visitors, delivery drivers, subcontractors, and employees are not arriving at the site with an elevated risk of Coronavirus including those who have flu-like symptoms, have travelled to restricted countries or regions in the last 14 days, or had direct contact with a person diagnosed with COVID-19 or suspected of COVID-19.

4.6.1 Health Screening (Health Status Questions)

Project personnel (identified above) are required to acknowledge their health and travel status daily using a sign in/out sheet or other method (electronic, etc.). An example *Entry/Exit Log* is **attached**.

- If the project has a field office, communicate and post current access restrictions in addition to using an *Entry/Exit Log*. Place posters in locations where they are seen by visitor before they walk a significant distance through our project site. An example “*Access Restrictions*” poster is **attached**.
- Delivery drivers are not exempt. Drivers will be required to report to the office and complete the Entry/Exit log. In general, delivery drivers will not be permitted to enter the facilities.
 - If a driver falls into a restricted category, the driver will be required to remain in the cab and materials will be off-loaded by others. The driver’s company will be notified that the driver is not allowed to return until Coronavirus risk is known.
 - If the driver must provide support to unloading, project personnel will remain clear until the driver completes tasks and returns to his cab.
 - Potentially contaminated surfaces will be cleaned as outlined for “Keep field offices clean.”

4.6.2 Temperature Screening

Ramboll does not perform temperature screening unless required by our client or local regulations. Temperature screening...

☒ **IS** required for this project.

☐ **IS NOT** required for this project.

Ramboll and personnel who visit the WTPs must self-administer a temperature screening. A temperature of 99.5 °F or higher will result in the person being denied entry to the facilities. Temperature screening will be conducted as follow:

- **Hudson Falls** – Upon entering the WTP, personnel will be prompted to self-administer a temperature screening using the provided forehead thermometer via signage provided by GE. Upon completion of the temperature screening the employee will disinfect the thermometer and affirm an acceptable temperature on the sign in sheet.
- **Fort Edward** – Upon pulling in the gate, park in a safe location near the entrance, don a face mask/covering, and proceed to the temperature screening table located outside of the Guard House. Do NOT enter the Guard House. The employee will then self-administer a temperature screening and show it to the guard, through the Guard House window. The guard will confirm an acceptable temperature and will allow the employee on to site.

All temperature screening locations will be stocked with the following:

- Nitrile gloves
- Alcohol based hand sanitizer
- Disinfectant wipes

- Disposable face masks

4.7 Routine Cleaning & Disinfection

Keep field offices, vehicles, tools, and equipment clean. Although airborne transmission appears to be the primary route of exposure, contact with surfaces where residual Coronavirus may be present is also a significant route of exposure. This section focuses on routine cleaning and disinfection. Refer to "[Enhanced Disinfection](#)" guidelines under the "[Case Management](#)" section of this Project CRP if someone confirmed (or suspected) of having COVID-19 was at your project.

4.7.1 Daily Cleaning

Routine cleaning of field offices and other frequently touched surfaces on a project site should be performed accordance with CDC "[Disinfecting Your Facility](#)" which provides cleaning guidance for hard surfaces, soft surfaces, and electronics.

- All **frequently touched** surfaces such as workstations, doorknobs, phones, and tabletops will be cleaned at least 2 times per shift.
- **Shared** tools, equipment, vehicles, bathrooms, etc. will be cleaned daily or prior to being used by different persons, whichever occurs first.
- **Eliminate soft surfaces** (rugs, carpets, and drapes) in project offices when feasible. Consider slip-on vinyl or plastic seat covers for shared vehicles which are easier to clean than fabric upholstery.
- **Normal cleaning agents** routinely associated with these surfaces will be used. Routine housekeeping will be maintained so that project offices, conference rooms, break rooms, and other frequently accessed areas remain clean and free from excessive dirt, debris, and trash. Poor routine housekeeping means that disinfection is much more difficult and less effective.
- **Cleaning Supplies** - Cleaning supplies will be procured and stocked by Ramboll. A two-week supply stock will be maintained at each respective site as follows:
 - Hudson Falls: Existing supply cabinet located in the janitorial closet in WTP 1st floor office area.
 - Fort Edward: Existing supply cabinet located in the Control Room.
- **Responsibilities** for Cleaning - The following parties are responsible for cleaning frequently touched surfaces at least two times per shift.
 - Hudson Falls:
 - Common areas: Northeast Janitorial twice weekly (Tuesday and Thursday) and Operators on a daily basis at the start and end of each work shift at a minimum.
 - Water Treatment plant: Operator on duty at the start and end of each work shift.
 - Fort Edward: Operator on duty at the start and end of each work shift.
- The filters on all HVAC systems will be changed monthly

4.7.2 Daily Disinfection

Along with daily cleaning, daily disinfection is important to control COVID-19 risk. Surfaces that may have been touched by the affected individual will be **disinfected** with EPA-approved sanitizers and following manufacturer-recommended contact times and safety recommendations. Perform disinfection in accordance with CDC "[Disinfecting Your Facility](#)" which provides cleaning guidance for hard surfaces, soft surfaces, electronics.

- Approved disinfection products are posted on EPAs "[Selected EPA-Registered Disinfectants](#)" page. Scroll down to "List N" for SARS-CoV-2. These are update regularly. Have a container on-site along with gloves and safety glasses should post-case sanitization is necessary.
- If commercial cleaners are not available (out-of-stock), then dilute bleach solutions or **70% alcohol (isopropanol)** may be used. Mix **1/3 cup per gallon or 4 teaspoons per quart of water which is about 1-part bleach to 50-parts water**. Wear latex or nitrile surgical gloves and safety glasses even though bleach is a common household chemical.
 - Isopropanol is potentially flammable if excessive amounts are sprayed (or spilled) in a poorly ventilated area. ([Isopropanol SDS](#))
 - Bleach is a potent eye and skin irritant. Immediately rinse exposed skin which may be splashed with undiluted bleach. ([Bleach SDS](#))
 - Do not use surface disinfectants for air sanitization since they have only been proven effective on surfaces.
 - Leave on surfaces for 1 minute before wiping off.
- Daily Disinfection is part of the [Routine Cleaning & Disinfection](#) process and is documented on the same cleaning chart referenced in the previous section.

5. Business Continuity

Maintain continuity of operations. There is no "one size" approach that can accommodate full diversity of projects performed by Ramboll.

5.1 Backups for Key Project Roles

Facilitate cross-training so that more than one person can perform a specific job function.

Operators trained and approved to work on HF and FE systems:

- John McDougal (lead operator at HF, cross-trained to operate FE)
- David TenEyck (lead operator at FE, cross-trained to operate HF)
- Anthony Pliscofsky (secondary operator, cross-trained to operate both plants)
- Thomas Boea (requires refresher at both plants)
- Erick Trease (requires refresher at both plants)
- Dave Rigas (Remote operation & monitoring only, both plants)
- John Baker (emergency operator at both plants)

5.2 Delegation of Authority

Establish clear delegations of authority when primary decision-makers may be unable to do so.

- The decision-making authority will be delegated to the lowest level competent of making the decision starting with the site lead working up to the Project owner.
 - Ken Jones – Project Owner/Officer
 - Mark Byrne/Stephen Phelps – Project Manager
 - Dave TenEyck/John McDougal – Lead Operator/Site Lead – Designated Lead
 - Anthony Pliscofsky – Plant Operator – Primary Backup
 - John Baker – Plant Operator – Secondary Backup

5.3 Critical Tasks

Identify critical tasks so that limited resources can be allocated appropriately.

- **Hudson Falls:** The HF system cannot currently be solely operated remotely. The system can be fully monitored remotely via *Team Viewer*. The system generally needs to be started and operated for 10-11 hours per day to maintain hydraulic depression within the recovery system, tunnel drain collection system (TDCS), and prevent the North Basin from getting to a high level. Overall run time is dependent on demand and flow, which does vary seasonally and with respect to precipitation. The system can be operated by a single operator.

Depending on the North Basin level when the system is shut off, the HF system can be off line for approximately 30 hours following a full day of operation whereby the basin has been pumped down and stored water has been processed.

- **Fort Edward:** The FE system can be operated and monitored remotely via *Team Viewer*. The system does require a minimum of weekly operational site visits to add flocculant chemical, as well to monitor and replenish storage capacity of the NAPL systems waste containers (drums). The system is currently operating at approximately half capacity utilizing a single multi-media filter (MMF). Daily site visits are required while the system operates on a single MMF vessel. Additional site visits may also be required while a course of action to rectify the MMF failure situation is fully vetted and/or during the interim period prior to completion of the long-term replacement strategy.

The FE system generally runs constantly, however the size of the equalization basin does inherently allow for some operational flexibility (assuming normal operational capacity and two MMFs operating in parallel sequence). Overall run time is dependent on demand and flow, which does vary seasonally and with respect to precipitation. Adjustments made to limit the recovery system (i.e.: reducing or temporarily eliminated drawdown of certain recovery wells) can also be made that will affect overall flow and demand thereby reducing frequency of maintenance activities if needed. The system can be operated by a single operator.

5.4 Critical Vendors

Identify critical vendors and assess impact if vendors are unable to deliver products or services as scheduled. Accelerate deliveries if possible.

Hudson Falls Water Treatment Plant					
Description		Current vendor	Existing Stock	Typical Lead time	Alternate Vendor
PPE	Gloves	Dival Safety	Approx. 90 days	3-5 D	Northern Safety; B-Lann Equip Co
	Tyvek Suits				
	Sorbent Pads				
Cleaning Supplies	Simple Green				
	Paper Towels				

Hudson Falls Water Treatment Plant					
Description		Current vendor	Existing Stock	Typical Lead time	Alternate Vendor
	Clorox Wipes				
	Lysol Spray				
Chemical Additives Required for Operation	Polymer Flocculent	Suez Water	90 days	1-2 Wk	Suez does not expect to stop manufacturing due to critical infrastructure needs
	Coagulant	Suez Water	12 months	1-2 Wk	
	Hydrogen Peroxide	Surpass Chemical	90 days	1-2 Wk	Surpass does not expect to stop manufacturing
	Tower Cleaner (sodium hypochlorite)	Redux/Azure	90 days	1-2 Wk	Generic brands are readily available
Compliance Sampling and Laboratory Analysis	Sample Collection	Adirondack labs	N/A	N/A	Adk Labs to stock add'l bottle ware at site in event operators or other personnel need to collect samples.
	Sample Analysis				Eurofins Test America

Fort Edward Water Treatment Plant					
Description		Current vendor	Existing Stock	Typical Lead time	Alternate Vendor
PPE	Gloves	Dival Safety	Approx. 90 days	3-5 D	Northern Safety; B-Lann Equip Co
	Tyvek Suits				
	Sorbent Pads				
Cleaning Supplies	Simple Green				
	Paper Towels				
	Clorox Wipes				
	Lysol Spray				
Chemical Additives Required for Operation	J-Floc SB-800-Coagulant	Redux/Azure	90 days	1-2 Wk	TBD
	J-Floc SB-631-Coagulant	Redux/Azure	90 days	1-2 Wk	
	J-Floc A202V-Polymer	Redux/Azure	90 days	1-2 Wk	
	Feremede	Redux/Azure	90 days	1-2 Wk	
	Tower Cleaner (sodium hypochlorite)	Redux/Azure	90 days	1-2 Wk	Generic brands are readily available
Compliance Sampling and Laboratory analysis	Sample Collection	Adirondack labs	N/A	N/A	Adk Labs to stock add'l bottle ware at site in event operators or other personnel need to collect samples.
	Sample Analysis				Eurofins Test America

Fort Edward Water Treatment Plant					
Description		Current vendor	Existing Stock	Typical Lead time	Alternate Vendor
Bag Filter Elements (Interim measure during MMF down time)	Various micron size rated bag filter elements	Filtration Unlimited	N/A	1-2 Wk	AFTEK
MMF System	Currently in process of procuring system with client and technical team	TBD	N/A	10-15 Wk	TBD

5.5 Critical Staffing

Identify a minimum staffing level necessary to safely sustain critical path work so that work can safely be shut down when staffing drops below that level and can resume when enough staffing is available, and the Coronavirus risk is acceptable.

- **Hudson Falls:** A single operator is needed to start up, operate and maintain the system six days per week. The operator can overlap and also perform operational duties at the Fort Edward site (one operator split between both sites on a given day).
- **Fort Edward:** A single operator is required to be at the site 5 days per week. The operator can overlap performing operational duties at the Hudson Falls site (one operator split between both sites on a given day). The system is currently operating at approximately half capacity utilizing a single multi-media filter (MMF). Daily site visits are required while the system operates on a single MMF vessel. Additional site visits may also be required while a course of action to rectify the MMF failure situation is fully vetted and/or during the interim period prior to completion of the long-term replacement strategy. Interim measures while MMF replacement is being evaluated and during lead time for system procurement are to include use of bag filters. Maintenance on the bag filter units is to be determined but daily check-in and bag filter replacement is anticipated. The Fort Edward facility runs 24/7 and monitored for problems by site security. Operations personal must be available for responding during off hours.

5.6 Recordkeeping

Ensure the project team is not storing important project documents on their personal computer hard drives.

- One note, PCM and CRM (for Managers) will be used to store important project documents. These systems are accessible by anyone when needed and are fully backed up each day.

6. Case Management

This section outlines Ramboll's response when persons who are confirmed (or suspected of) having COVID-19 were on-site.

6.1 Notification

- All project personnel are required to notify the Ramboll COVID Safety Coordinator if they been diagnosed with COVID-19 or have been in close contact with a person diagnosed with COVID-19 or suspected of having COVID-19.
- Ramboll site supervisor will notify project personnel, the Ramboll Project Manager, HSS Regional Lead, and the client or facility owner, subcontractors, and other business partners of possible on-site exposure to COVID-19. The names of individuals must be kept confidential to the extent feasible.

6.2 Ramboll Line Manager Response

If a Ramboll employee is diagnosed with COVID-19 or suspected of having COVID-19, then the Project Manager will follow actions for the "Line Manager" outlined in the ["Continuity Action Plan – Coronavirus"](#) released by Ramboll Group. A copy is **attached**.

6.3 Response to Symptomatic Persons

These actions apply to persons on site who exhibit flu-like symptoms or were on site during the 48 hours prior to developing symptoms or having a positive COVID-19 test. Persons who exhibit flu-like symptoms must be immediately isolated from the rest of the project team and removed from site, asked to self-quarantine, and follow-up with a healthcare provider. After removal from site, Ramboll will complete initiate [Contact Tracing](#) and conduct [Notifications](#). Areas, vehicles, and equipment which may have been contacted will be secured and [Enhanced Disinfection](#) conducted. They may not return to work until the following conditions are met:

- Quarantine for at least 72 hours after fever has subsided without the use of medicine to reduce fevers; AND
- other symptoms have improved; AND
- at least 7 days have passed since the first onset of symptoms unless directed otherwise by a healthcare provider; OR ALTERNATELY
- an ill employee may provide a negative COVID-19 test or medical diagnosis by a healthcare provider of illness other than COVID-19 and return to work if otherwise healthy enough to do so.

6.4 Response to Exposed Persons Who are Asymptomatic (no symptoms)

In addition to infected (or potentially infected) individuals who are exhibiting flu-like symptoms, exposed individuals who had prolonged contact to individuals suspected or confirmed to have COVID-19 will also be removed from the project site or otherwise be prohibited from entering the site. "Exposed persons" will generally be those identified as part of [Contact Tracing](#) or those who notify Ramboll of a potential non-work COVID-19 exposure. They may not return until after 14 days of home isolation or until a negative test (if available) is obtained or if diagnosed by a healthcare provider with illness other than COVID-19.

"Prolonged" exposure is defined as spending more than 15 minutes within 6ft during a 48-hour period prior to the onset of symptoms reported by a person confirmed, or suspected, of having COVID-19. This guidance is in the 10-30 minute range reported by the CDC in the footnotes on the ["Public Health Recommendations for Community-Related Exposure."](#)

6.5 Contact Tracing

Contact tracing is part of Ramboll's response to COVID-related events including [Response to Symptomatic Persons](#) and [Response to Exposed Persons Who Are Asymptomatic](#). Most states require that employers conduct contact tracing and identify those persons who are at elevated COVID-19 risk and require quarantine and medical follow-up from those that do not.

6.5.1 HSS Support & EHS Insights

Americas Regional HSS Leads will support contact tracing efforts and ensure information is properly documented in Ramboll's **EHS Insights** global event reporting system. Contact tracing will be documented in the system using the "Witness List" feature which provides confidentiality for those who are contacted as part of contact tracing efforts while at the same time documenting Ramboll's contact tracing efforts. HSS Regional Leads are:

- Jim Stinnett (OLC / Water Lead H&S) – (678) 237-7794 | James.Stinnett@ramboll.com

6.5.2 Contact Tracing Log

This project [☐ requires | ☒ does not require] the use of a contact tracing log.

The use of a Contact Tracing Log is mandatory when required by local authorities but is otherwise optional. The purpose is to pro-actively identify persons who may need to be interviewed as part of contact tracing and identify areas that need [Enhanced Disinfection](#) if they should develop flu-like symptoms or test positive for COVID-19.

- The log must be completed daily. **Refer to the attached log** which will be used.
- The Ramboll [COVID Safety Coordinator](#) is responsible for ensure the log is maintained by can enlist the support of Ramboll and subcontractor management as necessary to complete and/or verify the accuracy of information on the log.
- The log includes a tab for **sample questions** to consider when conducting contact tracing. These should be reviewed and used during contact tracing efforts regardless if the example log is used or is replaced by an equivalent approach.
- Complete the log electronically. Avoid printing paper copies which are handled by multiple people.

6.6 Quarantine when Other Persons at Home May Have COVID-19

When an exposed person is required to home isolate with another person who is confirmed or suspected of having COVID-19, the 14-day home isolation period begins as soon as the employee and others in the household follow [home isolation practices](#) where the symptomatic person is isolated from others in the household.

6.7 Enhanced Disinfection

Enhanced disinfection of surfaces will be performed when potentially contaminated by a person who is confirmed, or suspected, of having COVID-19 in accordance with CDC guidelines posted on "[Cleaning and Disinfecting Your Facility](#)" in the section titled, "Cleaning and Disinfecting Your Building or facility if Someone is Sick." (NOTE – It's the shaded section midway down the page.)

- Persons performing disinfection must wear appropriate PPE including nitrile/latex gloves and safety glasses as a minimum. Disinfection may be performed by a 3rd party company if beyond the capabilities of the project team.

- Follow [Routine Cleaning & Disinfection](#) guidelines outlined previously in this CRP plus additional guidelines in this section.
- Close-off areas exposed to the person who is sick.
- Open outside doors and windows.
- Wait 24 hours (or as long as possible) before disinfecting.
- Clean and disinfect all areas used by the sick person including electronics, tools, equipment, and vehicles.
- If vacuuming is necessary, use vacuums with HEPA filtration.
- Soft surfaces such as rugs, towels, or drapes should be discarded or laundered with cleaners appropriate for these materials at the warmest appropriate water temperature. Handle with care to avoid creating airborne dust.
- As an alternative to disinfection, a facility may be closed, and contaminated materials isolated, for 7 days as recommended by the CDC in "[Cleaning and Disinfecting Your Facility](#)." After 7 days and prior to re-opening, conduct "routine cleaning & disinfection" as outlined above.

6.8 Become Sick or Have Direct Contact with COVID-19 while Traveling

Response actions to take if you become sick or have direct contact with someone diagnosed with, or suspected of having, COVID-19.

- If anyone on the project team becomes sick with flu-like symptoms while traveling, public transportation will be avoided, and medical attention obtained at that location. Project team members will get food and medications on behalf of the person who is ill. Alternately, those who are ill may utilize a personal shopping service to buy and deliver food or groceries. Examples include: [Grub Hub](#), [Instacart](#), and [Doordash](#).
- If anyone on the project team has been in direct contact with someone diagnosed with COVID-19 or suspected of having COVID-19 (exhibiting flu-like symptoms) while travelling, public transportation will be avoided if possible. If not possible, but individual(s) are asymptomatic, then social distancing and hand hygiene practices will be implemented along with the use of face coverings/masks during travel to protect others. Individual(s) will notify their supervisor and self-quarantine for 14 days or until a negative Coronavirus test (if available) is obtained.
- Individuals suspected, or confirmed, of having COVID-19 should avoid public transportation unless otherwise advised by public health recommendations or an affected person's healthcare provider. Individuals must wear a face covering for the protection of others along with frequent hand washing.
- Follow protocols previously outlined for [Response to Symptomatic Persons](#).

Appendix D3

**COVID-19 Policy, Travel, and Health Verification
Hudson Falls & Fort Edward**



General Electric Company
Hudson Falls and Fort Edward, NY Sites
COVID-19 Policy, Travel, and Health Verification

In response to the COVID-19 pandemic, General Electric Company (GE) is restricting access to its Site to individuals that pose an elevated risk of spreading the virus. By completing this form, you acknowledge and understand this policy and GE's Site requirements. You also affirm that your health and travel history are not in one of the following restricted access groups. If you fall into one of the following groups, leave the Site immediately and follow recommendations of public health agencies and your healthcare provider.

- Do NOT enter the Site if you are experiencing flu-like symptoms: fever (greater than 99.5°F), cough, sore throat, fatigue, shortness of breath.
- Do NOT enter the Site if you have traveled to a high COVID-risk state or country as determined by the New York State Travel Advisory and Center for Disease Control and you 1) have not successfully completed the required quarantine, 2) have not provided current evidence of a negative COVID-19 test result, or 3) have not provided acceptable confirmation of exempt/essential employee status.
- Do NOT enter the Site if you have recently been in direct contact with an individual with a confirmed or suspected case of COVID-19.

Individual Verification:

**Initial All
that Apply**

Travel History

____ Employee has not recently traveled outside of New York State (NYS) to a "high COVID risk" state, as currently defined by the NYS Department of Health (coronavirus.health.ny.gov).

____ Employee has recently traveled outside of NYS to a high COVID risk state (identify state(s)) and has successfully completed a fourteen (14) day self-quarantine upon returning to NYS.

____ Employee has recently traveled outside of NYS to a high COVID risk state (identify state(s)) and has successfully provided current evidence of a negative COVID-19 test result.

____ Employee has recently traveled outside of NYS to a high COVID risk state (identify state(s)) and is exempt from travel restrictions as determined by their employer and NYSDOH and has complied with the latest NYS requirements for essential employees.

____ Employee has recently traveled outside of NYS to a state not currently identified as a high COVID risk state (identify state(s)) and is not subject to travel restrictions.

Health Status

____ Employee has not been in contact with a person with a confirmed or suspected case of COVID-19.

____ Employee is not currently experiencing any of the following: Flu-like symptoms including fever, coughing, sore throat, fatigue, or shortness of breath.

Employer: _____ Date: _____

Employee Name (print): _____

Employee Contact _____

Tracing Information: _____
Phone Number Address

Employee Signature: _____

Appendix E

Arcadis COVID-19 Guidance

Arcadis Field and Embedded Staff COVID-19 Guidance

16 February 2022

Version Control

Revision No.	Date Issued	Description
1	3/17/20	Original document.
2	3/20/20	Added guidance for multiple occupants traveling in the same vehicle.
3	3/24/20	Updated introduction to include links to Orange Line information; added requirement of Arcadis COVID-19 Health Screening Self-Assessment Questionnaires; moved client questionnaire section forward in the document; and made minor updates to the social distancing, vehicle/transportation, lodging and equipment sections.
4	3/30/20	Updated social distancing section to include CDC “close contact” definition; added section for work in team settings; added AirBnB to lodging discussion.
5	4/2/20	Document template updated and sections rearranged; updated Hand Hygiene section; updated Cleaning of Frequently Touched Surfaces section; updated close contact definition; added section on PPE; added section for Traveling Between States, Provinces and Territories; added section for Construction/Construction Management; added section on Post-Shift Work
6	4/3/20	Added Appendix D – Interim Guidance for the Use of Face Coverings; Updated links, Section 2.3 added bullet to avoid sharing tools and equipment unless cleaned; Section 4.7.2 updated with a bullet for maintaining social distancing at choke points; Section 4.8 added section for Face Coverings and guidance in Appendix D.
7	4/10/20	Added Section 2.8 Other Considerations for journey and emergency action planning; Section 4.6 updated with current information regarding COVID-19 in sewage; Section 4.8 and Appendix D updated to include CDC’s recommends of wearing cloth face coverings in public settings where other social distancing measures are difficult to maintain.
8	4/13/20	Revised Section 2.6 by adding information about gloves being required in some jurisdictions; revised Section 4.8 and Appendix D with latest CDC and Health Canada guidance information.
9	4/20/20	Revised Section 2.1 to discuss both digital and hardcopy COVID-19 Health Screening Self-Assessment Questionnaires; revised Section 2.3.1 to include instructions on alcohol-based hand sanitizer use.
10	4/26/20	Revised Section 2.1 by adding the definition of fever and process for elevated temperature; revised section 2.4 by adding a reminder to understand the appropriate uses and limitations of the disinfectant; revised Section 2.6 by adding link to PPE request form and email address; Section 3.1 added link to “Locations with Travel Restrictions”

Revision No.	Date Issued	Description
		dashboard; revised Section 3.2 to consider face coverings when multiple occupants are riding in a single vehicle; revised Section 4.2 adding critical infrastructure/essential worker language; updated hyperlinks
11	5/1/20	Section 1 revised with latest symptoms of COVID-19; Section 2.5 reinforced Stop Work Authority and reporting where social distancing is not being practiced; inserted Interim Guidelines for Cardiopulmonary Resuscitation as Section 2.8 and moved “Other Considerations” to Section 2.9; added a bullet referencing Continuity Plan in Section 2.9
12	5/4/20	Revised Appendix C per jurisdictional updates.
13	6/16/20	Updated symptom list per CDC guidance; revised CDC close contact definition notes (Section 2.4); added plan for breaks bullets in Section 4.2; added Section 4.9 KN95; updated CDC’s face covering laundering recommendations in Appendix D.
14	8/14/20	Updated footnotes for “close contact” definition (Section 2.5); updated Sections 3.1 and 3.3 to reflect current travel recommendations; updated Section 4.8 and Appendix D to indicate exhalation valves or vents should NOT be worn; added links to the Face Covering Guide in Section 4.8.
15	10/23/20	Added Appendix E with additional signage that may be used; added reference to signage (Section 2.3.1); updated social distancing and close contact definitions (Section 2.5); added Yellow Guidance sub bullet (Section 2.7); updated order hyperlink (Section 3.1); added airline and other transportation (Section 3.2); added reporting requirement documentation (Section 4.3); updated Section 4.7.1 to clarify occupancy and documentation of visitors for contact tracing; added guidance to hold meetings outside (Section 4.7.2); minor edits to Section 4.8 and Appendix D.
16	11/13/20	Section 3.2 updated protocol to only one person in a vehicle; Section 3.3 updated protocol regarding room sharing and dining; Sections 4.2 through 4.7 added a face covering bullet; Section 4.8 and Appendix D added information from recent study that face coverings provide protection to the wearer.
17	12/4/20	Revised the reporting process in Section 2.7 to contact WorkCare instead of Brian Kundert. Added Section 2.7.1 describing WorkCare’s risk stratification and return to work process.
18	1/29/21	Updated all hyperlinks to new Intranet; added COVID-19 vaccine to Section 2.3; moved the Face Covering and KN95 section from 4.8 and 4.9, respectively, to Section 2.6; renumbered all sections; Section 2.9 clarified the continuity plan is required by the jurisdiction or client and is

Revision No.	Date Issued	Description
		recommended for all projects; revised poster in Appendix B; Appendix D updated with current CDC language and added CDC graphics.
19	2/25/21	Updated links in Section 2.1.2; updated Section 2.6 and Appendix D with revised face covering and KN95 guidance.
20	5/18/21	Added U.S. quarantine exemptions in Section 2.8; updated U.S. ridesharing requirements in Section 3.2; updated U.S. dining protocol in Section 3.3; updated face covering bullets in Section 4.0 work-specific situations; template update.
21	7/23/2021	Updated Section 2.1 and 2.8.1 to reflect the revised WorkCare Daily Screen and risk stratification process; removed outdated Section 2.6.1; updated U.S. vehicle sharing protocol in Section 3.2; Section 4.7 updated with guidance for vaccinated and unvaccinated employees.
22	8/13/21	Removed “Jurisdictional Social Distancing” template from Appendix C and renumber appendices; changed temperature at which individuals will not visit an office or project site to 100.0°F (37.8°C) in Section 2.1; updated face covering protocol for indoor spaces in Section 2.6 and Appendix C; updated U.S. vehicle sharing protocol in Section 3.2.
23	9/10/21	Added Section 2.3 Vaccine Policy and renumbered sections; Section 2.8 removed reference to retired “Yellow Caution Status” flowchart; Section 3.2 updated Canada ridesharing; Section 3.3 updated Canada and U.S. dining protocol; Section 4.7.1 removed reference to unvaccinated employees.
24	2/14/22	Updated vaccination terminology and definition in Section 2.9; revised U.S. ridesharing and lodging requirements for unvaccinated staff in Sections 3.2 and 3.3, respectively; added requirement that staff entering residential settings must be vaccinated in Section 4.5; updated Appendix C with latest CDC mask guidance; updated hyperlinks throughout the document.
25	2/16/22	Revised Section 4.5 recommending staff entering residential settings be vaccinated and added recommendation for an N95.

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- Appendix E: Arcadis Contact Tracing Log

Acronyms and Abbreviations

AED	Automated external defibrillators
CDC	U.S. Centers for Disease Control and Prevention
CPR	Cardiopulmonary resuscitation
HC	Health Canada
PPE	Personal protective equipment
SDS	Safety Data Sheet

1 Introduction

Currently Arcadis is following CDC and Health Canada guidelines, as well as applicable government directives. The health and safety of our people is of utmost importance to us. Arcadians are empowered to use TRACK to evaluate individual situations and Stop Work Authority anytime safety is at risk. Employees will not come to work if exhibiting any respiratory illness symptoms, including but not limited to COVID-19.

It is recommended that all field and embedded staff review and have access to the current version of this document. The most current version can be viewed and downloaded from the [ANA H&S COVID-19 Resources](#) intranet page. COVID-19 symptoms may appear 2-14 days after exposure to the virus. People with these symptoms or combinations of symptoms may have COVID-19:

- Fever or chills
- Cough
- Shortness of breath or difficulty breathing
- Fatigue
- Muscle or body aches
- Headache
- New loss of taste or smell
- Sore throat
- Congestion or runny nose
- Nausea or vomiting
- Diarrhea

This list is not all inclusive. Please consult your medical professional for any other symptoms that are severe or concerning to you.

2 Guidance for Project Activities

Employees will complete the following for all project activities.

2.1 Arcadis COVID-19 Health Screening Self-Assessment Questionnaires

All employees going to an Arcadis office, a project site, or a client site will be required to complete a Daily Screening through WorkCare's WorkMatters app, regardless of vaccination status. Individuals should continuously monitor for signs and symptoms of COVID-19 and, if not feeling well, complete the WorkCare Daily Screen Process again.

When individuals take their own temperature to evaluate whether they have a fever, the temperature measurements will be completed without the use of fever-reducing medicines that contains ibuprofen or acetaminophen and not within 30 minutes of exercise. The CDC defines a fever as a temperature of 100.4°F (38°C) or greater. If the individual's temperature is between 99°F (37.2°C) and 99.9°F (37.7°C) it is recommended the individual pay close attention for signs and symptoms of COVID-19 and complete the WorkCare COVID-19 Daily Screen Process more frequently. Individuals with temperatures of 100.0°F (37.8°C) or greater should not

visit an office or project site. You may also contact WorkCare's COVID-19 services if you are experiencing symptoms consistent with COVID-19 and are concerned it may be COVID-19.

2.1.1 COVID-19 Daily Screen Process

All Arcadis staff will register in WorkCare's WorkMatters app. Arcadis staff can use the WorkCare WorkMatters app once a day (or multiple times a day, if appropriate) to complete their COVID-19 health screening self-assessment using the Daily Screen Survey.

Upon completion of the COVID-19 Daily Screen Process in the WorkMatters app, the user will receive a green or red completion message:

- Green – Proceed to the office or project site.
- Red – Do not proceed to the office or project site. Complete Survey 2 and follow end guidance. You and your supervisor will receive an email that you have not been cleared to work. You will need to conduct contact tracing with Corporate Health & Safety, if necessary. You must log into the URL or App to complete the Daily Symptom Tracker, each day you are Not Cleared To Return To Work.

Once you have been cleared to Return to Work by a WorkCare physician, you and your supervisor will receive an email that states you have been Cleared to Return to Work.

2.1.2 COVID-19 Health Screening Self-Assessment Questionnaire (Hardcopy)

The COVID-19 Health Screening Self-Assessment Questionnaire must be:

- Distributed to scheduled visitors, clients, and contractors before visiting Arcadis offices or sites.
- Post the self-assessment questionnaire and post Appendix A at entrances and/or field trailers.

Minimize visitors on site. All visitors (staff, subcontractors, clients, anticipated guests, unanticipated guests) to the site must be asked to review the applicable questionnaire from the following list.

[Canada COVID-19 Health Screening Self-Assessment Questionnaire for Staff \(English\)](#)

[U.S. COVID-19 Health Screening Self-Assessment Questionnaire for Staff, Contractors and Visitors \(English\)](#)

[U.S. COVID-19 Health Screening Self-Assessment Questionnaire for Staff, Contractors and Visitors \(Spanish\)](#)

If a client has a similar questionnaire that Arcadis staff are required to complete, the client questionnaire may be substituted for Arcadis questionnaire.

2.2 Client COVID-19 Health Screening Forms

Some clients are requiring our employees to complete their COVID-19 health screening forms.

- You are not required to share personal medical information with clients; therefore, Arcadis is not requiring you to complete any form requesting medical information. Your disclosure of personal medical information to clients is completely voluntary.
- Please understand, if you do not complete the form, you will not be allowed on the client's sites and facilities, per the client's directive.
- Also, if you complete the form, you have an ongoing duty to provide prompt notice of any changes to any of your responses. (Some clients may require periodically signing updated forms).
- If you are restricted from a client site as a result of your answers to the COVID-19 health screening form, or because you have chosen not to complete the form, Arcadis will attempt to find you alternative work that does not involve access to the client's site or facility; although, Arcadis cannot guarantee that other work will be available.

If your Project Manager is not already aware of the client COVID-19 health screening form, please alert them when you receive one from a client.

2.3 U.S. Vaccine Policy

Arcadis strongly encourages all employees to receive a COVID-19 vaccination. COVID-19 vaccines are effective at helping protect against severe disease and death from variants of the virus that causes COVID-19. In accordance with the [Arcadis U.S. Vaccine Policy](#), all U.S. employees are encouraged to upload the vaccination details into WorkCare's WorkMatters portal.

Clients may require employees working at their sites be fully vaccinated or if unvaccinated, to complete surveillance testing. If the client requires Arcadis verification, Project Managers or Account Managers will reach out to HR Operations (HROperations.ANA@arcadis.com) with a list of names to be checked. If testing is required, contact Corporate Health & Safety.

2.4 Practice Good Hygiene

The best way to prevent illness is to avoid exposure to the virus. CDC and Health Canada recommend common flu and cold season preventative measures, including:

- Wash hands often with soap and water for at least 20 seconds. If soap and water are not readily available, use a hand sanitizer with at least 60% alcohol.
 - If hand sanitizer or soap & water are not available on site, bring your own source of water and hand soap to accommodate hand washing.
- Avoid touching your eyes, nose, and mouth.
- Cover your nose and mouth with a tissue when sneezing or coughing.
- Monitor your health daily by completing a self-assessment.
- Stay 6 feet (2 metres) away from others.
- Avoid crowds and poorly ventilated spaces.
- Do not share Personal Protective Equipment (PPE).
- Maintain and thoroughly clean PPE in accordance with manufacturer's instructions.
- Avoid sharing phones, offices, tools, and equipment. If sharing is necessary, clean and disinfect prior to use.
- Clean high touch surfaces daily.
- Get a vaccine (flu to reduce the risk of flu illness and COVID-19).

2.4.1 Hand Hygiene

Hand hygiene for infection prevention is an important part of the U.S. and Canada response to COVID-19. Washing hands with soap and water has been and will continue to be our primary method for good hand hygiene. Both CDC and HC recommend that you wash hands often with soap and water for at least 20 seconds especially after you have been in a public place, or after blowing your nose, coughing, or sneezing. Hand washing mechanically removes pathogens.

Alcohol based hand sanitizer is a flammable liquid and vapor. However, there is no evidence to suggest hand sanitizer poses a fire hazard when used according to package directions and warnings. To use hand sanitizer:

- Follow manufacturer instructions for use.
- Rub your hands together, covering all surfaces of both hands, including between your fingers and up around your fingertips and nails.
- Rub hands together for 30 seconds to allow your hands to completely absorb the product.
- Allow the hand sanitizer to completely dry.
- Do not touch food or anything until your hands are dry.
- Refer to the Safety Data Sheet (SDS) for hazards information.

If hand sanitizer is not available, Arcadis requires that project teams assess and address the need for hand washing (e.g., access to water and soap) while working on site. This can be achieved by having access to a functioning restroom, a portable hand washing station or as simple as having hand soap, bottled water and paper towels to clean hands as necessary. A handwashing sign that may be posted near handwashing stations is provided in Appendix D.

2.5 Clean Frequently Touched Surfaces

Arcadis recommends that project teams identify who is responsible for cleaning frequently touched surfaces in our workplaces (field trailers, client facilities, etc.). CDC and HC recommend that these surfaces are disinfected daily. This includes tables, doorknobs, light switches, countertops, handles, desks, phones, keyboards, toilets, faucets, and sinks. Before using a disinfectant product, understand the appropriate uses and limitations of the disinfectant, and refer to equipment/tool manufacturer care instructions to determine whether the disinfectant is compatible (e.g., using isopropyl alcohol to disinfect an [iPhone](#)).

CDC cleaning and disinfecting facilities: <https://www.cdc.gov/coronavirus/2019-ncov/community/disinfecting-building-facility.html>

Health Canada cleaning and disinfecting public spaces: <https://www.canada.ca/en/public-health/services/publications/diseases-conditions/cleaning-disinfecting-public-spaces.html>

Health Canada hard surface disinfectants: <https://www.canada.ca/en/health-canada/services/drugs-health-products/disinfectants/covid-19.html>

If surfaces are dirty, clean them using detergent or soap and water prior to disinfection. To disinfect, most common [EPA-registered](#) or [HC-approved](#) household disinfectants will work. Use disinfectants appropriate for the surface.

If the sourcing of disinfectant products is limited, CDC and HC have outlined an option to use a diluted household bleach solution (at least 1,000 ppm sodium hypochlorite) as a disinfectant.

Standard household bleach is typically 5.25% sodium hypochlorite (52,500 ppm), whereas ultra-strength household bleach is typically 6% sodium hypochlorite (60,000 ppm). In accordance with Hazard Communication requirements, always refer to and have a copy of the Safety Data Sheet (SDS) available and on site with you. To **make a daily bleach solution** for use as a disinfectant:

- Mix 5 tablespoons (1/3rd cup) of standard bleach per gallon of water or for a smaller spray bottle size dilution, mix 4 teaspoons bleach per quart of water.

OR

- 1 teaspoon (5 mL) per cup (250 mL) OR 4 teaspoons (20 mL) per litre (1000mL).

Note: Solution must be mixed daily, because the solution will lose effectiveness as a disinfectant after 24-hours.

Follow manufacturer's instructions (e.g., [Clorox](#)) for application and proper ventilation, ensuring a contact time of at least 1 minute (for specific products and contact time information, refer to the CDC and HC links above). Check to ensure the product is not past its expiration date. Never mix household bleach with ammonia or any other cleanser. According to the HC, CDC and U.S. EPA, unexpired household bleach will be effective against coronaviruses when properly diluted.

A second alternative is to use an alcohol solution. The solution must have at least 70% isopropanol.

If supplies cannot be sourced locally, email PPerequests@arcadis.com.

2.6 Practice Social (Physical) Distancing

The CDC definition of **social distancing, also called “physical distancing,”** means keeping a safe space (approximately 6 feet, 2 metres or about two arm lengths) between yourself and other people who are not from your household in both indoor and outdoor spaces. Situations where social/physical distancing should be practiced include but are not limited to tailgate and safety briefing meetings, breaks in field trailers, entering stores and workstations. Plan work activities to maximize social (physical) distancing and minimize close contact with others. Social (physical) distancing is mandatory for unvaccinated individuals and highly recommended for vaccinated individuals. If there are instances where social distancing is not being practiced where it should, Stop Work and remove yourself from the situation. Contact the Project Manager or your Supervisor and document in the H&S App as an “Close Call” or “Unsafe Behavior.”

Additional information when working in teams is required is discussed in the “work specific situations” section below.

Note: The CDC defines **close contact** as: a person who was within 6 feet of an infected person for a cumulative total of 15 minutes or more over a 24-hour period starting from 2 days before illness onset (or, for asymptomatic patients, 2 days prior to test specimen collection) until the time the patient is isolated.¹

¹ Individual exposures added together over a 24-hour period (e.g., three 5-minute exposures for a total of 15 minutes). Data are limited, making it difficult to precisely define “close contact;” however, 15 cumulative minutes of exposure at a distance of 6 feet or less can be used as an operational definition for contact investigation. Factors to consider when defining close contact include proximity (closer distance likely increases exposure risk), the duration of exposure (longer exposure time likely increases exposure risk), whether the infected individual has symptoms (the period around onset of symptoms is associated with the highest levels of viral shedding), if the infected person was likely to generate respiratory aerosols (e.g., was coughing, singing, shouting), and other environmental factors (crowding, adequacy of ventilation, whether exposure was indoors or outdoors). Because the general public has not received training on proper selection and use of respiratory PPE, such as an N95, the determination of close contact should generally be made irrespective of whether the contact was wearing respiratory PPE. At this time, differential determination of close contact for those using fabric face coverings is not recommended.

2.7 Face Coverings

[Health Canada](#) and [CDC](#) recommends wearing face coverings in public settings, like on public and mass transportation, at events and anywhere you will be around other people. In the U.S., face coverings are required on planes, buses, trains, and other forms of public transportation traveling into, within, or out of the United States and in U.S. transportation hubs such as airports and stations. When visiting Arcadis offices and project sites, face coverings will be worn when moving about the space, in common areas and during meetings. If social/physical distancing can be maintained, face coverings may be removed when sitting at individual workstations or actively eating in cafés. Some jurisdictions require face coverings to be worn at all times indoors regardless of vaccination status.

In Canada, non-surgical face coverings are mandatory when flying and travelling through airports. The wearing of face coverings is either required or recommended in all other public settings across Canada (indoors and outdoors).

Studies show that face coverings reduce the spray of droplets when worn over the nose and mouth. Studies also show face coverings can reduce wearers' exposure to infectious droplets through filtration. How well the face covering protects the wearer depends on the fabrics used and how it is made (e.g., the type of fabric, the number of layers of fabric, how well the mask fits). Health Canada and CDC still recommends that you stay at least 6 feet away from other people (social distancing), frequent hand cleaning, avoid contact with people who are sick and other everyday preventive actions. Face coverings are not a substitute for social/physical distancing. Face coverings with exhalation valves or vents should NOT be worn to help prevent the person wearing the mask from spreading COVID-19 to others. Face shields and goggles are not a substitute for face coverings.

Face coverings offering various features appropriate for different work environments, including moisture wicking and FR, are now in stock at [Airgas](#) (U.S.). The [Face Covering Guide](#) outlines several options to facilitate selection of the face covering that is appropriate for your work.

Some jurisdictional entities and clients require the use of face coverings based on Health Canada and CDC guidance. CDC guidance on selection of face coverings is included in Appendix C.

2.8 Personal Protective Equipment

Be prudent with PPE use (PPE with a purpose). Continue to work with our vendors on your PPE ordering needs and consider alternatives (e.g., N95 dust masks may not be available, but half face elastomeric respirators with P100 cartridges are available in limited supplies). If PPE and supplies cannot be sourced locally, email PPErequests@arcadis.com.

Select the appropriate glove for the task and include in the HASP, JSA and/or COVID-19 Preparedness, Response and Continuity Plan. Before using nitrile gloves as personal protective equipment (PPE), make sure to:

- Wash and dry your hands before and immediately after using gloves.
- Understand how to put nitrile gloves on and take them off ([Ansell Donning & Doffing Technical Release](#)).
- Nitrile gloves offer protection against common consumer cleaning supplies, chlorinated solvents, and offer good dexterity and sensitivity.
- Change gloves between tasks or wash gloved hands with soap and water between tasks.
- Do not touch your face.

- Inspect gloves frequently for rips, tears, etc. and replace as necessary.
- Understand limitations of nitrile gloves.

2.9 Reporting a COVID-19 Exposure

Contact WorkCare (888-449-7787, press 9) to initiate the [COVID-19 Screening and Return to Work Process](#) if you have tested positive for COVID-19, have been asked to be tested for COVID-19 by a medical professional or have received a red “Stop” screen during the COVID-19 self-assessment instructing you to call WorkCare.

If you learn you have been in **close contact** with a worker, client or member of the public who is COVID-19 positive:

- Stop work.
- Notify your Supervisor and Project Manager.
- Self-quarantine in accordance with country-specific requirements ([Canada](#) and [U.S.](#)) and contact your personal physician for additional direction.
 - If working in the U.S., the following people are exempt from self-quarantine due to close contact and are asymptomatic
 - Fully vaccinated and up-to-date on COVID-19 vaccines²
 - Had COVID-19 in the past 3 months

If you've been tested or asked to be tested for COVID-19 by a medical professional, please contact WorkCare (888-449-7787, press 9) to initiate the return to work process.

2.9.1 WorkCare COVID-19 Screening & Return to Work Process

Contact WorkCare (888-449-7787, press 9) for access to doctors and nurses who will discuss your symptoms, complete a risk stratification process, and advise on return-to-work process. If you complete the Daily Screen Process through the WorkMatters App and receive a red screen, you will be prompted to complete the risk stratification process electronically and depending on the outcome, you may receive a call from a WorkCare nurse or physician. If prompted to complete the risk stratification process, you can expect to:

- Be placed into a low, moderate or high-risk category
 - Low Risk – you may be cleared to return to work at an office or project site
 - Moderate and High Risk – you will not be cleared to return to work at an office or project site and instructed to remain at home
 - An email will be sent to you, Corporate H&S, HR, and your Supervisor indicating whether you can proceed to an office or project site (cleared) or whether you must work remotely (not cleared). If you are not cleared, this will initiate Arcadis' internal contact tracing process.
- Moderate and High-Risk individuals will be required to complete the “Daily Symptom Tracker” during their self-isolation period.
- At the end of your self-isolation period, you will complete a Return-to-Work Survey in the WorkMatters Portal. The survey and daily symptom tracker will be reviewed by a WorkCare physician.

² People are considered fully vaccinated and up-to-date when they have received all recommended COVID-19 vaccines, including any booster dose(s) when eligible. “Fully vaccinated” two weeks after second dose in a two-dose series, such as Pfizer/Moderna vaccines, or two weeks after a single-dose vaccine, such as Johnson & Johnson's Janssen vaccine.

- You will receive a written notice from WorkCare indicating whether you are cleared or not cleared to return to work at an office or project site.

If you are not cleared, you will receive additional instruction, which may include continuing daily assessments and completing another return-to-work survey at a later date.

2.10 Interim Guidelines for Cardiopulmonary Resuscitation

The American Heart Association and Heart & Stroke Foundation of Canada have issued interim Hands-only cardiopulmonary resuscitation (CPR) guidelines to reduce the risk when helping victims of cardiac arrest with suspected or confirmed COVID-19.

CPR and the use of automated external defibrillators (AED) significantly improve the chance of survival of patients experiencing cardiac arrest. During the COVID-19 pandemic, first aid trained folks and bystanders may feel uncomfortable performing lifesaving CPR and increasing their own risk of contracting the virus.

Hands-only CPR involves performing chest compressions only at a rate of 100 to 120 compressions per minute until an ambulance arrives.

When administering CPR, consider:

- Wearing a face covering
- Laying a cloth, towel, or clothing over the person's mouth and nose
- Perform hands-only CPR
- Use an AED, if available

2.11 Other Considerations

When planning field work, consider the following:

- Plan your journey to and from the site to manage social distancing and hand hygiene when you need to stop for gas or at a store for supplies
- Reevaluate the current field work situation as it relates to lone worker protocols
- A [COVID-19 Preparation, Response and Continuity Plan template](#) is required for all projects.

3 Travel Guidance

3.1 Traveling Between States, Provinces or Territories

Some states, provinces and territories have issued executive orders requiring self-quarantine, travel health screening questionnaires and/or COVID-19 testing for people traveling into or from certain locations. While some jurisdictions exempt essential workers, self-quarantine requirements may apply during off-work hours, confining the employee to their lodging location. Check local requirements before you travel to determine whether you can travel or if there is a need to self-quarantine at the destination. Prior to travel, it is important to have a destination plan in place and understand the steps you will take to remain safe and healthy throughout your trip. Whenever possible, use local project teams within a 4-hour drive radius.

3.2 Field Vehicles and Transportation

When using shared vehicles (fleet, rental, ride sharing services) follow the cleaning guidance above for frequently touched surfaces. Check with your rental agency before vehicle pick-up to understand their cleaning procedures, and supplement with your own cleaning, as necessary. Note: if using wipes, make sure the wipe is compatible with the surface being cleaned.

Canada: A limit of two vaccinated employees may share a vehicle. Unvaccinated individuals are not permitted to share vehicles.

U.S.: There is no limit to the number of vaccinated employees that may share a vehicle. Face coverings must be worn at all times when multiple people are in the vehicle. Unvaccinated employees are not allowed to share vehicles.

When traveling by air for business-critical travel, check with the airline to obtain their latest COVID-19 requirements. A summary of current airline COVID-19 policies can be found [here](#).

3.3 Lodging Considerations

Most hotel chains have implemented additional cleaning, disinfection and face covering in common area procedures. Check with your hotel before check-in to understand their procedures. Consider bringing a surface cleaner or disinfecting wipes to clean frequently touched surfaces such as doorknobs, tv remote, etc.

In instances where AirBnB has been authorized and approved in writing by the Project Manager and Supervisor, consider the following:

- The entire team should not stay at the same residential facility.
- In the U.S., only vaccinated individuals may share lodging provided the configuration allows each individual to have their own dedicated living space (e.g., own bedroom). Face coverings are required in common spaces.
- Understand the AirBnB may need additional cleaning and disinfection of commonly touched surfaces upon arrival.

Lodging together is not permitted for unvaccinated employees.

Always maintain good personal hygiene and avoid crowded places such as restaurants or bars. Consider using take out or outdoor seating. If self-quarantine is required by the jurisdiction during off-work hours, plan ahead and evaluate local food and/or grocery delivery options.

Canada: Dining together outdoors and indoors without face coverings is permitted if everyone is fully vaccinated. Outdoor dining is preferable. Indoor dining should be limited, and groups kept small. Dining together is not permitted if anyone is not vaccinated.

U.S.: Dining together outdoors without face coverings is permitted if everyone is fully vaccinated. Indoor dining is permitted if everyone is fully vaccinated and face coverings are worn in public spaces. Dining together is not permitted if anyone is not vaccinated.

3.4 Rental Equipment and Sample Cooler Handling

Clean the exterior of rental equipment and sample coolers upon arrival at the job site using a cleaning product that will not impact data quality. Wear gloves and safety glasses when handling sample coolers to prevent contact with acid preservation of the bottles in coolers. Where possible, order separate sets of equipment and “assign” equipment to individuals for use through the duration of the event.

4 Work-Specific Situations

4.1 Working with Little or No Contact with Others

Follow procedures listed in Section 2.0 and Section 3.0.

4.2 Working in Project Teams

When working in project teams (paired Arcadians, embedded staff, contractors, clients, etc.):

- If feasible, prior to visiting the site, have a H&S check in to confirm all attendees are complying with CDC or Health Canada guidelines, including:
 - Confirm understanding that workers or clients should not go to the job site if they have personally tested positive for COVID-19, have been in close contact to anyone else who has tested positive for COVID-19 or are exhibiting symptoms. If a worker discloses close contact with someone COVID-19 positive and the worker is asymptomatic, instruct the employee to complete the WorkCare Daily Screen and follow the instructions provided following the survey.
- Out of respect for all, ask everyone to self-disclose if they are not feeling well (exhibiting flu-like symptoms), and request that they should go home.
- Observe person(s) for symptoms, and use Stop Work, as necessary, and contact Project Manager.
- Set visual or physical barriers to keep the public away (caution tape and cones).
- Consider if “split shifts” can be used to limit contact, or if work can be scheduled during hours of low to no facility operations.
- Arcadis staff plan work activities, continuously use TRACK and re-plan work activities to maximize social distancing and minimize “close contact”
 - Practice good hygiene and clean commonly touched surfaces
 - Clean clipboard and pen prior to use
 - Bring your own pen
 - Disinfect shared equipment (water level meters, pumps, etc.)
 - Coordinate with sanitation vendor for portable hand wash station (soap & water or hand sanitizer)
 - Use work practices and tools to minimize close contact when feasible, such as:
 - Single person operating a winch instead of a two-person manual lift
 - Tools to maximize distance
 - Use PPE in accordance with the Job Safety Analysis (face shield, safety glasses, gloves, etc.)
 - Plan for breaks to allow for hydration, nutrition and rest/prevention of heat related illness
 - Select locations where social distancing can be maintained
 - Allow time for safe doffing/donning of personal safety items
 - Communicate individual needs for breaks before beginning work.

- If social distancing or other controls are not feasible discuss this with your supervisor and PM, discuss “Is the work necessary?” or “Can the work be rescheduled for a later date?”
 - Refer to Section 2.6 for the definition of close contact. CDC has indicated short periods of time in close contact may not increase risk of exposure.
- Wear face coverings in accordance with Section 2.7 and jurisdictional requirements.
- Subcontractors need to develop and implement their own procedures to protect their workers.

4.3 Embedded Employee Working at a Client Facility

Embedded employee at a client facility should:

- Inquire whether working remotely is an option.
- If not, and Arcadis must work at the client facility:
 - Ask if arrangements can be made to practice social distancing (e.g., split shift, separate workstation, etc.)
 - Practice good hygiene, and if you do not feel the situation is safe, you can execute your stop work authority by having discussions with your Supervisor and Project Manager.
- Wear face coverings when social/physical distancing cannot be maintained or in accordance with client or jurisdictional requirements.
- If client facility cleanliness is a concern discuss concerns with Project Manager. The Project Manager will discuss with the client. If the client will not increase cleaning, Arcadis employees will be provided with the supplies to clean and disinfect frequently touched surfaces as well as supplies to clean hands.
- Discuss and document Arcadis, client and jurisdictional protocol for reporting a COVID-19 case using the template in the Arcadis COVID-19 Preparedness, Response and Continuity Plan or similar form.

4.4 Working in Contact with the Public

When working in contact with the public (mall areas, parks, outdoor residential settings):

- Set visual or physical barriers (caution tape and cones) to keep the public away and maintain social distancing.
- Wear face coverings when working indoors or in enclosed spaces. Refer to Appendix C for guidance on the appropriate face covering.
- Consider posting signs reminding the public of social distancing guidance (example in Appendix B).

4.5 Working at Indoor Residential Settings

When working at indoor residential settings, consider the following guidelines:

- It is recommended that employees entering residential settings are fully vaccinated.
- A N95 is recommended when entering residential settings.
- Call ahead to ask if the resident(s) is experiencing flu-like symptoms or if anyone in the house is in mandatory or precautionary self-quarantine. Reschedule the work if the resident is experiencing symptoms or under quarantine. Also share Arcadis work procedures and explain that Arcadis will be practicing social distancing during the work.
- Upon arrival, assess the residents for signs of flu-like symptoms. If observed, use Stop Work, exercise social distancing and contact the Project Manager.

- Where feasible, wear gloves, wipe down surfaces prior to touching them and thoroughly wash hands after completing the work (do not touch face).
- Ask if arrangements can be made to practice social distancing (meaning stay 6 feet [2 metres] away).
- Schedule your work when resident is not home, if your work area allows for access (e.g., a basement crawl space the doesn't require entry to the main living area of the home).

4.6 Projects Involving Drinking Water Systems, Recreational Water and/or Wastewater

According to the CDC, at this time, the risk of transmission of the virus that causes COVID-19 through sewerage systems is thought to be low. Although transmission of the virus that causes COVID-19 through sewage may be possible, there is no evidence to date that this has occurred.

Wastewater and sewage workers should use standard practices, practice basic hygiene precautions, and wear personal protective equipment ([PPE](#)) as prescribed for current work tasks.

When working on projects involving drinking water systems, recreational water and/or wastewater:

- The COVID-19 virus has not been detected in drinking water.
- Conventional [water treatment methods](#) that use filtration and disinfection, such as those in most municipal drinking water systems, should remove or inactivate the virus that causes COVID-19.
- [Standard practices](#) associated with wastewater treatment plant operations should be sufficient to protect wastewater workers from the virus that causes COVID-19.
- Review the project Health & Safety Plan and task-specific Job Safety Analysis for required personal protective equipment and other controls.
- Wear face coverings when working indoors. Refer to Appendix C for guidance on the appropriate face covering.

4.7 Construction Management/Construction

4.7.1 Field Trailers

Field trailers may present unique challenges for social distancing. Consider the following:

- Restrict access by posting site signage (Appendix D) requesting all visitors, including site workers. All who enter the field trailer should knock and don a face covering before entering.
 - The project team will determine the maximum occupancy based on the ability to maintain social distancing.
- Local jurisdictions may require face coverings in all indoor spaces regardless of vaccination status. In areas without jurisdictional mandates, all workers will wear face coverings in common spaces and when social/physical distancing cannot be maintained. Refer to Appendix C for guidance on the appropriate face covering.
- Maintain a log of visitors entering the trailer use the "Arcadis Contact Tracing Log" in Appendix E. Assign a person responsible for signing visitors in and out.
- Clean surfaces regularly. In the absence of professional cleaning services, occupants will develop a schedule for site personnel to complete cleaning of commonly touched surfaces.

- When using common surfaces, each individual is responsible for wiping down the shared surface before and after use.
- Assess and address the need for the availability of hand washing (e.g., access to water and soap) while working on site. This can be achieved by:
 - Having access to a functioning restroom
 - Portable hand washing station
 - Hand soap and bottled water to clean hands as necessary.
- Plan seating arrangement so that personnel inside the trailer maintain social distancing, at least 6-feet (2 m) of separation.
- Meetings in the trailer will not exceed the maximum occupancy as determined based on the ability to maintain social distancing. Unvaccinated individuals must wear face coverings and maintain 6 feet (2 m) of physical distance.
- Consider the use of physical barriers to separate the field trailer from the public and/or site activities.

4.7.2 Other Construction Guidance

Additional guidance related to construction and construction management activities include:

- Consider use of technology (e.g., digital sign in using QR codes, virtual tailgate, or construction meetings, video camera systems to minimize the number of people on site).
- For tailgate or other meetings that are not virtual:
 - Unvaccinated individuals must wear face coverings at all times, when meeting indoors. Refer to Appendix C for guidance on the appropriate face covering.
 - Maintain 6 feet (2 m) of physical distance at all times between attendees (both seated and standing).
 - Have the person leading the meeting sign everyone in.
 - If signature is required, everyone should have their own pen.
 - Hold meetings in outdoor spaces whenever feasible.
- For work outdoors:
 - Masks are optional when working outside more than 6 feet (2 m) apart (socially distanced).
 - Determine comfort level and vaccination status of field team when deciding whether to wear face covering for work tasks that need to be completed within 6 feet (2 m) and physical distancing cannot be maintained. Unvaccinated staff must wear face coverings when physical distancing cannot be maintained.
 - Refer to Appendix C for guidance on the appropriate face covering.
- Simultaneous operations coordination to separate contractors:
 - Coordinate movements around the site
 - Set up work zones with visual barriers for specific activities with transition areas in common spaces
 - Post social distancing signage (refer to Section 4.4)
 - Maintain social distancing with at least 6-feet (2 m) of separation whenever feasible
 - Consider the following administrative controls:
 - Activity rotation - schedule work when the fewest number of people are present
 - "Split shifts" can be used to limit contact, or if work can be scheduled during hours of low to no facility operations.

- Work in teams/pairs:
 - Plan work activities, continuously use TRACK and re-plan work activities to maximize social distancing and minimize “close contact”
 - Use equipment or tools to increase distance between personnel to greater than 6-feet (2m) or eliminate the need for a second person.
- Coordinate with contractors to make sure they are following the same social distancing, hand hygiene and cleaning guidance to reduce the risk to other project personnel.

5 Post Shift Considerations

At the end of the work shift, clean the vehicle, if used throughout the day. Wash hands prior to leaving the site and after the commute.

Upon arriving home or at lodging, shower and launder clothing.

Appendix A

Site Signage – Self-Assessment Required

Arcadis Employees

Have you done your “Daily Screen” today?

Before each day, you must complete
the online **“Daily Screen”**.



QR Code for daily
self-assessment.

SAFE Return

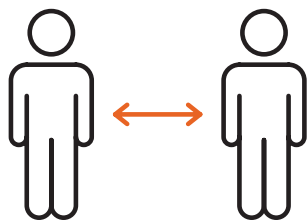
Appendix B

Site Signage – Social Distancing

Project Sites

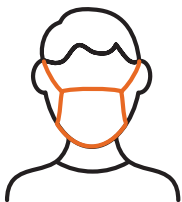
Keep Yourself and Others Working Safely

100% compliance is required by you and our subcontractors.



Maintain physical (social) distance of six feet, about two arms' length.

Need to talk? Shut equipment down if noise is interfering, use hand signals, radios, or move to another area of the site where distance can be maintained.



Face coverings must be worn when six feet of physical distance cannot be maintained.

Stop Work if procedures are not followed. It's mandatory!

SAFE Return

Appendix C

Guidance for the Use of Face Coverings

COVID-19 Face Covering Recommendations

Scenario	Mask Type			Respirators	
	Cloth Masks	Procedure Masks	Masks that Meet a Standard	Respirators that Meet International Standards ³	NIOSH-Approved Respirators ³
Working Indoors					
Entering a resident, school, or hospital	Not Recommended	Recommended	Preferred	CDC Recommended	CDC Preferred
Working indoors with coworkers ¹ and physically distanced	Not Recommended	Recommended	Preferred	--	--
Working indoors in close proximity to coworkers, no physical distancing	Not Recommended	Recommended	Preferred	CDC Recommended	CDC Preferred
Working indoors with the general public and physically distanced	Not Recommended	Recommended	Preferred	CDC Recommended	CDC Preferred
Working indoors in close proximity to the general public (no physical distancing)	Not Recommended	Not Recommended	Not Recommended	CDC Recommended	CDC Preferred
Working in an Arcadis Office ²	Not Recommended	Recommended	Preferred	CDC Recommended	CDC Preferred
Working Outdoors					
Working outdoors with coworker and physically distanced	--	--	--	--	--
Working outdoors with a coworker and not physical distancing	Not Recommended	Recommended	Preferred	--	--
Working outdoors with the general public and physically distanced	Not Recommended	Recommended	Preferred	CDC Recommended	CDC Preferred
Working outdoors with the general public and not physical distancing	Not Recommended	Not Recommended	Not Recommended	CDC Recommended	CDC Preferred
Travel					
Travel on public transportation	Not Recommended	Recommended	Preferred	CDC Recommended	CDC Preferred
Ridesharing with coworker (Fully Vaccinated Only)	Not Recommended	Recommended	Preferred	CDC Recommended	CDC Preferred
Ridesharing	Not Recommended	Recommended	Preferred	CDC Recommended	CDC Preferred
Communal lodging	Not Recommended	Recommended	Preferred	CDC Recommended	CDC Preferred

Notes:

¹Coworkers includes Arcadis employees, Arcadis or client subcontractors, and Arcadis clients

²Masks must be worn when entering an office or job trailer, moving about the space and in common areas. Masks may be removed when seated at a individual workstation and physically distanced from others or alone in a enclosed space with floor to ceiling walls and door closed. Additional jurisdiction requirements may apply.

³[Required use of a respirator meeting an international standard or NIOSH-approved respirator will need to follow the Arcadis Respiratory Protection H&S Standard.](#)

References:

[CDC Types of Masks and Respirators](#)



Cloth masks:

- Multiple layers of tightly woven, breathable fabric
- Nose wire
- Fabric that blocks light when held up to bright light source
- Do not wear mask with exhalation valve

Procedure masks:

- Multiple layers of non-woven material
- Nose wire
- Protects others from the wearer's respiratory emissions



Mask that meets a standard:

- Designed and tested to ensure they perform at a consistent level
- Must be labeled with the standard the mask meets
- Multiple layers of non-woven material

Respirators that meet international standards:

- Designed and tested to meet international standards
- Filters varying levels of particles in the air depending on the standard they are designed to meet
- Seals tightly to the face when fitted properly
- Medical surveillance and fit testing required if using when required under Arcadis' Respiratory H&S Standard



NIOSH-approved respirators:

- Respirators listed on the NIOSH-Approved Particulate Filtering Facepiece Respirators [webpage](#)
- Evaluated against a specific US standard that includes a quality requirement
- Filters at least 95% of particles in the air with proper fit
- Seals tightly on the face
- Medical surveillance and fit testing required if using when required under [Arcadis' Respiratory H&S Standard](#)

The following graphics are from the [U.S. CDC](https://www.cdc.gov/media/releases/2020/s110520-covid-19-masks.html):

DO choose masks that



Have two or more layers of washable, breathable fabric



Completely cover your nose, mouth, and chin.



Fit snugly against the sides of your face and don't have gaps

DO NOT choose masks that



Are made of fabric that makes it hard to breathe, for example, vinyl



Have exhalation valves or vents which allow virus particles to escape



Not recommended: Evaluation of face shields is ongoing, but effectiveness is unknown at this time.

Cold weather gear



Wear your scarf, ski mask or balaclava over your mask



Scarves, ski masks and balaclavas are not substitutes for masks

Note: Some jurisdictions may not consider gaiters or bandanas acceptable face coverings.

How to Wear a Mask

Wear a well-fitting mask **correctly** and **consistently** for the best protection.

- Be sure to [wash your hands or use hand sanitizer](#) before putting on a mask.
- Do **NOT** touch the mask when wearing it. If you have to touch/adjust your mask often, it doesn't fit you properly, and you may need to find a different mask or make adjustments.

Do wear a mask that



- Covers your nose and mouth and can be secured under your chin.
- Fits snugly against the sides of your face.

Two important ways to make sure your mask works the best it can

1

Make sure your mask fits snugly against your face. Gaps can let air with respiratory droplets leak in and out around the edges of the mask

2

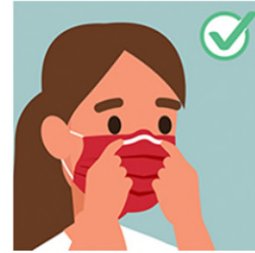
Pick a mask with layers to keep your respiratory droplets in and others' out. A mask with layers will stop more respiratory droplets getting inside your mask or escaping from your mask if you are sick.



Do

Choose a mask with a nose wire

- A nose wire is a metal strip along the top of the mask
- Nose wires prevent air from leaking out of the top of the mask.
- Bend the nose wire over your nose to fit close to your face.



Use a mask fitter or brace

- Use a mask fitter or brace over a disposable mask or a cloth mask to prevent air from leaking around the edges of the mask.



Check that it fits snugly over your nose, mouth, and chin

- Check for gaps by cupping your hands around the outside edges of the mask.
- Make sure no air is flowing from the area near your eyes or from the sides of the mask.
- If the mask has a good fit, you will feel warm air come through the front of the mask and may be able to see the mask material move in and out with each breath.



Add layers of material


2 ways to layer

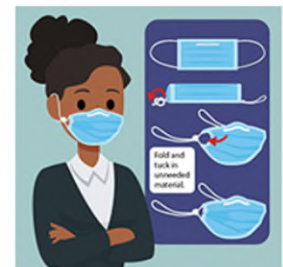
- Use a cloth mask that has multiple layers of fabric.
- Wear a disposable mask underneath a cloth mask.
 - The cloth mask should push the edges of the disposable mask against your face.



Make sure you can see and breathe easily

Knot and tuck ear loops of a 3-ply mask

- Knot the ear loops of a 3-ply face mask where they join the edge of the mask
- Fold and tuck the unneeded material under the edges
- For instructions, see the following <https://youtu.be/GzTAZDsNBe0> .



Other things to consider

Certain types of facial hair, like beards, can make mask fitting difficult. People with beards can do one or more of the following:

- Shave their beards.
- Trim their beards close to the face.
- Use a mask fitter or brace.
- Wear one disposable mask underneath a cloth mask that has multiple layers of fabric. The second mask should push the edges of the inner mask snugly against the face and beard.

Masks designed for people with beards are being evaluated, and information will be provided when it becomes available.



Do NOT

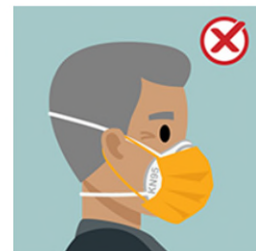
Combine two disposable masks

- Disposable masks are not designed to fit tightly and wearing more than one will not improve fit.



Combine a N95 or KN95 mask with any other mask.

- Only use one N95 or KN95 mask at a time.



How NOT to Wear a Mask

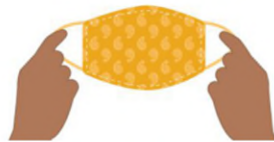


How to take off a mask



①

Carefully, untie the strings behind your head or stretch the ear loops



②

Handle only by the ear loops or ties



③

Fold the outside corners together



④

Be careful not to touch your eyes, nose, and mouth when removing and wash hands immediately after removing

Appendix D

Additional Signage

Best Practices

Wash your hands.

Wash in hot water for 40 seconds: 20 seconds with soap, 20 seconds to rinse.

Wipe surfaces with disinfectant wipes after you are finished.

Maintain proper social distancing.

Stand back 6 feet from others who may be washing their hands, or waiting in line to wash.

SAFE Return

Best Practices

**You touch it,
you clean it.**

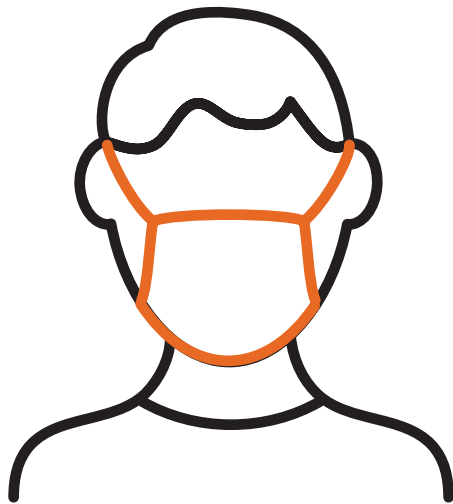


Remember to clean any surface
you touch with the provided
disinfectant spray.

SAFE Return

Arcadis Staff, Visitors & Deliveries

Wear face cover.

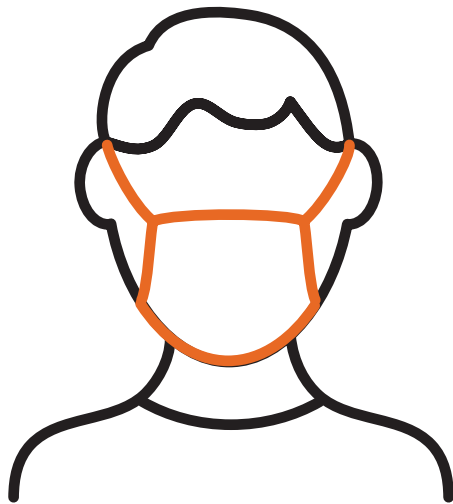


Face covering must be worn at
all times.

SAFE Return

Arcadis Staff, Visitors & Deliveries

Wear face cover.



Please wear face covering when moving about the space. Face coverings can be removed while seated at workstation.

SAFE Return

Visitors & Deliveries

**All staff, visitors or
deliveries must use
the main entrance.**

Located: (Third floor, main reception desk)

Firstname Lastname (#### #### #####)

SAFE Return

Restricted

Authorized Staff Only

In order to maintain proper social distancing,
this area is restricted to authorized staff.

Need something?

Contact: Firstname Lastname (#### #### #####)

SAFE Return

Restricted

Maximum Occupancy

##

In order to maintain proper social distancing, the number of people allowed in this area is limited.

SAFE Return

Closure

Room Closed

In order to maintain proper social distancing guidelines, this room is temporarily closed.

SAFE Return

Off limits

Do not use

Restricted

Appendix E

Arcadis Contact Tracing Log



Arcadis Contact Tracing Log

[illegible]

Arcadis U.S., Inc.
1 Executive Drive, Suite 303
Chelmsford
Massachusetts 01824
Phone: 978 937 9999
Fax:
www.arcadis.com

Appendix E

Accident Report Forms

EMPLOYEE INCIDENT/NEAR MISS REPORT

This form will be used to report all Work-Related Injuries, Illnesses, or “Near Miss” Events (which could have caused an injury or illness) – no matter how minor. Once complete, give this form to a supervisor so they can take further action.

IDENTIFICATION			
Reporting a work-related:		<input type="checkbox"/> INJURY	<input type="checkbox"/> ILLNESS <input type="checkbox"/> NEAR MISS
Has the Supervisor been made aware of this incident?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
NAME OR PERSON INJURED OR ILLNESS:	SUPERVISOR NAME:		DATE OF REPORT:
PROJECT NAME & NO.:	LOCATION OF INCIDENT:	DATE OF INCIDENT:	TIME:
NAME/S OF WITNESSES: (WITNESS STATEMENTS NEED TO BE TAKEN IMMEDIATELY)			
INCIDENT DESCRIPTION			
What were you doing leading up to the incident? (You may attach additional pages as needed.)			
If Injury what parts of your body were injured? If this was a near miss, how could you have gotten hurt?			
What could have been done to prevent this injury/near miss?			
MEDICAL TREATMENT			
Was medical treatment necessary? <input type="checkbox"/> YES <input type="checkbox"/> NO		IF YES, NAME OF HOSPITAL/PHYSICIAN:	
DATE OF VISIT:	TIME OF VISIT:	HOSPITAL/PHYSICIAN PHONE:	
Have Employee been injured in a similar way before? <input type="checkbox"/> YES <input type="checkbox"/> NO		IF YES, WHEN?	
SIGNATURE			
SIGNATURE OF PERSON COMPLETING THIS FORM:		DATE:	

SUPERVISOR ACCIDENT INVESTIGATION

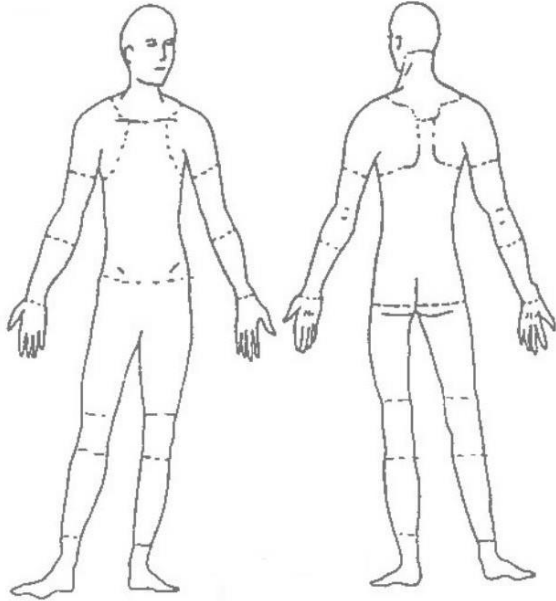
VICTIM IDENTIFICATION		
NAME OF PERSON INJURED:		<input type="checkbox"/> MALE <input type="checkbox"/> FEMALE
DATE OF BIRTH:	PHONE NUMBER:	
INJURED PERSON'S ADDRESS:		
DATE OF EVENT:	TIME OF EVENT:	LOCATION OF EVENT:
NAME/S OF WITNESSES: (WITNESS STATEMENTS NEED TO BE TAKEN IMMEDIATELY)		
INCIDENT DESCRIPTION		
Describe in detail which parts of the victim's body were injured.		
Describe the nature of the injury in detail.		
How did the accident happen? Describe what the employee was doing leading up to the incident.		
What caused the event?		
Were safety regulations in place and used? If not, what was wrong?		
Did the employee receive medical attention? <input type="checkbox"/> YES <input type="checkbox"/> NO		IF YES, NAME OF HOSPITAL/PHYSICIAN:
PREVENTION		
What kind of preventative actions must be taken to prevent similar events in the future?		
SIGNATURE		
YOUR SIGNATURE:		DATE:

INCIDENT INVESTIGATION REPORT

Complete this form as soon as possible after an incident that results in serious injury or illness. (Optional: Use to investigate a minor injury or near miss that could have resulted in a serious injury or illness.)

This is a report of a: <input type="checkbox"/> Death <input type="checkbox"/> Lost Time <input type="checkbox"/> Dr. Visit Only <input type="checkbox"/> First Aid Only <input type="checkbox"/> Near Miss	
DATE OF INCIDENT:	This report is made by: <input type="checkbox"/> Employee <input type="checkbox"/> Supervisor <input type="checkbox"/> Team <input type="checkbox"/> Other: _____

STEP 1: INJURED EMPLOYEE

NAME:	<input type="checkbox"/> MALE <input type="checkbox"/> FEMALE	DATE OF BIRTH:
DEPARTMENT:	JOB TITLE:	
PARTS OF BODY AFFECTED:	NATURE OF INJURY:	EMPLOYEE WORKS:
	<input type="checkbox"/> Abrasion, scrapes <input type="checkbox"/> Amputation <input type="checkbox"/> Broken Bone <input type="checkbox"/> Bruise <input type="checkbox"/> Burn (heat) <input type="checkbox"/> Burn (chemical) <input type="checkbox"/> Concussion <input type="checkbox"/> Crushing Injury <input type="checkbox"/> Cut, laceration, puncture <input type="checkbox"/> Hernia <input type="checkbox"/> Illness <input type="checkbox"/> Sprain, strain <input type="checkbox"/> Damage to a body system <input type="checkbox"/> Other:	<input type="checkbox"/> Regular full time <input type="checkbox"/> Regular part time <input type="checkbox"/> Seasonal <input type="checkbox"/> Temporary
		MONTHS WITH EMPLOYER: MONTHS IN CURRENT POSITION:

INCIDENT INVESTIGATION REPORT

STEP 2: DESCRIBE THE INCIDENT			
EXACT LOCATION OF INCIDENT:		EXACT TIME:	
During what part of the employee's workday did the incident take place?			
<input type="checkbox"/> Entering/leaving work <input type="checkbox"/> Doing normal work activities <input type="checkbox"/> Meal Period <input type="checkbox"/> Break <input type="checkbox"/> Overtime <input type="checkbox"/> Other			
NAME/S OF WITNESSES:			
NUMBER OF ATTACHMENTS:	WRITTEN WITNESS STATEMENTS:	PHOTOGRAPHS:	MAPS/DRAWINGS:
Describe any personal protective equipment that was being used.			
Describe the events that led up to the injury in as much detail as possible. Include names of machines, equipment, parts, tools, and any other important details. (You may attach additional pages as needed.)			

INCIDENT INVESTIGATION REPORT

STEP 3: WHY DID THE INCIDENT HAPPEN?

UNSAFE WORKPLACE CONDITIONS:

- ☐ Inadequate guards
- ☐ Unguarded hazard
- ☐ Safety device is defective
- ☐ Tool or equipment is defective
- ☐ Workstation layout is hazardous
- ☐ Unsafe lighting
- ☐ Lack of ventilation
- ☐ Lack of needed PPE
- ☐ Lack of appropriate equipment/tools
- ☐ Unsafe clothing
- ☐ No training or insufficient training
- ☐ Other:

UNSAFE ACTS BY PEOPLE:

- ☐ Operating without permission
- ☐ Operating at unsafe speed
- ☐ Servicing equipment connected to a power source
- ☐ Tampering with a safety device
- ☐ Using defective equipment
- ☐ Using equipment in an unapproved way
- ☐ Unsafe lifting
- ☐ Taking an unsafe position or posture
- ☐ Distraction, teasing, horseplay
- ☐ Failure to wear available PPE
- ☐ Failure to use the available equipment/tools
- ☐ Other:

Why were the unsafe conditions present in the workplace?

What allowed the unsafe acts to occur?

Is there a reward that may have encouraged the unsafe conditions or acts?

☐ YES ☐ NO

IF YES, DESCRIBE.

Were the unsafe acts or conditions reported prior to the incident? ☐ YES ☐ NO

Have there been similar incidents or near misses prior to this one? ☐ YES ☐ NO

INCIDENT INVESTIGATION REPORT

STEP 4: HOW CAN FUTURE INCIDENTS BE PREVENTED?

What actions would you suggest be taken to prevent this incident/near miss from happening again?

- ☐ Stop this activity
- ☐ Guard the hazard
- ☐ Train the employee(s)
- ☐ Train the supervisor(s)
- ☐ Redesign task steps
- ☐ Redesign work station
- ☐ Create a new policy/rule
- ☐ Enforce existing policy
- ☐ Routinely inspect for the hazard
- ☐ Personal protective equipment
- ☐ Other:

What should be or has already been done to carry out the suggestions in the previous box? (You may attach additional pages as needed.)

STEP 5: WHO COMPLETED AND REVIEWED THIS FORM?

WRITTEN BY:

TITLE:

DEPARTMENT:

DATE:

NAMES OF INVESTIGATION TEAM MEMBERS:

REVIEWED BY:

TITLE:

DATE:

Appendix F

Incident Notice Form

Incident Notification Form

Incident details

Incident type

This is to notify of a: ☐ Death ☐ Serious Injury ☐ Serious Illness ☐ Dangerous Incident ☐ Serious Electrical
☐ Incident Dangerous Electrical Event ☐ Major Environmental Impact
☐ Major Equip. Damage

Provide a brief explanation of the incident (e.g., a category of 'serious injury' is 'immediate treatment for serious head injury'):

Incident date, time and location

Date of incident and Time:

Location of incident:

Describe the specific location of the incident

Description of the incident Please provide as much detail as possible, for instance: the events that led to the incident; the work being undertaken when the incident happened; the overall action, exposure or event that best describes the circumstances that resulted in the injury, illness, fatality or dangerous incident; the object, substance or circumstance which was directly involved in inflicting the injury, illness, death or dangerous incident; the name and type of any machinery, equipment or substance involved. Was anyone else involved? Was electricity or electrical equipment involved?

(Incident Report must be completed separately)

Injury/illness and treatment details (if required)

Description of injury/illness: (e.g., fracture, laceration, amputation, strain, electrical shock, burn)

Body location:

Where was injured person taken for treatment: (if applicable)

Notifier's details (necessary)

First Name: Last Name: Contact Phone No.:

Title: Email:

Is this the person that should be contacted for further information:

☐ YES ☐ No

If NO, please provide the name and contact information of the appropriate person should further information be required.

First Name: Last Name: Contact Phone No.:

Appendix G

Right-To-Know

Right to Know Hazardous Substance Fact Sheet

Common Name: **POLYCHLORINATED BIPHENYLS**

Synonyms: Aroclor; Chlorodiphenyls; PCBs

Chemical Name: 1,1'-Biphenyl, Chloro Derivs.

Date: April 2002

Revision: November 2008

CAS Number:

1336-36-3

RTK Substance Number:

1554

DOT Number:

UN 2315

Description and Use

Polychlorinated Biphenyls are light yellow or colorless, thick, oily liquids. They are used in hydraulic and heat transfer liquids. They were formally used in electrical capacitors and transformers.

Reasons for Citation

- **Polychlorinated Biphenyls** are on the Right to Know Hazardous Substance List because they are cited by OSHA, ACGIH, DOT, NIOSH, NTP, DEC, IARC, IRIS, NFPA and EPA.
- This chemical is on the Special Health Hazard Substance List.

SEE GLOSSARY ON PAGE 5.

FIRST AID

Eye Contact

- Immediately flush with large amounts of water for at least 15 minutes, lifting upper and lower lids. Remove contact lenses, if worn, while rinsing.

Skin Contact

- Quickly remove contaminated clothing. Immediately wash contaminated skin with large amounts of soap and water.

Inhalation

- Remove the person from exposure
- Begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.
- Transfer promptly to a medical facility.

EMERGENCY NUMBERS

Poison Control: 1-800-222-1222

CHEMTREC: 1-800-424-9300

NYS Spill Hotline: 1-800-457-7362

National Response Center: 1-800-424-8802

EMERGENCY RESPONDERS >>>> SEE BACK PAGE

Hazard Summary

Hazard Rating	NYDOH	NFPA
HEALTH	3	2
FLAMMABILITY	-	1
REACTIVITY	-	0
CARCINOGEN TERATOGEN POISONOUS GASES ARE PRODUCED IN FIRE		

Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

- **Polychlorinated Biphenyls** can affect you when inhaled and by passing through the skin.
- **Polychlorinated Biphenyls** should be handled as CARCINOGENS and may be TERATOGENS. HANDLE WITH EXTREME CAUTION.
- Contact can irritate the skin and eyes.
- **Polychlorinated Biphenyls** may cause brownish pigmentation of the skin, eyes and fingernails.
- Skin contact may cause an acne-like rash (chloracne).
- Inhaling the vapors can irritate the nose, throat and lungs.
- Exposure to **Polychlorinated Biphenyls** can cause headache, nausea, vomiting, loss of weight and abdominal pain.
- High exposure can damage the nervous system causing headache, numbness, weakness, and tingling ("pins and needles") in the arms and legs.
- **Polychlorinated Biphenyls** may damage the liver.

Workplace Exposure Limits

OSHA: The legal airborne permissible exposure limit (PEL) is **1 mg/m³** (42% Chlorine) and **0.5 mg/m³** (54% Chlorine) averaged over an 8-hour workshift.

NIOSH: The recommended airborne exposure limit (REL) is **0.001 mg/m³** averaged over a 10-hour workshift.

ACGIH: The threshold limit value (TLV) is **1 mg/m³** (42% Chlorine) and **0.5 mg/m³** (54% Chlorine) averaged over an 8-hour workshift.

- **Polychlorinated Biphenyls** are PROBABLE CARCINOGENS and TERATOGENS in humans. There may be no safe level of exposure to a carcinogen, so all contact should be reduced to the lowest possible level.
- The above exposure limits are for air levels only. When skin contact also occurs, you may be overexposed, even though air levels are less than the limits listed above.

Determining Your Exposure

- ▶ Read the product manufacturer's Material Safety Data Sheet (MSDS) and the label to determine product ingredients and important safety and health information about the product mixture.
- ▶ You have a right to this information under the New York State Right-to-Know Law and the New York State Public Employees Safety and Health Act (PESHA), and under the federal Occupational Safety and Health Act (OSHA) if you are a private worker.
- ▶ The New York State Right-to-Know Law requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard (29 CFR 1910.1200) and the PESHA Hazard Communication Standard require employers to provide similar information and training to their employees.

This Fact Sheet is a summary of available information regarding the health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

Health Hazard Information

Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to **Polychlorinated Biphenyls**:

- ▶ Contact can irritate the skin and eyes.
- ▶ Inhaling the vapors can irritate the nose, throat and lungs causing coughing, wheezing and/or shortness of breath.
- ▶ Exposure to **Polychlorinated Biphenyls** can cause headache, nausea, vomiting, loss of weight and abdominal pain.

Chronic Health Effects

The following chronic (long-term) health effects can occur at some time after exposure to **Polychlorinated Biphenyls** and can last for months or years:

Cancer Hazard

- ▶ **Polychlorinated Biphenyls** are PROBABLE CARCINOGENS in humans. There is evidence that they cause cancer of the skin, brain, and pancreas in humans and have been shown to cause liver and pituitary cancer, and leukemia, in animals.
- ▶ Many scientists believe there is no safe level of exposure to a carcinogen.

Reproductive Hazard

- ▶ **Polychlorinated Biphenyls** may be TERATOGENS in humans since they are teratogens in animals.
- ▶ There is limited evidence that **Polychlorinated Biphenyls** may affect male and female fertility.

Other Effects

- ▶ **Polychlorinated Biphenyls** may cause brownish pigmentation of the skin, eyes and fingernails.
- ▶ Skin contact may cause an acne-like rash (chloracne).
- ▶ High exposure can damage the nervous system causing headache, numbness, weakness, and tingling ("pins and needles") in the arms and legs.
- ▶ **Polychlorinated Biphenyls** may damage the liver.

Medical

Medical Testing

Before beginning employment and at regular times after that, for frequent or potentially high exposures, the following are recommended:

- ▶ Liver function tests
- ▶ Exam of the skin and fingernails

If symptoms develop or overexposure is suspected, the following are recommended:

- ▶ Blood PCB levels
- ▶ Exam of the nervous system

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 1910.1020).

Mixed Exposures

- ▶ More than light alcohol consumption can cause liver damage. Drinking alcohol can increase the liver damage caused by **Polychlorinated Biphenyls**.

Workplace Controls and Practices

Very toxic chemicals, or those that are reproductive hazards or sensitizers, require expert advice on control measures if a less toxic chemical cannot be substituted. Control measures include: (1) enclosing chemical processes for severely irritating and corrosive chemicals, (2) using local exhaust ventilation for chemicals that may be harmful with a single exposure, and (3) using general ventilation to control exposures to skin and eye irritants. For further information on workplace controls, consult the NIOSH document on Control Banding at www.cdc.gov/niosh/topics/ctrlbanding/.

The following work practices are also recommended:

- ▶ Label process containers.
- ▶ Provide employees with hazard information and training.
- ▶ Monitor airborne chemical concentrations.
- ▶ Use engineering controls if concentrations exceed recommended exposure levels.
- ▶ Provide eye wash fountains and emergency showers.
- ▶ Wash or shower if skin comes in contact with a hazardous material.
- ▶ Always wash at the end of the workshift.
- ▶ Change into clean clothing if clothing becomes contaminated.
- ▶ Do not take contaminated clothing home.
- ▶ Get special training to wash contaminated clothing.
- ▶ Do not eat, smoke, or drink in areas where chemicals are being handled, processed or stored.
- ▶ Wash hands carefully before eating, smoking, drinking, applying cosmetics or using the toilet.

In addition, the following may be useful or required:

- ▶ Where possible, transfer **Polychlorinated Biphenyls** from drums or other containers to process containers in an enclosed system.

Personal Protective Equipment

The OSHA Personal Protective Equipment Standard (29 CFR 1910.132) requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

Gloves and Clothing

- ▶ Avoid skin contact with **Polychlorinated Biphenyls**. Wear personal protective equipment made from material which can not be permeated or degraded by this substance. Safety equipment suppliers and manufacturers can provide recommendations on the most protective glove and clothing material for your operation.
- ▶ Safety equipment manufacturers recommend Butyl, Neoprene, Polyvinyl Chloride, Silver Shield®/4H® and Viton for gloves, and Tychem® CPF 2, SL, CPF 4 and Responder®, or the equivalent, as protective materials for clothing.
- ▶ All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

Eye Protection

- ▶ Wear indirect-vent, impact and splash resistant goggles when working with liquids.
- ▶ Wear a face shield along with goggles when working with corrosive, highly irritating or toxic substances.

Respiratory Protection

Improper use of respirators is dangerous. Respirators should only be used if the employer has implemented a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing, and medical exams, as described in the OSHA Respiratory Protection Standard (29 CFR 1910.134).

- ▶ Where the potential exists for exposure over **0.001 mg/m³**, use a NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive-pressure mode.
- ▶ Exposure to **5 mg/m³** is immediately dangerous to life and health. If the possibility of exposure above **5 mg/m³** exists, use a NIOSH approved self-contained breathing apparatus with a full facepiece operated in a pressure-demand or other positive-pressure mode equipped with an emergency escape air cylinder.

Fire Hazards

If employees are expected to fight fires, they must be trained and equipped as stated in the OSHA Fire Brigades Standard (29 CFR 1910.156).

- ▶ **Polychlorinated Biphenyls** may burn, but do not readily ignite.
- ▶ Use dry chemical, CO₂, water spray or alcohol-resistant foam as extinguishing agents.
- ▶ POISONOUS GASES ARE PRODUCED IN FIRE, including *Polychlorinated Dibenzofurans* and *Chlorinated Dibenzo-p-dioxins*.
- ▶ Use water spray to keep fire-exposed containers cool.

Spills and Emergencies

If employees are required to clean-up spills, they must be properly trained and equipped. The OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) may apply.

If **Polychlorinated Biphenyls** are spilled or leaked, take the following steps:

- ▶ Evacuate personnel and secure and control entrance to the area.
- ▶ Eliminate all ignition sources.
- ▶ Absorb liquids in vermiculite, dry sand, earth, or a similar material and place into sealed containers for disposal.
- ▶ Ventilate and wash area after clean-up is complete.
- ▶ DO NOT wash into sewer.
- ▶ It may be necessary to contain and dispose of **Polychlorinated Biphenyls** as HAZARDOUS WASTE. Contact your state Department of Environmental Conservation (DEC) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.

Handling and Storage

Prior to working with **Polychlorinated Biphenyls** you should be trained on its proper handling and storage.

- ▶ **Polychlorinated Biphenyls** are not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE) and STRONG ACIDS (such as HYDROCHLORIC, SULFURIC and NITRIC).
- ▶ Store in tightly closed containers in a cool, well-ventilated area away from STRONG ULTRAVIOLET LIGHT and SUNLIGHT.

Occupational Health Information Resources

The New York State Department of Health offers multiple services in occupational health. These services include providing informational resources, educational materials, public presentations, and industrial hygiene and medical investigations and evaluations.

For more information, please contact:

New York State Department of Health
Right to Know
Bureau of Occupational Health and Injury Prevention
Empire State Plaza-Corning Tower, Room 1325
Albany, New York 12237
Phone: (518) 402-7900 or 800-458-1158
Web address: https://www.health.ny.gov/environmental/workplace/right_to_know/

This Right to Know Hazardous Substance Fact Sheets is not intended to be copied and sold for commercial purposes.

GLOSSARY

ACGIH is the American Conference of Governmental Industrial Hygienists. They publish guidelines called Threshold Limit Values (TLVs) for exposure to workplace chemicals.

Acute Exposure Guideline Levels (AEGs) are established by the EPA. They describe the risk to humans resulting from once-in-a-lifetime, or rare, exposure to airborne chemicals.

Boiling point is the temperature at which a substance can change its physical state from a liquid to a gas.

A **carcinogen** is a substance that causes cancer.

The **CAS number** is unique, identifying number, assigned by the Chemical Abstracts Service, to a specific chemical.

CFR is the Code of Federal Regulations, which are the regulations of the United States government.

A **combustible** substance is a solid, liquid or gas that will burn.

A **corrosive** substance is a gas, liquid or solid that causes destruction of human skin or severe corrosion of containers.

DEC is the New York State Department of Environmental Conservation.

DOT is the Department of Transportation, the federal agency that regulates the transportation of chemicals.

EPA is the Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

ERG is the Emergency Response Guidebook. It is a guide for emergency responders for transportation emergencies involving hazardous substances.

Emergency Response Planning Guideline (ERPG) values provide estimates of concentration ranges where one reasonably might anticipate observing adverse effects.

A **fetus** is an unborn human or animal.

A **flammable** substance is a solid, liquid, vapor or gas that will ignite easily and burn rapidly.

The **flash point** is the temperature at which a liquid or solid gives off vapor that can form a flammable mixture with air.

IARC is the International Agency for Research on Cancer, a scientific group.

Ionization Potential is the amount of energy needed to remove an electron from an atom or molecule. It is measured in electron volts.

IRIS is the Integrated Risk Information System database on human health effects that may result from exposure to various chemicals, maintained by federal EPA.

LEL or **Lower Explosive Limit**, is the lowest concentration of a combustible substance (gas or vapor) in the air capable of continuing an explosion.

mg/m³ means milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

A **mutagen** is a substance that causes mutations. A **mutation** is a change in the genetic material in a body cell. Mutations can lead to birth defects, miscarriages, or cancer.

NFPA is the National Fire Protection Association. It classifies substances according to their fire and explosion hazard.

NIOSH is the National Institute for Occupational Safety and Health. It tests equipment, evaluates and approves respirators, conducts studies of workplace hazards, and proposes standards to OSHA.

NTP is the National Toxicology Program which tests chemicals and reviews evidence for cancer.

OSHA is the federal Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

PESHA is the New York State Public Employees Safety and Health Act, which adopts and enforces health and safety standards in public workplaces.

Permeated is the movement of chemicals through protective materials.

ppm means parts of a substance per million parts of air. It is a measure of concentration by volume in air.

Protective Action Criteria (PAC) are values established by the Department of Energy and are based on AEGs and ERPGs. They are used for emergency planning of chemical release events.

A **reactive** substance is a solid, liquid or gas that releases energy under certain conditions.

STEL is a Short Term Exposure Limit which is usually a 15-minute exposure that should not be exceeded at any time during a work day.

A **teratogen** is a substance that causes birth defects by damaging the fetus.

UEL or **Upper Explosive Limit** is the highest concentration in air above which there is too much fuel (gas or vapor) to begin a reaction or explosion.

Vapor Density is the ratio of the weight of a given volume of one gas to the weight of another (usually *Hydrogen*), at the same temperature and pressure.

The **vapor pressure** is a force exerted by the vapor in equilibrium with the solid or liquid phase of the same substance. The higher the vapor pressure the higher concentration of the substance in air.

Common Name: **POLYCHLORINATED BIPHENYLS**

Synonyms: Aroclor; Chlorodiphenyls; PCBs

CAS No: 1336-36-3

 Molecular Formula: $C_{12}H_{10-n}Cl_n$

RTK Substance No: 1554

Description: Light yellow or colorless, thick, oily liquids

HAZARD DATA

Hazard Rating	Firefighting	Reactivity
3 - Health 1 - Fire 0 - Reactivity DOT#: UN 2315 ERG Guide #: 171 Hazard Class: 9 (Miscellaneous Hazardous Materials)	Polychlorinated Biphenyls may burn, but do not readily ignite. Use dry chemical, CO ₂ , water spray or alcohol-resistant foam as extinguishing agents. POISONOUS GASES ARE PRODUCED IN FIRE, including <i>Polychlorinated Dibenzofurans</i> and <i>Chlorinated Dibenzo-p-dioxins</i> . Use water spray to keep fire-exposed containers cool.	Polychlorinated Biphenyls are not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE) and STRONG ACIDS (such as HYDROCHLORIC, SULFURIC and NITRIC).

SPILL/LEAKS
Isolation Distance:

Spills: 50 meters (150 feet)

Fire: 800 meters (1/2 mile)

Absorb liquids in vermiculite, dry sand, earth, or a similar material and place into sealed containers for disposal.

DO NOT wash into sewer.

Polychlorinated Biphenyls bioaccumulate and are hazardous to the environment.

PHYSICAL PROPERTIES

Flash Point:	286° to 385°F (141° to 196°C)
Auto Ignition Temp:	464°F (240°C)
Vapor Pressure:	0.001 mm Hg at 68°F (20°C)
Specific Gravity:	1.3 (water = 1)
Water Solubility:	Insoluble
Boiling Point:	617° to 734°F (325° to 390°C)
Melting Point:	-2° to 50°F (-19° to 10°C)
Molecular Weight:	258 to 326

EXPOSURE LIMITS
OSHA: 1 mg/m³, 8-hr TWA (42% *Chlorine*) and 0.5 mg/m³, 8-hr TWA (54% *Chlorine*)

NIOSH: 0.001 mg/m³, 10-hr TWA

ACGIH: 1 mg/m³, 8-hr TWA (42% *Chlorine*) and 0.5 mg/m³, 8-hr TWA (54% *Chlorine*)

IDLH: 5 mg/m³
PROTECTIVE EQUIPMENT

Gloves:	Butyl, Neoprene, Polyvinyl Chloride, Silver Shield®/4H® and Viton (>4-hr breakthrough)
Coveralls:	Tychem® CPF 2, SL, CPF 4 and Responder® (>8-hr breakthrough)
Respirator:	>0.001 mg/m ³ - Supplied air or SCBA

HEALTH EFFECTS

Eyes:	Irritation
Skin:	Irritation
Inhalation:	Nose, throat and lung irritation with coughing, wheezing and shortness of breath Headache, nausea, vomiting, and abdominal pain
Chronic:	Cancer (skin, brain, pancreas) in humans

FIRST AID AND DECONTAMINATION

Remove the person from exposure.

Flush eyes with large amounts of water for at least 15 minutes. Remove contact lenses if worn.

Quickly remove contaminated clothing and wash contaminated skin with large amounts of soap and water.

Begin artificial respiration if breathing has stopped and CPR if necessary.

Transfer promptly to a medical facility

Right to Know Hazardous Substance Fact Sheet

Common Name: **LEAD**

Synonym: Metallic Lead

Chemical Name: Lead

Date: September 2007 Revision: December 2016

Description and Use

Lead is a heavy, soft, silvery-gray metal. It is used in the production of storage batteries, ammunition, cable covering, pigments, glass, ceramic glazes, casting metals, and solders.

Reasons for Citation

- **Lead** is on the Right to Know Hazardous Substance List because it is cited by OSHA, ACGIH, DOT, NIOSH, NTP, DEC, IARC and EPA.
- This chemical is on the Special Health Hazard Substance List.

SEE GLOSSARY ON PAGE 5.

FIRST AID

Eye Contact

- Immediately flush with large amounts of cool water for at least 15 minutes, lifting upper and lower lids. Remove contact lenses, if worn, while rinsing.

Skin Contact

- Remove contaminated clothing. Wash contaminated skin with soap and water.

Inhalation

- Remove the person from exposure.
- Begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.
- Transfer promptly to a medical facility.

EMERGENCY NUMBERS

Poison Control: 1-800-222-1222

CHEMTREC: 1-800-424-9300

NYS Spill Hotline: 1-800-457-7362 National

Response Center: 1-800-424-8802

CAS Number: 7439-92-1

RTK Substance Number: 1096

DOT Number: UN 3077

EMERGENCY RESPONDERS >>>> SEE BACK PAGE

Hazard Summary

Hazard Rating	NYDOH	NFPA
HEALTH	4	-
FLAMMABILITY	0	-
REACTIVITY	0	-
CARCINOGEN TERATOGEN POISONOUS FUMES ARE PRODUCED IN FIRE DOES NOT BURN		

Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

- **Lead** can affect you when inhaled or swallowed.
- **Lead** is a CARCINOGEN and may be a TERATOGEN. HANDLE WITH EXTREME CAUTION.
- Contact can irritate the eyes.
- Exposure can cause headache, irritability, and muscle and joint pain.
- Repeated exposure can cause *Lead poisoning* with metallic taste, colic and muscle cramps.
- **Lead** may damage the nervous system.
- Exposure may cause kidney and brain damage, and anemia.

Workplace Exposure Limits

OSHA: The legal airborne permissible exposure limit (PEL) is **0.05 mg/m³** averaged over an 8-hour workshift.

NIOSH: The recommended airborne exposure limit (REL) is **0.05 mg/m³** averaged over a 10-hour workshift. Air concentrations should be maintained so that blood **Lead** is less than **0.06 mg per 100 grams** of whole blood.

ACGIH: The threshold limit value (TLV) is **0.05 mg/m³** averaged over an 8-hour workshift.

- **Lead** is a PROBABLE CARCINOGEN in humans and may be a TERATOGEN in humans. There may be no safe level of exposure to a carcinogen, so all contact should be reduced to the lowest possible level.

Determining Your Exposure

- ▶ Read the product manufacturer's Material Safety Data Sheet (MSDS) and the label to determine product ingredients and important safety and health information about the product mixture.
- ▶ You have a right to this information under the New York State Right-to-Know Law and the New York State Public Employees Safety and Health Act (PESHA), and under the federal Occupational Safety and Health Act (OSHA) if you are a private worker.
- ▶ The New York State Right-to-Know Law requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard (29 CFR 1910.1200) and the PESHA Hazard Communication Standard require employers to provide similar information and training to their employees.

This Fact Sheet is a summary of available information regarding the health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

Health Hazard Information

Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to **Lead**:

- ▶ Contact can irritate the eyes.
- ▶ **Lead** can cause headache, irritability, reduced memory, disturbed sleep, and mood and personality changes.
- ▶ Exposure can cause upset stomach, poor appetite, weakness and fatigue.

Chronic Health Effects

The following chronic (long-term) health effects can occur at some time after exposure to **Lead** and can last for months or years:

Cancer Hazard

- ▶ **Lead** is a PROBABLE CARCINOGEN in humans. There is some evidence that **Lead** and *Lead compounds* cause lung, stomach, brain and kidney cancers in humans and they have been shown to cause kidney cancer in animals.
- ▶ Many scientists believe there is no safe level of exposure to a carcinogen.

Reproductive Hazard

- ▶ **Lead** may be a TERATOGEN in humans since it is a teratogen in animals.
- ▶ It may decrease fertility in males and females, and damage the developing fetus and the testes (male reproductive glands).

Other Effects

- ▶ Repeated exposure to **Lead** can cause *Lead poisoning*. Symptoms include metallic taste, poor appetite, weight loss, colic, nausea, vomiting, and muscle cramps.
- ▶ Higher levels can cause muscle and joint pain, and weakness.
- ▶ High or repeated exposure may damage the nerves causing weakness, "pins and needles," and poor coordination in the arms and legs.
- ▶ **Lead** exposure increases the risk of high blood pressure.
- ▶ **Lead** may cause kidney and brain damage, and damage to the blood cells causing anemia.
- ▶ Repeated exposure causes **Lead** to accumulate in the body. It can take years for the body to get rid of excess **Lead**.

Medical

Medical Testing

Before first exposure, and every six (6) months thereafter, OSHA requires your employer to provide (for persons exposed to **30 micrograms** or more of **Lead per cubic meter** of air for 30 days or more per year):

- ▶ Blood *Lead* test
- ▶ ZPP (a special test for the effects of *Lead* on blood cells)

For employees with blood *Lead* levels above **40 micrograms per 100 grams** of whole blood (**40 micrograms per deciliter**), OSHA requires blood *Lead* level monitoring every two months until two consecutive blood *Lead* levels are below **40 micrograms per 100 grams** of whole blood. These employees must undergo a medical evaluation, which should include:

- ▶ Complete work and medical history
- ▶ Thorough physical examination, including examination of the central nervous system
- ▶ Blood *Lead* test
- ▶ ZPP
- ▶ Hemoglobin, hematocrit with complete blood count
- ▶ Urinalysis with microscopic examination
- ▶ Any other tests determined necessary by the examining physician

This evaluation should be performed at least annually.

OSHA requires your employer to provide you and your doctor with a copy of the OSHA Lead Standards (29 CFR 1910.1025 and 1926.62).

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 1910.1020).

Mixed Exposures

Body exposures to *Lead* from hobbies using *Lead* solder or pigments, target practice, and drinking moonshine made in *Leaded* containers will increase *Lead* levels. Repeated breathing or handling of *Leaded* gasoline may also add to body *Lead* levels.

Workplace Controls and Practices

Very toxic chemicals, or those that are reproductive hazards or sensitizers, require expert advice on control measures if a less toxic chemical cannot be substituted. Control measures include: (1) enclosing chemical processes for severely irritating and corrosive chemicals, (2) using local exhaust ventilation for chemicals that may be harmful with a single exposure, and (3) using general ventilation to control exposures to skin and eye irritants. For further information on workplace controls, consult the NIOSH document on Control Banding at www.cdc.gov/niosh/topics/ctrlbanding/.

The following work practices are also recommended:

- ▶ Label process containers.
- ▶ Provide employees with hazard information and training.
- ▶ Monitor airborne chemical concentrations.
- ▶ Use engineering controls if concentrations exceed recommended exposure levels.
- ▶ Provide eye wash fountains and emergency showers.
- ▶ Wash or shower if skin comes in contact with a hazardous material.
- ▶ Always wash at the end of the workshift.
- ▶ Change into clean clothing if clothing becomes contaminated.
- ▶ Do not take contaminated clothing home.
- ▶ Get special training to wash contaminated clothing.
- ▶ Do not eat, smoke, or drink in areas where chemicals are being handled, processed or stored.
- ▶ Wash hands carefully before eating, smoking, drinking, applying cosmetics or using the toilet.

In addition, the following may be useful or required:

- ▶ Specific engineering controls are required for this chemical by OSHA. Refer to the OSHA **Lead** Standards (29 CFR 1910.1025 and 1926.62).
- ▶ Use a vacuum or a wet method to reduce dust during clean-up. **DO NOT DRY SWEEP.**
- ▶ Use a high efficiency particulate air (HEPA) filter when vacuuming. Do not use a standard shop vacuum.

Personal Protective Equipment

The OSHA Personal Protective Equipment Standard (29 CFR 1910.132) requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

Gloves and Clothing

- ▶ Avoid skin contact with **Lead**. Wear personal protective equipment made from material which can not be permeated and/or degraded by this substance. Safety equipment suppliers/manufacturers can provide recommendations on the most protective glove/clothing material for your operation.
- ▶ Safety equipment manufacturers recommend *Nitrile*, *Latex*, or *Rubber* for gloves and DuPont *Tyvek*® as protective material for clothing.
- ▶ All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

Eye Protection

- ▶ Wear non-vented, impact resistant goggles when working with fumes, gases, or vapors.
- ▶ For impact hazards (such as flying fragments, chips or particles), wear safety glasses with side shields or safety goggles.
- ▶ Wear a face shield along with goggles when working with corrosive, highly irritating or toxic substances.

Respiratory Protection

Improper use of respirators is dangerous. Respirators should only be used if the employer has a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing, and medical exams, as described in the OSHA Respiratory Protection Standard (29 CFR 1910.134).

- ▶ Where the potential exists for exposure not higher than **0.5 mg/m³**, use a half-mask air purifying respirator equipped with high efficiency filters.
- ▶ Where the potential exists for exposure not higher than **2.5 mg/m³**, use a full facepiece, air purifying respirator with high efficiency filters.
- ▶ Where the potential exists for exposure not higher than **50 mg/m³**, use any powered-air purifying respirator with high efficiency filters or a half-mask supplied-air respirator operated in a positive pressure mode.
- ▶ Leave the area immediately if (1) while wearing a filter or cartridge respirator you can smell, taste, or otherwise detect **Lead**, (2) while wearing particulate filters abnormal resistance to breathing is experienced, or (3) eye irritation occurs while wearing a full facepiece respirator. Check to make sure the respirator-to-face seal is still good. If it is, replace the filter or cartridge. If the seal is no longer good, you may need a new respirator.
- ▶ Be sure to consider all potential sources of exposure in your workplace. You may need a combination of filters, prefilters or cartridges to protect against different forms of a chemical (such as vapor and mist) or against a mixture of chemicals.
- ▶ Where the potential exists for exposure not higher than **100 mg/m³**, use supplied-air respirators with full facepiece, hood, helmet or suit, operated in a positive pressure mode.
- ▶ Exposure to **100 mg/m³** is immediately dangerous to life and health. If the possibility of exposure above **100 mg/m³** (as *Lead*) exists, use a NIOSH approved self-contained breathing apparatus with a full facepiece operated in a pressure-demand or other positive-pressure mode equipped with an emergency escape air cylinder.

Fire Hazards

If employees are expected to fight fires, they must be trained and equipped as stated in the OSHA Fire Brigades Standard (29 CFR 1910.156).

- ▶ Extinguish fire using an agent suitable for type of surrounding fire. **Lead** itself does not burn.
- ▶ POISONOUS FUMES ARE PRODUCED IN FIRE, including *Lead Oxides*.
- ▶ Use water spray to keep fire-exposed containers cool.

Spills and Emergencies

If employees are required to clean-up spills, they must be properly trained and equipped. The OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) may apply.

If **Lead** is spilled, take the following steps:

- ▶ Evacuate personnel and secure and control entrance to the area.
- ▶ Eliminate all ignition sources.
- ▶ Collect spilled material using a HEPA-filter vacuum and deposit into sealed containers.
- ▶ Ventilate and wash area after clean-up is complete.
- ▶ DO NOT wash into sewer.
- ▶ It may be necessary to contain and dispose of **Lead** as a HAZARDOUS WASTE. Contact your state Department of Environmental Conservation (DEC) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.

Handling and Storage

Prior to working with **Lead** you should be trained on its proper handling and storage.

- ▶ A regulated, marked area should be established where **Lead** is handled, used, or stored.
- ▶ **Lead** reacts violently with HYDROGEN PEROXIDE; AMMONIUM NITRATE; ZIRCONIUM; SODIUM AZIDE; SODIUM ACETYLIDE; and CHLORINE TRIFLUORIDE.
- ▶ **Lead** is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE) and STRONG ACIDS (such as HYDROCHLORIC, SULFURIC and NITRIC).
- ▶ Store in tightly closed containers in a cool, well-ventilated area.

Occupational Health Services Resources

The New York State Department of Health offers multiple services in occupational health. These services include providing informational resources, educational materials, public presentations, and industrial hygiene and medical investigations and evaluations.

For more information, please contact:

New York State Department of Health
Right to Know
Bureau of Occupational Health and Injury Prevention
Empire State Plaza-Corning Tower, Room 1325
Albany, New York 12237
Phone: (518) 402-7900 or 800-458-1158
Web address: https://www.health.ny.gov/environmental/workplace/right_to_know/

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GLOSSARY

ACGIH is the American Conference of Governmental Industrial Hygienists. They publish guidelines called Threshold Limit Values (TLVs) for exposure to workplace chemicals.

Boiling point is the temperature at which a substance can change its physical state from a liquid to a gas.

A **carcinogen** is a substance that causes cancer.

The **CAS number** is unique, identifying number, assigned by the Chemical Abstracts Service, to a specific chemical.

CFR is the Code of Federal Regulations, which are the regulations of the United States government.

A **combustible** substance is a solid, liquid or gas that will burn.

A **corrosive** substance is a gas, liquid or solid that causes destruction of human skin or severe corrosion of containers.

DEC is the New York State Department of Environmental Conservation.

DOT is the Department of Transportation, the federal agency that regulates the transportation of chemicals.

EPA is the Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

A **fetus** is an unborn human or animal.

A **flammable** substance is a solid, liquid, vapor or gas that will ignite easily and burn rapidly.

The **flash point** is the temperature at which a liquid or solid gives off vapor that can form a flammable mixture with air.

IARC is the International Agency for Research on Cancer, a scientific group.

Ionization Potential is the amount of energy needed to remove an electron from an atom or molecule. It is measured in electron volts.

IRIS is the Integrated Risk Information System database by federal EPA. The database contains information on human health effects that may result from exposure to various chemicals in the environment.

LEL or **Lower Explosive Limit**, is the lowest concentration of a combustible substance (gas or vapor) in the air capable of continuing an explosion.

mg/m³ means milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

A **mutagen** is a substance that causes mutations. A **mutation** is a change in the genetic material in a body cell. Mutations can lead to birth defects, miscarriages, or cancer.

NAERG is the North American Emergency Response Guidebook. It is a guide for emergency responders for transportation emergencies involving hazardous substances.

NFPA is the National Fire Protection Association. It classifies substances according to their fire and explosion hazard.

NIOSH is the National Institute for Occupational Safety and Health. It tests equipment, evaluates and approves respirators, conducts studies of workplace hazards, and proposes standards to OSHA.

NTP is the National Toxicology Program which tests chemicals and reviews evidence for cancer.

OSHA is the federal Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

PESHA is the New York State Public Employees Safety and Health Act, which adopts and enforces health and safety standards in public workplaces.

Permeated is the movement of chemicals through protective materials.

PIH is a DOT designation for chemicals which are Poison Inhalation Hazards.

ppm means parts of a substance per million parts of air. It is a measure of concentration by volume in air.

A **reactive** substance is a solid, liquid or gas that releases energy under certain conditions.

STEL is a Short Term Exposure Limit which is usually a 15-minute exposure that should not be exceeded at any time during a work day.

A **teratogen** is a substance that causes birth defects by damaging the fetus.

UEL or **Upper Explosive Limit** is the highest concentration in air above which there is too much fuel (gas or vapor) to begin a reaction or explosion.

Vapor Density is the ratio of the weight of a given volume of one gas to the weight of another (usually *Hydrogen*), at the same temperature and pressure.

The **vapor pressure** is a measure of how readily a liquid or a solid mixes with air at its surface. A higher vapor pressure indicates a higher concentration of the substance in air and therefore increases the likelihood of breathing it in.

Common Name: **LEAD**

Synonym: Metallic Lead

CAS No: 7439-92-1

Molecular Formula: Pb₂

RTK Substance No: 1096

Description: Heavy, soft, silvery-gray metal

HAZARD DATA

Hazard Rating	Firefighting	Reactivity
4 - Health 0 - Fire 0 - Reactivity DOT#: UN 3077 ERG Guide #: 171 Hazard Class: 9 (Environmentally Hazardous Substance)	Extinguish fire using an agent suitable for type of surrounding fire. Lead itself does not burn. POISONOUS FUMES ARE PRODUCED IN FIRE , including <i>Lead Oxides</i> . Use water spray to keep fire-exposed containers cool.	Lead reacts violently with HYDROGEN PEROXIDE; AMMONIUM NITRATE; ZIRCONIUM; SODIUM AZIDE; SODIUM ACETYLIDE; and CHLORINE TRIFLUORIDE. Lead is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE) and STRONG ACIDS (such as HYDROCHLORIC, SULFURIC and NITRIC).

SPILL/LEAKS

Isolation Distance: 10 to 25 meters
(30 to 80 feet)
 Use a HEPA-filter vacuum for clean-up.
 Toxic to aquatic organisms.
 Hazardous to the environment and persists in the environment.
 DO NOT wash into sewer.

PHYSICAL PROPERTIES

Odor Threshold: No odor
Flash Point: Not combustible
LEL: N/A
UEL: N/A
Specific Gravity: **11.35 at 68°F (20°C)**
Vapor Pressure: 0 mm Hg at 68°F (20°C)
Water Solubility: Insoluble
Boiling Point: 3,164°F (1,740°C)
Melting Point: 621.5°F (327.5°C)

EXPOSURE LIMITS

OSHA: 0.05 mg/m³, 8-hr TWA
NIOSH: 0.05 mg/m³, 10-hr TWA
ACGIH: 0.05 mg/m³, 8-hr TWA
IDLH LEVEL: 100 mg/m³
PAC LEVELS: PAC-1 = 0.15 mg/m³; PAC-2 = 120 mg/m³; PAC-3 = 700 mg/m³

PROTECTIVE EQUIPMENT

Gloves: Nitrile, Latex, Rubber
Coveralls: DuPont Tyvek®
Boots: Latex, Butyl, Neoprene
Respirator: ≤0.5 mg/m³ - N100
 ≤2.5 mg/m³ - full facepiece APR with High Efficiency filters
 ≤50 mg/m³ - full facepiece powered APR with High Efficiency filters
 ≤100 mg/m³ - Pressure-demand supplied-air
 >100 mg/m³ - Pressure-demand SCBA

HEALTH EFFECTS

Eyes: Irritation
Skin: No Information
Acute: Headache, irritability, upset stomach, and weakness
Chronic: *Lead* may cause lung, brain, stomach, and kidney cancer in humans.
 Metallic taste, colic, muscle cramps
 Damage to the nervous system

FIRST AID AND DECONTAMINATION

Remove the person from exposure.
Flush eyes with large amounts of water for at least 15 minutes.
 Remove contact lenses if worn.
Remove contaminated clothing and wash contaminated skin with soap and water.
Transfer to a medical facility.

Right to Know Hazardous Substance Fact Sheet

Common Name: **ASBESTOS**

Synonyms: See Below

Chemical Name: Asbestos

Date: January 2001 Revision: December 2009

CAS Number: 1332-21-4

RTK Substance Number: 0164

DOT Number: NA 2212

Description and Use

Asbestos is the general term for a group of six naturally occurring, fibrous, *Silicate* minerals. They range in color from white to gray, green, blue or brown and are used in brake linings, heat resistant materials, roofing composites, and in heat and electrical insulations. **Asbestos** has not been manufactured in the United States since 2002.

This fact sheet can also be used for:

ASBESTOS, ACTINOLITE (RTK # 3170)	CAS# 77536-66-4
ASBESTOS, AMOSITE (RTK # 0165)	CAS# 12172-73-5
ASBESTOS, ANTHOPHYLLITE (RTK # 0166)	CAS# 77536-67-5
ASBESTOS, CHRYSOTILE (RTK # 0167)	CAS# 12001-29-5
ASBESTOS, CROCIDOLITE (RTK # 0168)	CAS# 12001-28-4
ASBESTOS, TREMOLITE (RTK # 3283)	CAS# 77536-68-6
TALC (CONTAINING ASBESTOS FIBERS) (RTK # 4203)	CAS# 14807-96-6

Reasons for Citation

- ▶ **Asbestos** is on the Right to Know Hazardous Substance List because it is cited by OSHA, ACGIH, DOT, NIOSH, NTP, DEC, IARC, IRIS and EPA.
- ▶ This chemical is on the Special Health Hazard Substance List.

SEE GLOSSARY ON PAGE 5.

FIRST AID

Eye Contact

- ▶ Immediately flush with large amounts of water for at least 15 minutes, lifting upper and lower lids. Remove contact lenses, if worn, while rinsing.

Skin Contact

- ▶ Remove contaminated clothing and wash contaminated skin with soap and water.

Inhalation

- ▶ Remove the person from exposure.
- ▶ Begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.
- ▶ Transfer promptly to a medical facility.

EMERGENCY NUMBERS

Poison Control: 1-800-222-1222

CHEMTREC: 1-800-424-9300

NYS Spill Hotline: 1-800-457-7362

National Response Center: 1-800-424-8802

EMERGENCY RESPONDERS >>>> SEE LAST PAGE

Hazard Summary

Hazard Rating	NYDOH	NFPA
HEALTH	4	-
FLAMMABILITY	0	-
REACTIVITY	0	-
CARCINOGEN DOES NOT BURN		

Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

- ▶ **Asbestos** can affect you when inhaled.
- ▶ **Asbestos** is a CARCINOGEN. HANDLE WITH EXTREME CAUTION.
- ▶ Repeated exposure to **Asbestos** can cause the disease called *Asbestosis*, a scarring of the lungs that results in changes on chest x-rays. *Asbestosis* develops some years (from seven to thirty) after the period of exposure. Symptoms include cough, shortness of breath and chest pain. It can progress to disability and death.

Workplace Exposure Limits

The following exposure limits are for fibers longer than 5 micrometers:

OSHA: The legal airborne permissible exposure limit (PEL) is **0.1 fiber/cc** (fiber per cubic centimeter) averaged over an 8-hour workshift and **1 fiber/cc**, not to be exceeded during any 30-minute work period.

NIOSH: The recommended airborne exposure limit (REL) is **0.1 fiber/cc** averaged over a 10-hour workshift.

ACGIH: The threshold limit value (TLV) is **0.1 fiber/cc** (as the *respirable fraction*) averaged over an 8-hour workshift.

- ▶ **Asbestos** is a CARCINOGEN in humans. There may be no safe level of exposure to a carcinogen, so all contact should be reduced to the lowest possible level.

Determining Your Exposure

- ▶ Read the product manufacturer's Material Safety Data Sheet (MSDS) and the label to determine product ingredients and important safety and health information about the product mixture.
- ▶ You have a right to this information under the New York State Right-to-Know Law and the New York State Public Employees Safety and Health Act (PESHA), and under the federal Occupational Safety and Health Act (OSHA) if you are a private worker.
- ▶ The New York State Right-to-Know Law requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard (29 CFR 1910.1200) and the PESHA Hazard Communication Standard require employers to provide similar information and training to their employees.

This Fact Sheet is a summary of available information regarding the health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

Health Hazard Information

Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to **Asbestos**:

- ▶ There are no known acute effects. People who develop serious and fatal disease later in life may feel fine at the time of exposure.

Chronic Health Effects

The following chronic (long-term) health effects can occur at some time after exposure to **Asbestos** and can last for months or years:

Cancer Hazard

- ▶ **Asbestos** is a CARCINOGEN in humans. It has been shown to cause cancer of the lung (including mesothelioma) and the gastrointestinal tract.
- ▶ Many scientists believe there is no safe level of exposure to a carcinogen.

Reproductive Hazard

- ▶ While **Asbestos** has been tested, further testing is required to assess its potential to cause reproductive harm.

Other Effects

- ▶ Repeated exposure to **Asbestos** can cause the disease called *Asbestosis*, a scarring of the lungs that results in changes on chest x-rays. *Asbestosis* develops some years (from seven to thirty) after the period of exposure. Symptoms include cough, shortness of breath and chest pain. It can progress to disability and death. The earlier exposure is stopped, the better the chance of stopping serious disease later.

Medical

Medical Testing

Before first exposure and every 12 months thereafter, OSHA requires your employer to provide, for persons exposed to **0.1 fiber/cc** (fiber per cubic centimeter) of **Asbestos**, a work and medical history and exam which shall include:

- ▶ Chest x-ray and lung function tests
- ▶ Any other exams or tests suggested by the examining physician.

OSHA requires your employer to provide you and your doctor with a copy of the OSHA *Asbestos* Standard (29 CFR 1910.1001).

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 1910.1020).

Mixed Exposures

- ▶ Smoking can cause heart disease, lung cancer, emphysema, and other respiratory problems. It may worsen respiratory conditions caused by chemical exposure. Even if you have smoked for a long time, stopping now will reduce your risk of developing health problems.

Workplace Controls and Practices

Very toxic chemicals, or those that are reproductive hazards or sensitizers, require expert advice on control measures if a less toxic chemical cannot be substituted. Control measures include: (1) enclosing chemical processes for severely irritating and corrosive chemicals, (2) using local exhaust ventilation for chemicals that may be harmful with a single exposure, and (3) using general ventilation to control exposures to skin and eye irritants. For further information on workplace controls, consult the NIOSH document on Control Banding at www.cdc.gov/niosh/topics/ctrlbanding/.

The following work practices are also recommended:

- ▶ Label process containers.
- ▶ Provide employees with hazard information and training.
- ▶ Monitor airborne chemical concentrations.
- ▶ Use engineering controls if concentrations exceed recommended exposure levels.
- ▶ Provide eye wash fountains and emergency showers.
- ▶ Wash or shower if skin comes in contact with a hazardous material.
- ▶ Always wash at the end of the workshift.
- ▶ Change into clean clothing if clothing becomes contaminated.
- ▶ Do not take contaminated clothing home.
- ▶ Get special training to wash contaminated clothing.
- ▶ Do not eat, smoke, or drink in areas where chemicals are being handled, processed or stored.
- ▶ Wash hands carefully before eating, smoking, drinking, applying cosmetics or using the toilet.

In addition, the following may be useful or required:

- ▶ Specific actions are required for this chemical by OSHA. Refer to the OSHA *Asbestos* Standard (29 CFR 1910.1001).
- ▶ Use a vacuum or a wet method to reduce dust during clean-up. **DO NOT DRY SWEEP and NEVER USE COMPRESSED AIR.**
- ▶ Use a high efficiency particulate air (HEPA) filter when vacuuming. Do not use a standard shop vacuum.

Personal Protective Equipment

The OSHA Personal Protective Equipment Standard (29 CFR 1910.132) requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

Gloves and Clothing

- ▶ Avoid skin contact with **Asbestos**. Wear personal protective equipment made from material which can not be permeated or degraded by this substance. Safety equipment suppliers and manufacturers can provide recommendations on the most protective glove and clothing material for your operation.
- ▶ Safety equipment manufacturers recommend Nitrile and Natural Rubber for gloves, and Tyvek®, or the equivalent, as a protective clothing material.

- ▶ All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

Eye Protection

- ▶ Wear eye protection with side shields or goggles.

Respiratory Protection

Improper use of respirators is dangerous. Respirators should only be used if the employer has implemented a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing, and medical exams, as described in the OSHA Respiratory Protection Standard (29 CFR 1910.134).

- ▶ **DO NOT USE DISPOSABLE RESPIRATORS FOR Asbestos.**
- ▶ Where the potential exists for exposure over **0.1 fiber/cc**, use a NIOSH approved negative pressure, air-purifying, particulate filter respirator with an N, R or P100 filter. More protection is provided by a full facepiece respirator than by a half-mask respirator, and even greater protection is provided by a powered-air purifying respirator.
- ▶ A powered-air purifying respirator (PAPR) with a high efficiency filter must be provided instead of a negative pressure respirator when the employee chooses it and when the respirator (PAPR) provides adequate protection.
- ▶ Leave the area immediately if (1) while wearing a filter or cartridge respirator you can smell, taste, or otherwise detect **Asbestos**, (2) while wearing particulate filters abnormal resistance to breathing is experienced, or (3) eye irritation occurs while wearing a full facepiece respirator. Check to make sure the respirator-to-face seal is still good. If it is, replace the filter or cartridge. If the seal is no longer good, you may need a new respirator.
- ▶ Consider all potential sources of exposure in your workplace. You may need a combination of filters, prefilters or cartridges to protect against different forms of a chemical (such as vapor and mist) or against a mixture of chemicals.
- ▶ Where the potential exists for exposure over **1 fiber/cc**, use a NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus or an emergency escape air cylinder.

Fire Hazards

If employees are expected to fight fires, they must be trained and equipped as stated in the OSHA Fire Brigades Standard (29 CFR 1910.156).

- ▶ Extinguish fire using an agent suitable for type of surrounding fire. **Asbestos** itself does not burn.

Spills and Emergencies

If employees are required to clean-up spills, they must be properly trained and equipped. The OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) may apply.

If **Asbestos** is spilled, take the following steps:

- ▶ Evacuate personnel and secure and control entrance to the area.
- ▶ Eliminate all ignition sources.
- ▶ Moisten spilled material first or use a HEPA-filter vacuum for clean-up and place into sealed containers for disposal.
- ▶ Ventilate and wash area after clean-up is complete.
- ▶ DO NOT USE compressed air for clean-up.
- ▶ It may be necessary to contain and dispose of **Asbestos** as a HAZARDOUS WASTE. Contact your state Department of Environmental Conservation (DEC) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.

Handling and Storage

Prior to working with **Asbestos** you should be trained on its proper handling and storage.

- ▶ A regulated, marked area should be established where **Asbestos** is handled, used or stored as required by the OSHA *Asbestos* Standard (29 CFR 1910.1001).
- ▶ Airborne **Asbestos** dust is very difficult to remove. It is essential that any area where **Asbestos** is handled be enclosed and isolated. The material should be kept wet with special surfactants and water.
- ▶ Enclose operations and use local exhaust ventilation with negative pressure air filtration and high efficiency particulate filters in the area of **Asbestos** removal. If enclosure with containment "glove" boxes is not used for minor repairs, respirators must be worn and proper procedures must be followed.
- ▶ All **Asbestos** materials must be removed and disposed of according to regulations. The area must be monitored to ensure airborne **Asbestos** levels are below limits prior to reoccupation of the area where **Asbestos** was disturbed.

Occupational Health Information Resources

The New York State Department of Health offers multiple services in occupational health. These services include providing informational resources, educational materials, public presentations, and industrial hygiene and medical investigations and evaluations.

For more information, please contact:

New York State Department of Health
 Right to Know
 Bureau of Occupational Health and Injury Prevention
 Empire State Plaza-Corning Tower, Room 1325
 Albany, New York 12237
 Phone: (518) 402-7900 or 800-458-1158
 Web address: https://www.health.ny.gov/environmental/workplace/right_to_know/

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GLOSSARY

ACGIH is the American Conference of Governmental Industrial Hygienists. They publish guidelines called Threshold Limit Values (TLVs) for exposure to workplace chemicals.

Acute Exposure Guideline Levels (AEGs) are established by the EPA. They describe the risk to humans resulting from once-in-a-lifetime, or rare, exposure to airborne chemicals.

Boiling point is the temperature at which a substance can change its physical state from a liquid to a gas.

A **carcinogen** is a substance that causes cancer.

The **CAS number** is unique, identifying number, assigned by the Chemical Abstracts Service, to a specific chemical.

CFR is the Code of Federal Regulations, which are the regulations of the United States government.

A **combustible** substance is a solid, liquid or gas that will burn.

A **corrosive** substance is a gas, liquid or solid that causes destruction of human skin or severe corrosion of containers.

The **critical temperature** is the temperature above which a gas cannot be liquefied, regardless of the pressure applied.

DEC is the New York State Department of Environmental Conservation.

DOT is the Department of Transportation, the federal agency that regulates the transportation of chemicals.

EPA is the Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

ERG is the Emergency Response Guidebook. It is a guide for emergency responders for transportation emergencies involving hazardous substances.

Emergency Response Planning Guideline (ERPG) values provide estimates of concentration ranges where one reasonably might anticipate observing adverse effects.

A **fetus** is an unborn human or animal.

A **flammable** substance is a solid, liquid, vapor or gas that will ignite easily and burn rapidly.

The **flash point** is the temperature at which a liquid or solid gives off vapor that can form a flammable mixture with air.

IARC is the International Agency for Research on Cancer's scientific group.

Ionization Potential is the amount of energy needed to remove an electron from an atom or molecule. It is measured in electron volts.

IRIS is the Integrated Risk Information System database on human health effects that may result from exposure to various chemicals, maintained by federal EPA.

LEL or Lower Explosive Limit, is the lowest concentration of a combustible substance (gas or vapor) in the air capable of continuing an explosion.

mg/m³ means milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

A **mutagen** is a substance that causes mutations. A **mutation** is a change in the genetic material in a body cell. Mutations can lead to birth defects, miscarriages, or cancer.

NFPA is the National Fire Protection Association. It classifies substances according to their fire and explosion hazard.

NIOSH is the National Institute for Occupational Safety and Health. It tests equipment, evaluates and approves respirators, conducts studies of workplace hazards, and proposes standards to OSHA.

NTP is the National Toxicology Program which tests chemicals and reviews evidence for cancer.

OSHA is the federal Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

PESHA is the New York State Public Employees Safety and Health Act, which adopts and enforces health and safety standards in public workplaces.

Permeated is the movement of chemicals through protective materials.

ppm means parts of a substance per million parts of air. It is a measure of concentration by volume in air.

Protective Action Criteria (PAC) are values established by the Department of Energy and are based on AEGs and ERPGs. They are used for emergency planning of chemical release events.

A **reactive** substance is a solid, liquid or gas that releases energy under certain conditions.

STEL is a Short Term Exposure Limit which is usually a 15-minute exposure that should not be exceeded at any time during a work day.

A **teratogen** is a substance that causes birth defects by damaging the fetus.

UEL or Upper Explosive Limit is the highest concentration in air above which there is too much fuel (gas or vapor) to begin a reaction or explosion.

Vapor Density is the ratio of the weight of a given volume of one gas to the weight of another (usually *Air*), at the same temperature and pressure.

The **vapor pressure** is a force exerted by the vapor in equilibrium with the solid or liquid phase of the same substance. The higher the vapor pressure the higher concentration of the substance in air.

Common Name: **ASBESTOS**

Synonyms: Actinolite; Amosite; Anthophyllite; Chrysotile; Crocidolite; Tremolite

CAS No: 1332-21-4

Molecular Formula: Varies

RTK Substance No: 0164

Description: Group of six naturally occurring, fibrous *Silicate* minerals that range in color from white to gray, green blue or brown

HAZARD DATA

Hazard Rating	Firefighting	Reactivity
4 - Health 0 - Fire 0 - Reactivity DOT#: NA 2212 ERG Guide #: 171 Hazard Class: 9 (Miscellaneous Hazardous Substance)	Extinguish fire using an agent suitable for type of surrounding fire. Asbestos itself does not burn.	Not reactive

SPILL/LEAKS

Isolation Distance:

Spill: 25 meters (75 feet)

Fire: 800 meters (1/2 mile)

Moisten spilled material first or use a HEPA-filter vacuum for clean-up and place into sealed containers for disposal.

DO NOT USE COMPRESSED AIR.

PHYSICAL PROPERTIES

Odor Threshold:	Odorless
Flash Point:	Noncombustible
Vapor Pressure:	0 mm Hg at 8°F (20°C) (approx.)
Water Solubility:	Insoluble
Boiling Point:	Decomposes
Melting Point:	1,112°F (600°C)
Molecular Weight:	277 (for <i>Chrysotile Asbestos</i>)

EXPOSURE LIMITS

OSHA: 0.1 f/cc, 8-hr TWA; 1 f/cc, 30 min. Ceiling

NIOSH: 0.1 f/cc, 10-hr TWA

ACGIH: 0.1 f/cc, 8-hr TWA

The Protective Action Criteria values are:

PAC-1 = 0.05 mg/m³

PAC-2 = 0.06 mg/m³

PAC-3 = 0.3 mg/m³

PROTECTIVE EQUIPMENT

Gloves:	Nitrile and Natural Rubber
Coveralls:	Tyvek®
Respirator:	>0.1 f/cc - full facepiece APR with <i>High efficiency filter</i> >1 f/cc (0.05 mg/m ³) - SCBA

HEALTH EFFECTS

Eyes:	No acute health effects known
Skin:	No acute health effects known
Inhalation:	No acute health effects known
Chronic:	Cancer (lung and gastrointestinal tract) in humans

FIRST AID AND DECONTAMINATION

Remove the person from exposure.

Flush eyes with large amounts of water for at least 15 minutes. Remove contact lenses if worn.

Remove contaminated clothing and wash contaminated skin with soap and water.

Begin artificial respiration if breathing has stopped and CPR if necessary.

Transfer promptly to a medical facility.

Right to Know Hazardous Substance Fact Sheet

Common Name: **SILICA, QUARTZ**

Synonyms: Silica, Crystalline; Crystallized Silicon Dioxide

Chemical Name: Quartz

Date: February 2010

Revision: April 2016

CAS Number:

14808-60-7

RTK Substance Number:

1660

DOT Number:

None

Description and Use

Silica, Quartz is an odorless, colorless, white or reddish crystalline (sand-like) solid. It is used in making glass, ceramics, and other *Silica* containing products, and as an abrasive and filtering agent.

Reasons for Citation

- **Silica, Quartz** is on the Right to Know Hazardous Substance List because it is cited by OSHA, ACGIH, NIOSH, NTP and IARC.
- This chemical is on the Special Health Hazard Substance List.

SEE GLOSSARY ON PAGE 5.

FIRST AID

Eye Contact

- Immediately flush with large amounts of water for at least 15 minutes, lifting upper and lower lids. Remove contact lenses, if worn, while rinsing.

Skin Contact

- Remove contaminated clothing and wash contaminated skin with soap and water.

Inhalation

- Remove the person from exposure.
- Begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.
- Transfer promptly to a medical facility.

EMERGENCY NUMBERS

Poison Control: 1-800-222-1222

CHEMTREC: 1-800-424-9300

NYS Spill Hotline: 1-800-457-7362

National Response Center: 1-800-424-8802

EMERGENCY RESPONDERS >>>> SEE LAST PAGE

Hazard Summary

Hazard Rating	NYDOH	NFPA
HEALTH	4	-
FLAMMABILITY	0	-
REACTIVITY	0	-
CARCINOGEN DOES NOT BURN		

Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

- **Silica, Quartz** can affect you when inhaled.
- **Silica, Quartz** is a CARCINOGEN. HANDLE WITH EXTREME CAUTION.
- Contact can irritate the eyes and nose.
- Exposure to high levels of **Silica, Quartz** can cause a very serious lung disease called *Silicosis* with cough and shortness of breath. Very high exposures can cause *Silicosis* to develop in a few weeks; with lower exposures it may occur over many years. *Silicosis* may cause death.
- If *Silicosis* develops, chances of getting Tuberculosis are increased.
- For more information, consult the Right to Know Hazardous Substance Fact Sheets on *SILICA, CRISTOBALITE* and *SILICA, TRIPOLI*.

Workplace Exposure Limits

OSHA: The legal airborne permissible exposure limit (PEL) is:

10 mg/m³

% Silicon Dioxide +2 (as *respirable dust*) averaged over an 8-hour workshift, and

30 mg/m³

% Silicon Dioxide +2 (as *total dust*) averaged over an 8-hour workshift.

NIOSH: The recommended airborne exposure limit is

0.1 mg/m³ (as *respirable dust*) averaged over a 10-hour workshift.

ACGIH: The recommended airborne exposure limit is

0.025 mg/m³ (as the *respirable fraction*) averaged over an 8-hour workshift.

- **Silica, Quartz** is a CARCINOGEN in humans. There may be no safe level of exposure to a carcinogen, so all contact should be reduced to the lowest possible level.

Determining Your Exposure

- ▶ Read the product manufacturer's Material Safety Data Sheet (MSDS) and the label to determine product ingredients and important safety and health information about the product mixture.
- ▶ You have a right to this information under the New York State Right-to-Know Law and the New York State Public Employees Safety and Health Act (PESHA), and under the federal Occupational Safety and Health Act (OSHA) if you are a private worker.
- ▶ The New York State Right-to-Know Law requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard (29 CFR 1910.1200) and the PESHA Hazard Communication Standard require employers to provide similar information and training to their employees.

This Fact Sheet is a summary of available information regarding the health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

Health Hazard Information

Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to **Silica, Quartz**:

- ▶ Contact can irritate the eyes and nose.
- ▶ Exposure to high levels of **Silica, Quartz** can cause a serious lung disease called *Silicosis* with cough, shortness of breath, and changes in the chest x-ray.

Chronic Health Effects

The following chronic (long-term) health effects can occur at some time after exposure to **Silica, Quartz** and can last for months or years:

Cancer Hazard

- ▶ **Silica, Quartz** is a CARCINOGEN in humans. There is evidence that *Crystalline Silica* causes lung cancer in humans and **Silica, Quartz** causes lung cancer in animals.
- ▶ Many scientists believe there is no safe level of exposure to a carcinogen. Such substance may also have the potential for causing reproductive damage in humans.

Reproductive Hazard

- ▶ According to the information presently available to the New York State Department of Health, **Silica, Quartz** has not been tested for its ability to affect reproduction.

Other Effects

- ▶ Exposure to **Silica, Quartz** over a long period of time can cause a very serious lung disease called *Silicosis*. Simple *Silicosis* may only cause changes in the chest x-ray. Very high exposures can cause *Silicosis* to develop in a few weeks; with lower exposures it may occur over many years. *Silicosis* may cause death.
- ▶ If *Silicosis* develops, chances of getting *Tuberculosis* are increased.

Medical

Medical Testing

For frequent or potentially high exposure (half the TLV or greater), the following are recommended before beginning work and at regular times after that:

- ▶ Lung function tests
- ▶ Chest x-ray every one to three years

If abnormal chest x-ray develops, the following should be done periodically:

- ▶ Skin test for *Tuberculosis*

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 1910.1020).

Mixed Exposures

- ▶ Smoking can cause heart disease, lung cancer, emphysema, and other respiratory problems. It may worsen respiratory conditions caused by chemical exposure. Even if you have smoked for a long time, stopping now will reduce your risk of developing health problems.

Workplace Controls and Practices

Very toxic chemicals, or those that are reproductive hazards or sensitizers, require expert advice on control measures if a less toxic chemical cannot be substituted. Control measures include: (1) enclosing chemical processes for severely irritating and corrosive chemicals, (2) using local exhaust ventilation for chemicals that may be harmful with a single exposure, and (3) using general ventilation to control exposures to skin and eye irritants. For further information on workplace controls, consult the NIOSH document on Control Banding at www.cdc.gov/niosh/topics/ctrlbanding/.

The following work practices are also recommended:

- ▶ Label process containers.
- ▶ Provide employees with hazard information and training.
- ▶ Monitor airborne chemical concentrations.
- ▶ Use engineering controls if concentrations exceed recommended exposure levels.
- ▶ Provide eye wash fountains and emergency showers.
- ▶ Wash or shower if skin comes in contact with a hazardous material.
- ▶ Always wash at the end of the workshift.
- ▶ Change into clean clothing if clothing becomes contaminated.
- ▶ Do not take contaminated clothing home.
- ▶ Get special training to wash contaminated clothing.
- ▶ Do not eat, smoke, or drink in areas where chemicals are being handled, processed or stored.
- ▶ Wash hands carefully before eating, smoking, drinking, applying cosmetics or using the toilet.

In addition, the following may be useful or required:

- ▶ Use a vacuum or a wet method to reduce dust during clean-up. DO NOT DRY SWEEP.
- ▶ Use a high efficiency particulate air (HEPA) filter when vacuuming. Do not use a standard shop vacuum.

Personal Protective Equipment

The OSHA Personal Protective Equipment Standard (29 CFR 1910.132) requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

Gloves and Clothing

- ▶ Avoid skin contact with **Silica, Quartz**. Wear personal protective equipment made from material which can not be permeated or degraded by this substance. Safety equipment suppliers and manufacturers can provide recommendations on the most protective glove and clothing material for your operation.
- ▶ Safety equipment manufacturers recommend Nitrile and Natural Rubber for gloves, and Tyvek®, or the equivalent, as a protective clothing material.
- ▶ All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

Eye Protection

- ▶ Wear eye protection with side shields or goggles.

Respiratory Protection

Improper use of respirators is dangerous. Respirators should only be used if the employer has implemented a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing, and medical exams, as described in the OSHA Respiratory Protection Standard (29 CFR 1910.134).

- ▶ New York State Law requires that employers provide workers with full face-piece air purifying respirators when engineering controls cannot be used.
- ▶ Where the potential exists for exposure over **0.1 mg/m³** (as *respirable dust*), use a NIOSH approved negative pressure, air-purifying, particulate filter respirator with an N, R or P95 filter. More protection is provided by a full face-piece respirator than by a half-mask respirator, and even greater protection is provided by a powered-air purifying respirator.
- ▶ Leave the area immediately if (1) while wearing a filter or cartridge respirator you can smell, taste, or otherwise detect **Silica, Quartz**, (2) while wearing particulate filters abnormal resistance to breathing is experienced, or (3) eye irritation occurs while wearing a full face piece respirator. Check to make sure the respirator-to-face seal is still good. If it is, replace the filter or cartridge. If the seal is no longer good, you may need a new respirator.
- ▶ Consider all potential sources of exposure in your workplace. You may need a combination of filters, prefilters or cartridges to protect against different forms of a chemical (such as vapor and mist) or against a mixture of chemicals.
- ▶ Where the potential exists for exposure over **1 mg/m³** (as *respirable dust*), use a NIOSH approved supplied-air respirator with a full face piece operated in a pressure-demand or other positive-pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus or an emergency escape air cylinder.
- ▶ Exposure to **50 mg/m³** is immediately dangerous to life and health. If the possibility of exposure above **50 mg/m³** exists, use a NIOSH approved self-contained breathing apparatus with a full face-piece operated in a pressure-demand or other positive-pressure mode equipped with an emergency escape air cylinder.

Fire Hazards

If employees are expected to fight fires, they must be trained and equipped as stated in the OSHA Fire Brigades Standard (29 CFR 1910.156).

- ▶ Extinguish fire using an agent suitable for type of surrounding fire. **Silica, Quartz** itself does not burn.

Spills and Emergencies

If employees are required to clean-up spills, they must be properly trained and equipped. The OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) may apply.

If **Silica, Quartz** is spilled, take the following steps:

- ▶ Evacuate personnel and secure and control entrance to the area.
- ▶ Eliminate all ignition sources.
- ▶ Moisten spilled material first or use a HEPA-filter vacuum for clean-up and place into sealed containers for disposal.
- ▶ It may be necessary to contain and dispose of **Silica, Quartz** as a HAZARDOUS WASTE. Contact your state Department of Environmental Conservation (DEC) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.

Handling and Storage

Prior to working with **Silica, Quartz** you should be trained on its proper handling and storage.

- ▶ A regulated, marked area should be established where **Silica, Quartz** is handled, used, or stored.
- ▶ **Silica, Quartz** is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE); ACETYLENE; AMMONIA; HYDROGEN FLUORIDE; and CATECHOL.
- ▶ Store in tightly closed containers in a cool, well-ventilated area.

Occupational Health Information Resources

The New York State Department of Health offers multiple services in occupational health. These services include providing informational resources, educational materials, public presentations, and industrial hygiene and medical investigations and evaluations.

For more information, please contact:

New York State Department of Health
Right to Know
Bureau of Occupational Health and Injury Prevention
Empire State Plaza-Corning Tower, Room 1325
Albany, New York 12237
Phone: (518) 402-7900 or 800-458-1158
Web address: https://www.health.ny.gov/environmental/workplace/right_to_know/

This Right to Know Hazardous Substance Fact Sheets is not intended to be copied and sold for commercial purposes.

GLOSSARY

ACGIH is the American Conference of Governmental Industrial Hygienists. They publish guidelines called Threshold Limit Values (TLVs) for exposure to workplace chemicals.

Acute Exposure Guideline Levels (AEGs) are established by the EPA. They describe the risk to humans resulting from once-in-a lifetime, or rare, exposure to airborne chemicals.

Boiling point is the temperature at which a substance can change its physical state from a liquid to a gas.

A **carcinogen** is a substance that causes cancer.

The **CAS number** is unique, identifying number, assigned by the Chemical Abstracts Service, to a specific chemical.

CFR is the Code of Federal Regulations, which are the regulations of the United States government.

A **combustible** substance is a solid, liquid or gas that will burn.

A **corrosive** substance is a gas, liquid or solid that causes destruction of human skin or severe corrosion of containers.

The **critical temperature** is the temperature above which a gas cannot be liquefied, regardless of the pressure applied.

DEC is the New York State Department of Environmental Conservation.

DOT is the Department of Transportation, the federal agency that regulates the transportation of chemicals.

EPA is the Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

ERG is the Emergency Response Guidebook. It is a guide for emergency responders for transportation emergencies involving hazardous substances.

Emergency Response Planning Guideline (ERPG) values provide estimates of concentration ranges where one reasonably might anticipate observing adverse effects.

A **fetus** is an unborn human or animal.

A **flammable** substance is a solid, liquid, vapor or gas that will ignite easily and burn rapidly.

The **flash point** is the temperature at which a liquid or solid gives off vapor that can form a flammable mixture with air.

IARC is the International Agency for Research on Cancer, a scientific group.

Ionization Potential is the amount of energy needed to remove an electron from an atom or molecule. It is measured in electron volts.

IRIS is the Integrated Risk Information System database on human health effects that may result from exposure to various chemicals, maintained by federal EPA.

LEL or Lower Explosive Limit, is the lowest concentration of a combustible substance (gas or vapor) in the air capable of continuing an explosion.

mg/m³ means milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

A **mutagen** is a substance that causes mutations. A **mutation** is a change in the genetic material in a body cell. Mutations can lead to birth defects, miscarriages, or cancer.

NFPA is the National Fire Protection Association. It classifies substances according to their fire and explosion hazard.

NIOSH is the National Institute for Occupational Safety and Health. It tests equipment, evaluates and approves respirators, conducts studies of workplace hazards, and proposes standards to OSHA.

NTP is the National Toxicology Program which tests chemicals and reviews evidence for cancer.

OSHA is the federal Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

PESHA is the New York State Public Employees Safety and Health Act, which adopts and enforces health and safety standards in public workplaces.

Permeated is the movement of chemicals through protective materials.

ppm means parts of a substance per million parts of air. It is a measure of concentration by volume in air.

Protective Action Criteria (PAC) are values established by the Department of Energy and are based on AEGs and ERPGs. They are used for emergency planning of chemical release events.

A **reactive** substance is a solid, liquid or gas that releases energy under certain conditions.

STEL is a Short Term Exposure Limit which is usually a 15-minute exposure that should not be exceeded at any time during a work day.

A **teratogen** is a substance that causes birth defects by damaging the fetus.

UEL or Upper Explosive Limit is the highest concentration in air above which there is too much fuel (gas or vapor) to begin a reaction or explosion.

Vapor Density is the ratio of the weight of a given volume of one gas to the weight of another (usually Air), at the same temperature and pressure.

The **vapor pressure** is a force exerted by the vapor in equilibrium with the solid or liquid phase of the same substance. The higher the vapor pressure the higher concentration of the substance in air.

Common Name: **SILICA, QUARTZ**

Synonyms: Silica, Crystalline; Crystallized Silicon Dioxide

CAS No: 14808-60-7

Molecular Formula: SiO_2

RTK Substance No: 1660

Description: Odorless, colorless, white or reddish crystalline solid

HAZARD DATA

Hazard Rating

4 - Health

0 - Fire

0 - Reactivity

DOT#: None

ERG Guide #: None

Hazard Class: None

Firefighting

Extinguish fire using an agent suitable for type of surrounding fire. **Silica, Quartz** itself does not burn.

Reactivity

Silica, Quartz is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE); ACETYLENE; AMMONIA; HYDROGEN FLUORIDE; and CATECHOL.

SPILL/LEAKS

Isolation Distance:

Spill: 25 meters (75 feet)

Moisten spilled material first or use a HEPA-filter vacuum for clean-up and place into sealed containers for disposal.

PHYSICAL PROPERTIES

Odor Threshold:

Odorless

Flash Point:

Noncombustible

Vapor Pressure:

0 mm Hg at 68°F (20°C)

Specific Gravity:

2.6 (water = 1)

Water Solubility:

Insoluble

Boiling Point:

4,046°F (2,230°C)

Melting Point:

3,110°F (1,719°C)

Molecular Weight:

60.09

EXPOSURE LIMITS

NIOSH: 0.1 mg/m³, 10-hr TWA

ACGIH: 0.025 mg/m³, 8-hr TWA

IDLH: 50 mg/m³

The Protective Action Criteria values are:

PAC-1 = 0.075 mg/m³ PAC-2 = 33 mg/m³

PAC-3 = 200 mg/m³

PROTECTIVE EQUIPMENT

Gloves:

Nitrile and Natural Rubber

Coveralls:

Tyvek®

Respirator:

<1 mg/m³ - Full facepiece APR with *High efficiency filter*
>1 mg/m³ - SCBA

HEALTH EFFECTS

Eyes: Irritation

Skin: Irritation

Inhalation: Nose and lung irritation with cough, and shortness of breath (*Silicosis*)

Chronic: *Crystalline Silica* causes cancer (lung) in humans.

FIRST AID AND DECONTAMINATION

Remove the person from exposure.

Flush eyes with large amounts of water for at least 15 minutes. Remove contact lenses if worn.

Remove contaminated clothing and wash contaminated skin with soap and water.

Begin artificial respiration if breathing has stopped and CPR if necessary.

Transfer promptly to a medical facility.

Right to Know Hazardous Substance Fact Sheet

Common Name: **TRICHLOROETHYLENE**

Synonyms: Ethylene Trichloride; TCE; Trichloroethene

Chemical Name: Ethene, Trichloro-

Date: January 2000 Revision: December 2008

CAS Number: 79-01-6

RTK Substance Number: 1890

DOT Number: UN 1710

Description and Use

Trichloroethylene is a clear, colorless liquid with a sweet odor. It is used as a degreaser for metal parts, as a solvent and fumigant, and to make other chemicals.

► ODOR THRESHOLD = 1.4 ppm

- Odor thresholds vary greatly. Do not rely on odor alone to determine potentially hazardous exposures.

Reasons for Citation

- **Trichloroethylene** is on the Right to Know Hazardous Substance List because it is cited by OSHA, ACGIH, DOT, NIOSH, NTP, DEC, IARC, IRIS, NFPA and EPA.
- This chemical is on the Special Health Hazard Substance List.

SEE GLOSSARY ON PAGE 5.

FIRST AID

Eye Contact

- Immediately flush with large amounts of water for at least 15 minutes, lifting upper and lower lids. Remove contact lenses, if worn, while flushing. Seek medical attention.

Skin Contact

- Quickly remove contaminated clothing. Immediately wash contaminated skin with large amounts of soap and water. Seek medical attention.

Inhalation

- Remove the person from exposure.
- Begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.
- Transfer promptly to a medical facility.

EMERGENCY NUMBERS

Poison Control: 1-800-222-1222

CHEMTREC: 1-800-424-9300

NYS Spill Hotline: 1-800-457-7362

National Response Center: 1-800-424-8802

EMERGENCY RESPONDERS >>>> SEE BACK PAGE

Hazard Summary

Hazard Rating	NYDOH	NFPA
HEALTH	3	2
FLAMMABILITY	-	1
REACTIVITY	-	0
CARCINOGEN POISONOUS GASES ARE PRODUCED IN FIRE CONTAINERS MAY EXPLODE IN FIRE		

Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

- **Trichloroethylene** can affect you when inhaled and by passing through the skin.
- **Trichloroethylene** should be handled as a CARCINOGEN--WITH EXTREME CAUTION.
- Contact can irritate and burn the skin and eyes with possible eye damage.
- Exposure can cause headache, dizziness, lightheadedness, and passing out. Very high exposure can cause irregular heartbeat, which can be fatal.
- **Trichloroethylene** may cause a skin allergy.
- Repeated exposure may cause personality changes such as depression, anxiety or irritability.
- **Trichloroethylene** may damage the liver and kidneys.

Workplace Exposure Limits

OSHA: The legal airborne permissible exposure limit (PEL) is **100 ppm** averaged over an 8-hour workshift, and **200 ppm**, not to be exceeded during any 15-minute work period, and **300 ppm** as a 5-minute peak in any 2-hour work period.

NIOSH: Recommends that exposure to occupational carcinogens be limited to the lowest feasible concentration.

ACGIH: The threshold limit value (TLV) is **10 ppm** averaged over an 8-hour workshift and **25 ppm** as a STEL (short-term exposure limit).

- **Trichloroethylene** is a PROBABLE CARCINOGEN in humans. There may be no safe level of exposure to a carcinogen, so all contact should be reduced to the lowest possible level.
- The above exposure limits are for air levels only. When skin contact also occurs, you may be overexposed, even though air levels are less than the limits listed above.

Determining Your Exposure

- ▶ Read the product manufacturer's Material Safety Data Sheet (MSDS) and the label to determine product ingredients and important safety and health information about the product mixture.
- ▶ You have a right to this information under the New York State Right-to-Know Law and the New York State Public Employees Safety and Health Act (PESHA), and under the federal Occupational Safety and Health Act (OSHA) if you are a private worker.
- ▶ The New York State Right-to-Know Law requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard (29 CFR 1910.1200) and the PESHA Hazard Communication Standard require employers to provide similar information and training to their employees.

This Fact Sheet is a summary of available information regarding the health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

Health Hazard Information

Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to **Trichloroethylene**:

- ▶ Contact can irritate and burn the skin and eyes with possible eye damage.
- ▶ Exposure can cause headache, dizziness, lightheadedness, visual disturbances, nausea and vomiting, and passing out. Very high exposure can cause irregular heartbeat, which can be fatal.

Chronic Health Effects

The following chronic (long-term) health effects can occur at some time after exposure to **Trichloroethylene** and can last for months or years:

Cancer Hazard

- ▶ **Trichloroethylene** is a PROBABLE CARCINOGEN in humans. There is evidence that it causes liver, kidney, and lung cancer in animals.
- ▶ Many scientists believe there is no safe level of exposure to a carcinogen.

Reproductive Hazard

- ▶ There is limited evidence that **Trichloroethylene** is a teratogen in animals. Until further testing has been done, it should be treated as a possible teratogen in humans.
- ▶ There is limited evidence that **Trichloroethylene** may affect fertility and may damage the male reproductive system (including decreasing the sperm count) in animals.

Other Effects

- ▶ **Trichloroethylene** may cause a skin allergy. If allergy develops, very low future exposure can cause itching and a skin rash.
- ▶ Repeated exposure may cause personality changes such as depression, anxiety or irritability, and memory loss.
- ▶ **Trichloroethylene** may damage the liver and kidneys.

Medical

Medical Testing

For frequent or potentially high exposure (half the TLV or greater, or significant skin contact) the following are recommended before beginning work and at regular times after that:

- ▶ Liver and kidney function tests

If symptoms develop or overexposure is suspected, the following are recommended:

- ▶ Exam of the nervous system
- ▶ Evaluation by a qualified allergist can help diagnose skin allergy.
- ▶ Urinary *Trichloroacetic Acid* level (for repeated exposures) or blood **Trichloroethylene** levels (for acute exposure)
- ▶ Special 24-48 hour EKG (Holter monitor) to observe and record abnormal heart rhythms

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 1910.1020).

Mixed Exposures

- ▶ More than light alcohol consumption can cause liver damage. Drinking alcohol can increase the liver damage caused by **Trichloroethylene**.

Workplace Controls and Practices

Very toxic chemicals, or those that are reproductive hazards or sensitizers, require expert advice on control measures if a less toxic chemical cannot be substituted. Control measures include: (1) enclosing chemical processes for severely irritating and corrosive chemicals, (2) using local exhaust ventilation for chemicals that may be harmful with a single exposure, and (3) using general ventilation to control exposures to skin and eye irritants. For further information on workplace controls, consult the NIOSH document on Control Banding at www.cdc.gov/niosh/topics/ctrlbanding/.

The following work practices are also recommended:

- ▶ Label process containers.
- ▶ Provide employees with hazard information and training.
- ▶ Monitor airborne chemical concentrations.
- ▶ Use engineering controls if concentrations exceed recommended exposure levels.
- ▶ Provide eye wash fountains and emergency showers.
- ▶ Wash or shower if skin comes in contact with a hazardous material.
- ▶ Always wash at the end of the workshift.
- ▶ Change into clean clothing if clothing becomes contaminated.
- ▶ Do not take contaminated clothing home.
- ▶ Get special training to wash contaminated clothing.
- ▶ Do not eat, smoke, or drink in areas where chemicals are being handled, processed or stored.
- ▶ Wash hands carefully before eating, smoking, drinking, applying cosmetics or using the toilet.

In addition, the following may be useful or required:

- ▶ Where possible, transfer **Trichloroethylene** from drums or other containers to process containers in an enclosed system.

Personal Protective Equipment

The OSHA Personal Protective Equipment Standard (29 CFR 1910.132) requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

Gloves and Clothing

- ▶ Avoid skin contact with **Trichloroethylene**. Wear personal protective equipment made from material which can not be permeated or degraded by this substance. Safety equipment suppliers and manufacturers can provide recommendations on the most protective glove and clothing material for your operation.
- ▶ Safety equipment manufacturers recommend Silver Shield®/4H®, Viton and Barrier® for gloves, and Tychem® F, BR, LV, Responder®, and TK; Zytron® 500; ONESuit® TEC; and Trellchem® HPS and VPS, or the equivalent, as protective materials for clothing.
- ▶ All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

Eye Protection

- ▶ Wear indirect-vent, impact and splash resistant goggles when working with liquids.
- ▶ Wear non-vented, impact resistant goggles when working with fumes, gases, or vapors.
- ▶ Wear a face shield along with goggles when working with corrosive, highly irritating or toxic substances.

Respiratory Protection

Improper use of respirators is dangerous. Respirators should only be used if the employer has implemented a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing, and medical exams, as described in the OSHA Respiratory Protection Standard (29 CFR 1910.134).

- ▶ Where the potential exists for exposure over **10 ppm**, use a NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive-pressure mode.
- ▶ Exposure to **1,000 ppm** is immediately dangerous to life and health. If the possibility of exposure above **1,000 ppm** exists, use a NIOSH approved self-contained breathing apparatus with a full facepiece operated in a pressure-demand or other positive-pressure mode equipped with an emergency escape air cylinder.

Fire Hazards

If employees are expected to fight fires, they must be trained and equipped as stated in the OSHA Fire Brigades Standard (29 CFR 1910.156).

- ▶ **Trichloroethylene** may burn, but does not readily ignite.
- ▶ Use dry chemical, CO₂, water spray or alcohol-resistant foam as extinguishing agents.
- ▶ POISONOUS GASES ARE PRODUCED IN FIRE, including *Hydrogen Chloride* and *Phosgene*.
- ▶ CONTAINERS MAY EXPLODE IN FIRE.
- ▶ Use water spray to keep fire-exposed containers cool.
- ▶ Use water spray to reduce vapors.
- ▶ **Trichloroethylene** accumulates static charge.

Spills and Emergencies

If employees are required to clean-up spills, they must be properly trained and equipped. The OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) may apply.

If **Trichloroethylene** is spilled or leaked, take the following steps:

- ▶ Evacuate personnel and secure and control entrance to the area.
- ▶ Eliminate all ignition sources.
- ▶ Absorb liquids in vermiculite, dry sand, earth, fly ash or cement powder and place into sealed containers for disposal.
- ▶ Use water spray to keep containers cool.
- ▶ Ventilate and wash area after clean-up is complete.
- ▶ DO NOT wash into sewer.
- ▶ It may be necessary to contain and dispose of **Trichloroethylene** as a HAZARDOUS WASTE. Contact your state Department of Environmental Conservation (DEC) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.

Handling and Storage

Prior to working with **Trichloroethylene** you should be trained on its proper handling and storage.

- ▶ **Trichloroethylene** will react explosively with *finely divided* or *powdered* BARIUM, BERYLLIUM, and MAGNESIUM.
- ▶ **Trichloroethylene** reacts with ACTIVE METALS (such as LITHIUM, SODIUM and TITANIUM) to cause flashing and sparks and will react with STRONG BASES (such as SODIUM HYDROXIDE and POTASSIUM HYDROXIDE) and EPOXIDES to form spontaneously flammable *Dichloroacetylene*.
- ▶ **Trichloroethylene** is not compatible with STRONG ACIDS (such as HYDROCHLORIC, SULFURIC and NITRIC); ISOCYANATES; EPICHLOROHYDRIN; ALCOHOLS; and GLYCOLS.
- ▶ Store in tightly closed containers in a cool, well-ventilated area away from COMBUSTIBLES, LIGHT and MOISTURE.
- ▶ Use only non-sparking tools and equipment, especially when opening and closing containers of **Trichloroethylene**.
- ▶ Metal containers involving the transfer of **Trichloroethylene** should be grounded and bonded as **Trichloroethylene** accumulates static charge.

Occupational Health Information Resources

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For more information, please contact:

New York State Department of Health
Right to Know
Bureau of Occupational Health and Injury Prevention
Empire State Plaza-Corning Tower, Room 1325
Albany, New York 12237
Phone: (518) 402-7900 or 800-458-1158
Web address: https://www.health.ny.gov/environmental/workplace/right_to_know/

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GLOSSARY

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Boiling point is the temperature at which a substance can change its physical state from a liquid to a gas.

A **carcinogen** is a substance that causes cancer.

The **CAS number** is unique, identifying number, assigned by the Chemical Abstracts Service, to a specific chemical.

CFR is the Code of Federal Regulations, which are the regulations of the United States government.

A **combustible** substance is a solid, liquid or gas that will burn.

A **corrosive** substance is a gas, liquid or solid that causes destruction of human skin or severe corrosion of containers.

DEC is the New York State Department of Environmental Conservation.

DOT is the Department of Transportation, the federal agency that regulates the transportation of chemicals.

EPA is the Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

ERG is the Emergency Response Guidebook. It is a guide for emergency responders for transportation emergencies involving hazardous substances.

Emergency Response Planning Guideline (ERPG) values provide estimates of concentration ranges where one reasonably might anticipate observing adverse effects.

A **fetus** is an unborn human or animal.

A **flammable** substance is a solid, liquid, vapor or gas that will ignite easily and burn rapidly.

The **flash point** is the temperature at which a liquid or solid gives off vapor that can form a flammable mixture with air.

IARC is the International Agency for Research on Cancer, a scientific group.

Ionization Potential is the amount of energy needed to remove an electron from an atom or molecule. It is measured in electron volts.

IRIS is the Integrated Risk Information System database on human health effects that may result from exposure to various chemicals, maintained by federal EPA.

LEL or **Lower Explosive Limit**, is the lowest concentration of a combustible substance (gas or vapor) in the air capable of continuing an explosion.

mg/m³ means milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

A **mutagen** is a substance that causes mutations. A **mutation** is a change in the genetic material in a body cell. Mutations can lead to birth defects, miscarriages, or cancer.

NFPA is the National Fire Protection Association. It classifies substances according to their fire and explosion hazard.

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NTP is the National Toxicology Program which tests chemicals and reviews evidence for cancer.

OSHA is the federal Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

PESHA is the New York State Public Employees Safety and Health Act, which adopts and enforces health and safety standards in public workplaces.

Permeated is the movement of chemicals through protective materials.

ppm means parts of a substance per million parts of air. It is a measure of concentration by volume in air.

Protective Action Criteria (PAC) are values established by the Department of Energy and are based on AEGs and ERPGs. They are used for emergency planning of chemical release events.

A **reactive** substance is a solid, liquid or gas that releases energy under certain conditions.

STEL is a Short Term Exposure Limit which is usually a 15-minute exposure that should not be exceeded at any time during a work day.

A **teratogen** is a substance that causes birth defects by damaging the fetus.

UEL or **Upper Explosive Limit** is the highest concentration in air above which there is too much fuel (gas or vapor) to begin a reaction or explosion.

Vapor Density is the ratio of the weight of a given volume of one gas to the weight of another (usually *Hydrogen*), at the same temperature and pressure.

The **vapor pressure** is a force exerted by the vapor in equilibrium with the solid or liquid phase of the same substance. The higher the vapor pressure the higher concentration of the substance in air.

Common Name: **TRICHLOROETHYLENE**

Synonyms: Ethylene Trichloride; TCE; Trichloroethene

CAS No: 79-01-6

Molecular Formula: C_2HCl_3

RTK Substance No: 1890

Description: Clear, colorless liquid with a sweet, *Chloroform-like* odor

HAZARD DATA

Hazard Rating	Firefighting	Reactivity
3 - Health 1 - Fire 0 - Reactivity DOT#: UN 1710 ERG Guide #: 160 Hazard Class: 6.1 (Poison)	Trichloroethylene may burn, but does not readily ignite. Use dry chemical, CO ₂ , water spray or alcohol-resistant foam as extinguishing agents. POISONOUS GASES ARE PRODUCED IN FIRE, including <i>Hydrogen Chloride</i> and <i>Phosgene</i> . CONTAINERS MAY EXPLODE IN FIRE. Use water spray to keep fire-exposed containers cool. Use water spray to reduce vapors. Trichloroethylene accumulates static charge.	Trichloroethylene will react explosively with <i>finely divided</i> or <i>powdered</i> BARIUM, BERYLLIUM, and MAGNESIUM. Trichloroethylene reacts with ACTIVE METALS (such as LITHIUM, SODIUM and TITANIUM) to cause flashing and sparks. Trichloroethylene will react with STRONG BASES (such as SODIUM HYDROXIDE and POTASSIUM HYDROXIDE) and EPOXIDES to form spontaneously flammable <i>Dichloroacetylene</i> . Trichloroethylene is not compatible with STRONG ACIDS (such as HYDROCHLORIC, SULFURIC and NITRIC); ISOCYANATES; EPICHLOROHYDRIN; ALCOHOLS; and GLYCOLS.

SPILL/LEAKS

Isolation Distance:

Spill: 50 meters (150 feet)

Fire: 800 meters (1/2 mile)

Absorb liquids in vermiculite, dry sand, earth, fly ash or cement powder and place into sealed containers for disposal.

DO NOT wash into sewer.

Use only non-sparking tools and equipment, especially when opening and closing containers of **Trichloroethylene**.

Metal containers should be grounded and bonded as **Trichloroethylene** accumulates static charge.

Trichloroethylene is slightly toxic to aquatic life.

PHYSICAL PROPERTIES

Odor Threshold:	1.4 ppm
Flash Point:	>200°F (93°C)
LEL:	8%
UEL:	10.5%
Auto Ignition Temp:	788°F (420°C)
Vapor Density:	4.5 (air = 1)
Vapor Pressure:	58 mm Hg at 68°F (20°C)
Specific Gravity:	1.5 (water = 1)
Water Solubility:	Slightly soluble
Boiling Point:	189°F (87°C)
Melting Point:	-99°F (-73°C)
Ionization Potential:	9.5 eV
Molecular Weight:	131.4

EXPOSURE LIMITS

ACGIH: 10 ppm, 8-hr TWA; 25 ppm, 15-min STEL

IDLH: 1,000 ppm

The Protective Action Criteria values are:

PAC-1 = 130 ppm

PAC-2 = 450 ppm

PAC-3 = 3,800 ppm

PROTECTIVE EQUIPMENT

Gloves:	Silver Shield®/4H®, Viton and Barrier® (>8-hr breakthrough)
Coveralls:	Tychem® F, BR, LV, Responder®, and TK; Zytron® 500; ONESuit® TEC; and Trelchem® HPS and VPS (>8-hr breakthrough)
Respirator:	>10 ppm - Supplied air or SCBA

HEALTH EFFECTS

Eyes:	Irritation and burns
Skin:	Irritation and burns
Inhalation:	Headache, dizziness, lightheadedness, visual disturbances, nausea and vomiting, and passing out
Chronic:	Cancer (liver, kidney, and lung) in animals

FIRST AID AND DECONTAMINATION

Remove the person from exposure.

Flush eyes with large amounts of water for at least 15 minutes. Remove contact lenses if worn. Seek medical attention.

Quickly remove contaminated clothing and wash contaminated skin with large amounts of soap and water. Seek medical attention.

Begin artificial respiration if breathing has stopped and CPR if necessary.

Transfer promptly to a medical facility.

Right to Know Hazardous Substance Fact Sheet

Common Name: **BIS(2-ETHYLHEXYL) PHTHALATE**

Synonyms: Di(2-Ethylhexyl) Phthalate; Dioctyl Phthalate; DOP

Chemical Name: 1,2-Benzenedicarboxylic Acid, Bis(2-Ethylhexyl) Ester

Date: July 1998

Revision: February 2008

CAS Number: 117-81-7

RTK Substance Number: 0238

DOT Number: None

Description and Use

Bis(2-Ethylhexyl) Phthalate is a colorless to light colored, thick liquid with a slight odor. It is used as a plasticizer for resins, in pesticides, and as a solvent for ink.

Reasons for Citation

- **Bis(2-Ethylhexyl) Phthalate** is on the Right to Know Hazardous Substance List because it is cited by OSHA, ACGIH, NIOSH, NTP, DEC, IARC, IRIS and EPA.
- This chemical is on the Special Health Hazard Substance List.

SEE GLOSSARY ON PAGE 5.

FIRST AID

Eye Contact

- Immediately flush with large amounts of water for at least 15 minutes, lifting upper and lower lids. Remove contact lenses, if worn, while rinsing.

Skin Contact

- Quickly remove contaminated clothing. Immediately wash contaminated skin with large amounts of soap and water.

Inhalation

- Remove the person from exposure.
- Begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.
- Transfer promptly to a medical facility.

EMERGENCY NUMBERS

Poison Control: 1-800-222-1222

CHEMTREC: 1-800-424-9300

NYS Spill Hotline: 1-800-457-7362

National Response Center: 1-800-424-8802

EMERGENCY RESPONDERS >>>> SEE BACK PAGE

Hazard Summary

Hazard Rating	NYDOH	NFPA
HEALTH	3	-
FLAMMABILITY	1	-
REACTIVITY	0	-
CARCINOGEN TERATOGEN COMBUSTIBLE POISONOUS GASES ARE PRODUCED IN FIRE		

Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

- **Bis(2-Ethylhexyl) Phthalate** can affect you when inhaled.
- **Bis(2-Ethylhexyl) Phthalate** should be handled as a CARCINOGEN and TERATOGEN—WITH EXTREME CAUTION.
- **Bis(2-Ethylhexyl) Phthalate** may damage the testes (male reproductive glands) and may decrease fertility in males and females.
- Contact can irritate the skin and eyes.
- Inhaling **Bis(2-Ethylhexyl) Phthalate** can irritate the nose and throat.
- **Bis(2-Ethylhexyl) Phthalate** may affect the nervous system and the liver.

Workplace Exposure Limits

OSHA: The legal airborne permissible exposure limit (PEL) is **5 mg/m³** averaged over an 8-hour workshift.

NIOSH: The recommended airborne exposure limit (REL) is **5 mg/m³** averaged over a 10-hour workshift and **10 mg/m³**, not to be exceeded during any 15-minute work period.

ACGIH: The threshold limit value (TLV) is **5 mg/m³** averaged over an 8-hour workshift.

- **Bis(2-Ethylhexyl) Phthalate** is a PROBABLE CARCINOGEN and TERATOGEN in humans. There may be no safe level of exposure to a carcinogen, so all contact should be reduced to the lowest possible level.

Determining Your Exposure

- ▶ Read the product manufacturer's Material Safety Data Sheet (MSDS) and the label to determine product ingredients and important safety and health information about the product mixture.
- ▶ You have a right to this information under the New York State Right-to-Know Law and the New York State Public Employees Safety and Health Act (PESHA), and under the federal Occupational Safety and Health Act (OSHA) if you are a private worker.
- ▶ The New York State Right-to-Know Law requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard (29 CFR 1910.1200) and the PESHA Hazard Communication Standard require employers to provide similar information and training to their employees.

This Fact Sheet is a summary of available information regarding the health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

Health Hazard Information

Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to **Bis(2-Ethylhexyl) Phthalate**:

- ▶ Contact can irritate the skin and eyes.
- ▶ Inhaling **Bis(2-Ethylhexyl) Phthalate** can irritate the nose and throat.

Chronic Health Effects

The following chronic (long-term) health effects can occur at some time after exposure to **Bis(2-Ethylhexyl) Phthalate** and can last for months or years:

Cancer Hazard

- ▶ **Bis(2-Ethylhexyl) Phthalate** may be a CARCINOGEN in humans since it has been shown to cause liver cancer in animals.
- ▶ Many scientists believe there is no safe level of exposure to a carcinogen.

Reproductive Hazard

- ▶ **Bis(2-Ethylhexyl) Phthalate** may be a TERATOGEN in humans since it is a teratogen in animals.
- ▶ **Bis(2-Ethylhexyl) Phthalate** may damage the testes (male reproductive glands).
- ▶ **Bis(2-Ethylhexyl) Phthalate** may decrease fertility in males and females.

Other Effects

- ▶ **Bis(2-Ethylhexyl) Phthalate** may affect the nervous system and the liver.

Medical

Medical Testing

If symptoms develop or overexposure is suspected, the following are recommended:

- ▶ Exam of the nervous system
- ▶ Liver function tests

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 1910.1020).

Mixed Exposures

- ▶ More than light alcohol consumption can cause liver damage. Drinking alcohol may increase the liver damage caused by **Bis(2-Ethylhexyl) Phthalate**.

Workplace Controls and Practices

Very toxic chemicals, or those that are reproductive hazards or sensitizers, require expert advice on control measures if a less toxic chemical cannot be substituted. Control measures include: (1) enclosing chemical processes for severely irritating and corrosive chemicals, (2) using local exhaust ventilation for chemicals that may be harmful with a single exposure, and (3) using general ventilation to control exposures to skin and eye irritants. For further information on workplace controls, consult the NIOSH document on Control Banding at www.cdc.gov/niosh/topics/ctrlbanding/.

The following work practices are also recommended:

- ▶ Label process containers.
- ▶ Provide employees with hazard information and training.
- ▶ Monitor airborne chemical concentrations.
- ▶ Use engineering controls if concentrations exceed recommended exposure levels.
- ▶ Provide eye wash fountains and emergency showers.
- ▶ Wash or shower if skin comes in contact with a hazardous material.
- ▶ Always wash at the end of the workshift.
- ▶ Change into clean clothing if clothing becomes contaminated.
- ▶ Do not take contaminated clothing home.
- ▶ Get special training to wash contaminated clothing.
- ▶ Do not eat, smoke, or drink in areas where chemicals are being handled, processed or stored.
- ▶ Wash hands carefully before eating, smoking, drinking, applying cosmetics or using the toilet.

Personal Protective Equipment

The OSHA Personal Protective Equipment Standard (29 CFR 1910.132) requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

Gloves and Clothing

- ▶ Avoid skin contact with **Bis(2-Ethylhexyl) Phthalate**. Wear personal protective equipment made from material which can not be permeated or degraded by this substance. Safety equipment suppliers and manufacturers can provide recommendations on the most protective glove and clothing material for your operation.
- ▶ Safety equipment manufacturers recommend *Neoprene* and *Laminate Film* for gloves and DuPont *Tychem® BR, LV, TK, CSM*, and *Responder®*, or equivalent, as protective materials for clothing.
- ▶ All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

Eye Protection

- ▶ Wear indirect-vent, impact and splash resistant goggles when working with liquids.
- ▶ Wear a face shield along with goggles when working with corrosive, highly irritating or toxic substances.

Respiratory Protection

Improper use of respirators is dangerous. Respirators should only be used if the employer has a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing, and medical exams, as described in the OSHA Respiratory Protection Standard (29 CFR 1910.134).

- ▶ Where the potential exists for exposure over **5 mg/m³**, use a NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive-pressure mode.
- ▶ Exposure to **5,000 mg/m³** is immediately dangerous to life and health. If the possibility of exposure above **5,000 mg/m³** exists, use a NIOSH approved self-contained breathing apparatus with a full facepiece operated in a pressure-demand or other positive-pressure mode equipped with an emergency escape air cylinder.

Fire Hazards

If employees are expected to fight fires, they must be trained and equipped as stated in the OSHA Fire Brigades Standard (29 CFR 1910.156).

- ▶ **Bis(2-Ethylhexyl) Phthalate** is a COMBUSTIBLE LIQUID.
- ▶ Use dry chemical, CO₂, water spray, alcohol-resistant foam or other foam as extinguishing agents.
- ▶ Water or foam may cause frothing.
- ▶ POISONOUS GASES ARE PRODUCED IN FIRE.
- ▶ Use water spray to keep fire-exposed containers cool.

Spills and Emergencies

If employees are required to clean-up spills, they must be properly trained and equipped. The OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) may apply.

If **Bis(2-Ethylhexyl) Phthalate** is spilled or leaked, take the following steps:

- ▶ Evacuate personnel and secure and control entrance to the area.
- ▶ Eliminate all ignition sources.
- ▶ Absorb liquids in vermiculite, dry sand, earth, or a similar material and deposit in sealed containers.
- ▶ Ventilate and wash area after clean-up is complete.
- ▶ It may be necessary to contain and dispose of **Bis(2-Ethylhexyl) Phthalate** as a HAZARDOUS WASTE. Contact your state Department of Environmental Conservation (DEC) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.

Handling and Storage

Prior to working with **Bis(2-Ethylhexyl) Phthalate** you should be trained on its proper handling and storage.

- ▶ **Bis(2-Ethylhexyl) Phthalate** is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE); STRONG ACIDS (such as HYDROCHLORIC, SULFURIC and NITRIC); and STRONG BASES (such as SODIUM HYDROXIDE and POTASSIUM HYDROXIDE).
- ▶ Store in tightly closed containers in a cool, well-ventilated area away from HEAT.
- ▶ Sources of ignition, such as smoking and open flames, are prohibited where **Bis(2-Ethylhexyl) Phthalate** is used, handled, or stored in a manner that could create a potential fire or explosion hazard.

Occupational Health Information Resources

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EPA is the Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

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LEL or Lower Explosive Limit, is the lowest concentration of a combustible substance (gas or vapor) in the air capable of continuing an explosion.

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NTP is the National Toxicology Program which tests chemicals and reviews evidence for cancer.

OSHA is the federal Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

PESHA is the New York State Public Employees Safety and Health Act, which adopts and enforces health and safety standards in public workplaces.

Permeated is the movement of chemicals through protective materials.

PIH is a DOT designation for chemicals which are Poison Inhalation Hazards.

ppm means parts of a substance per million parts of air. It is a measure of concentration by volume in air.

A **reactive** substance is a solid, liquid or gas that releases energy under certain conditions.

STEL is a Short Term Exposure Limit which is usually a 15-minute exposure that should not be exceeded at any time during a work day.

A **teratogen** is a substance that causes birth defects by damaging the fetus.

UEL or Upper Explosive Limit is the highest concentration in air above which there is too much fuel (gas or vapor) to begin a reaction or explosion.

Vapor Density is the ratio of the weight of a given volume of one gas to the weight of another (usually *Hydrogen*), at the same temperature and pressure.

The **vapor pressure** is a measure of how readily a liquid or a solid mixes with air at its surface. A higher vapor pressure indicates a higher concentration of the substance in air and therefore increases the likelihood of breathing it in.

Common Name: **BIS(2-ETHYLHEXYL) PHTHALATE**

Synonyms: Di(2-Ethylhexyl) Phthalate; Dioctyl Phthalate; DOP

CAS No: 117-81-7

Molecular Formula: $C_{24}H_{38}O_4$

RTK Substance No: 0238

Description: Colorless to light colored, thick liquid with a slight odor

HAZARD DATA

Hazard Rating	Firefighting	Reactivity
3 - Health 1 - Fire 0 - Reactivity DOT#: None ERG Guide #: None Hazard Class: None	COMBUSTIBLE LIQUID. Use dry chemical, CO ₂ , water spray, alcohol-resistant foam or other foam as extinguishing agents. Water or foam may cause frothing. POISONOUS GASES ARE PRODUCED IN FIRE. Use water spray to keep fire-exposed containers cool.	Bis(2-Ethylhexyl) Phthalate is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE); STRONG ACIDS (such as HYDROCHLORIC, SULFURIC and NITRIC); and STRONG BASES (such as SODIUM HYDROXIDE and POTASSIUM HYDROXIDE).

SPILL/LEAKS

Isolation Distance:

Small Spills: 60 meters (200 feet)

Large Spills: 330 meters (1,100 feet)

Fire: 800 meters (1/2 mile)

Absorb liquids in vermiculite, dry sand, earth, or a similar material and deposit in sealed containers.

Bioaccumulation of this chemical may occur in seafood.

PHYSICAL PROPERTIES

Flash Point:	420°F (215°C)
LEL:	0.3% at 474°F (245°C)
Auto Ignition Temp:	662°F (350°C)
Vapor Density:	16 (air = 1)
Vapor Pressure:	<1 mm Hg at 68°F (20°C)
Specific Gravity:	0.99 (water = 1)
Water Solubility:	Insoluble
Boiling Point:	725°F (385°C)
Melting Point:	-58°F (-50°C)
Molecular Weight:	391

EXPOSURE LIMITS

OSHA:	5 mg/m ³ , 8-hr TWA
NIOSH:	5 mg/m ³ , 10-hr TWA; 10 mg/m ³ , STEL
ACGIH:	5 mg/m ³ , 8-hr TWA
IDLH LEVEL:	5,000 mg/m ³

PROTECTIVE EQUIPMENT

Gloves:	Neoprene and Laminate Film
Coveralls:	DuPont Tychem® BR, LV, TK, CSM and Responder® (>8-hr breakthrough)
Respirator:	>5 mg/m ³ - Supplied air

HEALTH EFFECTS

Eyes:	Irritation
Skin:	Irritation
Inhalation:	Nose and throat irritation
Chronic:	Cancer (liver) in animals

FIRST AID AND DECONTAMINATION

Remove the person from exposure.

Flush eyes with large amounts of water for at least 15 minutes. Remove contact lenses if worn.

Quickly remove contaminated clothing. Wash contaminated skin with large amounts of soap and water.

Begin artificial respiration if breathing has stopped and CPR if necessary.

Transfer to a medical facility.

Hazardous Substance Fact Sheet

Common Name: **CHLOROFORM**

Synonyms: Trichloromethane; Formyl Trichloride

Chemical Name: Methane, Trichloro-

Date: June 2008

Revision: April 2017

CAS Number: 67-66-3

RTK Substance Number: 0388

DOT Number: UN 1888

Description and Use

Chloroform is a colorless liquid with a pleasant, sweet odor. It is used as a solvent and to make refrigerants, resins, and plastics. It is no longer used as an anesthetic.

- ▶ **ODOR THRESHOLD = 2.4 to 85 ppm**
- ▶ Odor thresholds vary greatly. Do not rely on odor alone to determine potentially hazardous exposures.

Reasons for Citation

- ▶ **Chloroform** is on the Right to Know Hazardous Substance List because it is cited by OSHA, ACGIH, DOT, NIOSH, NTP, DEC, IARC, NFPA and EPA.
- ▶ This chemical is on the Special Health Hazard Substance List.

[SEE GLOSSARY ON PAGE 5.](#)

FIRST AID

Eye Contact

- ▶ Immediately flush with large amounts of water for at least 15 minutes, lifting upper and lower lids. Remove contact lenses, if worn, while rinsing.

Skin Contact

- ▶ Quickly remove contaminated clothing. Immediately wash contaminated skin with large amounts of soap and water.

Inhalation

- ▶ Remove the person from exposure.
- ▶ Begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.
- ▶ Transfer promptly to a medical facility.

EMERGENCY NUMBERS

Poison Control: 1-800-222-1222

CHEMTREC: 1-800-424-9300

NYS Spill Hotline: 1-800-457-7362 National

Response Center: 1-800-424-8802

EMERGENCY RESPONDERS >>>> SEE BACK PAGE

Hazard Summary

Hazard Rating	NYDOH	NFPA
HEALTH	3	2
FLAMMABILITY	0	0
REACTIVITY	0	0
CARCINOGEN POISONOUS GASES ARE PRODUCED IN FIRE		

Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

- ▶ **Chloroform** can affect you when inhaled and may be absorbed through the skin.
- ▶ **Chloroform** should be handled as a CARCINOGEN--WITH EXTREME CAUTION.
- ▶ **Chloroform** may damage the developing fetus.
- ▶ Contact can irritate and burn the skin and eyes.
- ▶ Exposure can irritate the nose and throat.
- ▶ Exposure can cause headache, dizziness, lightheadedness, and passing out.
- ▶ High exposure can cause the heart to beat irregularly or to stop. This may cause death.
- ▶ **Chloroform** may damage the liver, kidneys and nervous system.

Workplace Exposure Limits

OSHA: The legal airborne permissible exposure limit (PEL) is **50 ppm**, not to be exceeded at any time.

NIOSH: The recommended airborne exposure limit (REL) is **2 ppm**, which should not be exceeded in any 60-minute work period.

ACGIH: The threshold limit value (TLV) is **10 ppm** averaged over an 8-hour workshift.

- ▶ **Chloroform** is a PROBABLE CARCINOGEN in humans. There may be no safe level of exposure to a carcinogen, so all contact should be reduced to the lowest possible level.
- ▶ The above exposure limits are for air levels only. When skin contact also occurs, you may be overexposed, even though air levels are less than the limits listed above.

Determining Your Exposure

- ▶ Read the product manufacturer's Material Safety Data Sheet (MSDS) and the label to determine product ingredients and important safety and health information about the product mixture.
- ▶ You have a right to this information under the New York State Right-to-Know Law and the New York State Public Employees Safety and Health Act (PESHA), and under the federal Occupational Safety and Health Act (OSHA) if you are a private worker.
- ▶ The New York State Right-to-Know Law requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard (29 CFR 1910.1200) and the PESHA Hazard Communication Standard require employers to provide similar information and training to their employees.

This Fact Sheet is a summary of available information regarding the health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

Health Hazard Information

Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to **Chloroform**:

- ▶ Contact can irritate and burn the skin and eyes, and can cause eye tearing and reddening.
- ▶ Exposure can irritate the nose and throat.
- ▶ Exposure can cause headache, nausea, dizziness, loss of coordination, lightheadedness, and passing out.
- ▶ High exposure can cause the heart to beat irregularly or to stop. This may cause death.

Chronic Health Effects

The following chronic (long-term) health effects can occur at some time after exposure to **Chloroform** and can last for months or years:

Cancer Hazard

- ▶ **Chloroform** is a PROBABLE CARCINOGEN in humans. There is some evidence that it causes liver, kidney and thyroid cancer in animals.
- ▶ Many scientists believe there is no safe level of exposure to a carcinogen.

Reproductive Hazard

- ▶ **Chloroform** may damage the developing fetus.
- ▶ There is limited evidence that **Chloroform** may damage the male reproductive system (including decreasing the sperm count) in animals.

Other Effects

- ▶ Repeated skin contact with **Chloroform** can cause drying and cracking of the exposed areas.
- ▶ **Chloroform** may damage the liver, kidneys and nervous system.

Medical

Medical Testing

For frequent or potentially high exposure (half the TLV or greater), the following are recommended before beginning work and at regular times after that:

- ▶ Liver and kidney function tests

If symptoms develop or overexposure is suspected, the following are recommended:

- ▶ Exam of the nervous system
- ▶ A special 24-48 hour EKG (Holter monitor) to observe and record abnormal heart rhythms

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 1910.1020).

Mixed Exposures

- ▶ More than light alcohol consumption can cause liver damage. Drinking alcohol may increase the liver damage caused by **Chloroform**.

Workplace Controls and Practices

Very toxic chemicals, or those that are reproductive hazards or sensitizers, require expert advice on control measures if a less toxic chemical cannot be substituted. Control measures include: (1) enclosing chemical processes for severely irritating and corrosive chemicals, (2) using local exhaust ventilation for chemicals that may be harmful with a single exposure, and (3) using general ventilation to control exposures to skin and eye irritants. For further information on workplace controls, consult the NIOSH document on Control Banding at www.cdc.gov/niosh/topics/ctrlbanding/.

The following work practices are also recommended:

- ▶ Label process containers.
- ▶ Provide employees with hazard information and training.
- ▶ Monitor airborne chemical concentrations.
- ▶ Use engineering controls if concentrations exceed recommended exposure levels.
- ▶ Provide eye wash fountains and emergency showers.
- ▶ Wash or shower if skin comes in contact with a hazardous material.
- ▶ Always wash at the end of the workshift.
- ▶ Change into clean clothing if clothing becomes contaminated.
- ▶ Do not take contaminated clothing home.
- ▶ Get special training to wash contaminated clothing.
- ▶ Do not eat, smoke, or drink in areas where chemicals are being handled, processed or stored.
- ▶ Wash hands carefully before eating, smoking, drinking, applying cosmetics or using the toilet.

Personal Protective Equipment

The OSHA Personal Protective Equipment Standard (29 CFR 1910.132) requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

Gloves and Clothing

- ▶ Avoid skin contact with **Chloroform**. Wear personal protective equipment made from material which can not be permeated or degraded by this substance. Safety equipment suppliers and manufacturers can provide recommendations on the most protective glove and clothing material for your operation.
- ▶ Safety equipment manufacturers recommend *Silver Shield®/4H®* and *Viton* for gloves and DuPont *Tychem® CPF 4, BR, LV, Responder®,* and *TK*; Kappler® *Zytron® 500*; and Saint-Gobain *ONESuit® PRO*, or the equivalent, as protective materials for clothing.
- ▶ All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

Eye Protection

- ▶ Wear indirect-vent, impact and splash resistant goggles when working with liquids.
- ▶ Wear a face shield along with goggles when working with corrosive, highly irritating or toxic substances.
- ▶ Do not wear contact lenses when working with this substance.

Respiratory Protection

Improper use of respirators is dangerous. Respirators should only be used if the employer has implemented a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing, and medical exams, as described in the OSHA Respiratory Protection Standard (29 CFR 1910.134).

- ▶ Where the potential exists for exposure over **2 ppm**, use a NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive-pressure mode.
- ▶ Exposure to **500 ppm** is immediately dangerous to life and health. If the possibility of exposure above **500 ppm** exists, use a NIOSH approved self-contained breathing apparatus with a full facepiece operated in a pressure-demand or other positive-pressure mode equipped with an emergency escape air cylinder.

Fire Hazards

If employees are expected to fight fires, they must be trained and equipped as stated in the OSHA Fire Brigades Standard (29 CFR 1910.156).

- ▶ Extinguish fire using an agent suitable for type of surrounding fire. **Chloroform** itself does not burn.
- ▶ **POISONOUS GASES ARE PRODUCED IN FIRE**, including *Chlorine, Hydrogen Chloride* and *Phosgene*.
- ▶ Use water spray to keep fire-exposed containers cool.

Spills and Emergencies

If employees are required to clean-up spills, they must be properly trained and equipped. The OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) may apply.

If **Chloroform** is spilled or leaked, take the following steps:

- ▶ Evacuate personnel and secure and control entrance to the area.
- ▶ Eliminate all ignition sources.
- ▶ Absorb liquids in vermiculite, dry sand, earth, or a similar material and deposit in sealed containers.
- ▶ Ventilate and wash area after clean-up is complete.
- ▶ DO NOT wash into sewer.
- ▶ It may be necessary to contain and dispose of **Chloroform** as a HAZARDOUS WASTE. Contact your state Department of Environmental Conservation (DEC) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.

Handling and Storage

Prior to working with **Chloroform** you should be trained on its proper handling and storage.

- ▶ **Chloroform** reacts with CHEMICALLY ACTIVE METALS (such as POTASSIUM, SODIUM, MAGNESIUM and ZINC); ALUMINUM; STRONG BASES (such as SODIUM HYDROXIDE and POTASSIUM HYDROXIDE); and OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE) to cause fires and explosions.
- ▶ **Chloroform** is not compatible with ALKALI METALS (such as LITHIUM); MIXTURES of WATER and STRONG ALCOHOLS; ACETONE; PERCHLORIC ACID; DINITROGEN DIOXIDE; NITROGEN TETROXIDE; and DISILANE.
- ▶ Store in tightly closed dark containers in a cool, well-ventilated area away from and LIGHT and COMBUSTIBLES.
- ▶ **Chloroform** attacks PLASTICS, RUBBER and COATINGS and decomposes on HOT SURFACES to form toxic gases.

Occupational Health Information Resources

The New York State Department of Health offers multiple services in occupational health. These services include providing informational resources, educational materials, public presentations, and industrial hygiene and medical investigations and evaluations.

For more information, please contact:

New York State Department of Health
Right to Know
Bureau of Occupational Health and Injury Prevention
Empire State Plaza-Corning Tower, Room 1325
Albany, New York 12237
Phone: (518) 402-7900 or 800-458-1158
Web address: https://www.health.ny.gov/environmental/workplace/right_to_know/

*The Right to Know Hazardous Substance Fact Sheets
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for commercial purposes.*

GLOSSARY

ACGIH is the American Conference of Governmental Industrial Hygienists. They publish guidelines called Threshold Limit Values (TLVs) for exposure to workplace chemicals.

Acute Exposure Guideline Levels (AEGs) are established by the EPA. They describe the risk to humans resulting from once-in-a-lifetime, or rare, exposure to airborne chemicals.

Boiling point is the temperature at which a substance can change its physical state from a liquid to a gas.

A **carcinogen** is a substance that causes cancer.

The **CAS number** is unique, identifying number, assigned by the Chemical Abstracts Service, to a specific chemical.

CFR is the Code of Federal Regulations, which are the regulations of the United States government.

A **combustible** substance is a solid, liquid or gas that will burn.

A **corrosive** substance is a gas, liquid or solid that causes destruction of human skin or severe corrosion of containers.

DEC is the New York State Department of Environmental Conservation.

DOT is the Department of Transportation, the federal agency that regulates the transportation of chemicals.

EPA is the Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

ERG is the Emergency Response Guidebook. It is a guide for emergency responders for transportation emergencies involving hazardous substances.

Emergency Response Planning Guideline (ERPG) values are intended to provide estimates of concentration ranges where one reasonably might anticipate observing adverse effects.

A **fetus** is an unborn human or animal.

A **flammable** substance is a solid, liquid, vapor or gas that will ignite easily and burn rapidly.

The **flash point** is the temperature at which a liquid or solid gives off vapor that can form a flammable mixture with air.

IARC is the International Agency for Research on Cancer, a scientific group.

Ionization Potential is the amount of energy needed to remove an electron from an atom or molecule. It is measured in electron volts.

IRIS is the Integrated Risk Information System database maintained by federal EPA. The database contains information on human health effects that may result from exposure to various chemicals in the environment.

LEL or Lower Explosive Limit, is the lowest concentration of a combustible substance (gas or vapor) in the air capable of continuing an explosion.

mg/m³ means milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

A **mutagen** is a substance that causes mutations. A **mutation** is a change in the genetic material in a body cell. Mutations can lead to birth defects, miscarriages, or cancer.

NFPA is the National Fire Protection Association. It classifies substances according to their fire and explosion hazard.

NIOSH is the National Institute for Occupational Safety and Health. It tests equipment, evaluates and approves respirators, conducts studies of workplace hazards, and proposes standards to OSHA.

NTP is the National Toxicology Program which tests chemicals and reviews evidence for cancer.

OSHA is the federal Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

PESHA is the New York State Public Employees Safety and Health Act, which adopts and enforces health and safety standards in public workplaces.

Permeated is the movement of chemicals through protective materials.

PIH is a DOT designation for chemicals which are Poison Inhalation Hazards.

ppm means parts of a substance per million parts of air. It is a measure of concentration by volume in air.

A **reactive** substance is a solid, liquid or gas that releases energy under certain conditions.

STEL is a Short Term Exposure Limit which is usually a 15-minute exposure that should not be exceeded at any time during a work day.

A **teratogen** is a substance that causes birth defects by damaging the fetus.

UEL or Upper Explosive Limit is the highest concentration in air above which there is too much fuel (gas or vapor) to begin a reaction or explosion.

Vapor Density is the ratio of the weight of a given volume of one gas to the weight of another (usually *Hydrogen*), at the same temperature and pressure.

The **vapor pressure** is a measure of how readily a liquid or a solid mixes with air at its surface. A higher vapor pressure indicates a higher concentration of the substance in air and therefore increases the likelihood of breathing it in.

Common Name: **CHLOROFORM**

Synonyms: Trichloromethane; Formyl Trichloride

CAS No: 67-66-3

Molecular Formula: CHCl_3

RTK Substance No: 0388

Description: Colorless liquid, with a pleasant, sweet odor

HAZARD DATA

Hazard Rating	Firefighting	Reactivity
3 - Health 0 - Fire 0 - Reactivity DOT#: UN 1888 ERG Guide #: 151 Hazard Class: 6.1 (Poison)	<p>Extinguish fire using an agent suitable for type of surrounding fire. Chloroform itself does not burn.</p> <p>POISONOUS GASES ARE PRODUCED IN FIRE, including <i>Chlorine</i>, <i>Hydrogen Chloride</i> and <i>Phosgene</i>.</p> <p>Use water spray to keep fire-exposed containers cool.</p>	<p>Chloroform reacts with CHEMICALLY ACTIVE METALS such as POTASSIUM, SODIUM, MAGNESIUM and ZINC; ALUMINUM; STRONG BASES (such as SODIUM HYDROXIDE and POTASSIUM HYDROXIDE); and OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE) to cause fires and explosions.</p> <p>Chloroform is not compatible with ALKALI METALS (such as LITHIUM); MIXTURES of WATER and STRONG ALCOHOLS; ACETONE; PERCHLORIC ACID; DINITROGEN DIOXIDE; NITROGEN TETROXIDE; and DISILANE.</p>

SPILL/LEAKS

Isolation Distance:

Spill: 50 meters (150 feet)

Fire: 800 meters (1/2 mile)

Absorb liquids in vermiculite, dry sand, earth, or a similar material and deposit in sealed containers.

DO NOT wash into sewer.

Toxic to aquatic life.

PHYSICAL PROPERTIES

Odor Threshold:	2.4 to 85 ppm
Flash Point:	Noncombustible
Vapor Density:	4.12 (air = 1)
Vapor Pressure:	160 mm Hg at 68°F (20°C)
Specific Gravity:	1.5 (water = 1)
Water Solubility:	Very slightly soluble
Boiling Point:	143°F (62°C)
Melting Point:	-82°F (-64°C)
Ionization Potential:	11.42 eV
Molecular Weight:	119.4

EXPOSURE LIMITS

OSHA:	50 ppm, Ceiling
NIOSH:	2 ppm, 60-min STEL
ACGIH:	10 ppm, 8-hr TWA
IDLH LEVEL:	500 ppm
PAC LEVELS:	PAC-1 = 2 ppm; PAC-2 = 64 ppm; PAC-3 = 3,200 ppm

HEALTH EFFECTS

Eyes:	Irritation, burns, tearing
Skin:	Irritation, burns, drying and cracking
Inhalation:	Nose and throat irritation Headache, nausea, dizziness and passing out
Chronic:	Cancer (liver, kidney, thyroid) in animals

PROTECTIVE EQUIPMENT

Gloves:	Silver Shield®/4H® and Viton (>8-hr breakthrough)
Coveralls:	DuPont Tychem® CPF 4, BR, LV, Responder®, and TK; Kappler® Zytron® 500; and Saint-Gobain ONESuit® PRO (>8-hr breakthrough)
Respirator:	>2 ppm - Pressure demand supplied-air >500 ppm - Pressure demand SCBA

FIRST AID AND DECONTAMINATION

Remove the person from exposure.

Flush eyes with large amounts of water for at least 15 minutes. Remove contact lenses if worn.

Quickly remove contaminated clothing and wash contaminated skin with large amounts of soap and water.

Begin artificial respiration if breathing has stopped and CPR if necessary.

Transfer to a medical facility.



Right to Know Hazardous Substance Fact Sheet

Common Name: **1,2-DICHLOROETHYLENE**

CAS Number: 540-59-0
DOT Number: UN 1150

RTK Substance number: 0653
Date: September 1996 Revision: July 2002

HAZARD SUMMARY

- * **1,2-Dichloroethylene** can affect you when breathed in.
- * **1,2-Dichloroethylene** can irritate the skin causing a rash or burning feeling on contact.
- * **1,2-Dichloroethylene** can irritate the eyes on contact.
- * Breathing **1,2-Dichloroethylene** can irritate the nose, throat and lungs.
- * Exposure to a high concentration can cause you to become dizzy, lightheaded and to pass out.
- * Repeated exposure may affect the liver and kidneys.
- * **1,2-Dichloroethylene** is a FLAMMABLE and REACTIVE chemical and a FIRE and EXPLOSION HAZARD.

IDENTIFICATION

1,2-Dichloroethylene is a colorless liquid with an *Ether*-like odor. It is used as a solvent for organic materials.

REASON FOR CITATION

- * **1,2-Dichloroethylene** is on the Hazardous Substance List because it is regulated by OSHA and cited by ACGIH, DOT, NIOSH, DEC, NFPA and EPA.
- * This chemical is on the Special Health Hazard Substance List because it is **FLAMMABLE** and **REACTIVE**.
- * Definitions are provided on page 5.

HOW TO DETERMINE IF YOU ARE BEING EXPOSED

The New York State Right to Know Act requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information and training concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard, 1910.1200, requires private employers to provide similar training and information to their employees.

- * Exposure to hazardous substances should be routinely evaluated. This may include collecting personal and area air samples. You can obtain copies of sampling results from your employer. You have a legal right to this information under OSHA 1910.1020.
- * If you think you are experiencing any work-related health problems, see a doctor trained to recognize occupational diseases. Take this Fact Sheet with you.

WORKPLACE EXPOSURE LIMITS

- OSHA: The legal airborne permissible exposure limit (PEL) is **200 ppm** averaged over an 8-hour workshift.
- NIOSH: The recommended airborne exposure limit is **200 ppm** averaged over a 10-hour workshift.
- ACGIH: The recommended airborne exposure limit is **200 ppm** averaged over an 8-hour workshift.

WAYS OF REDUCING EXPOSURE

- * Where possible, enclose operations and use local exhaust ventilation at the site of chemical release. If local exhaust ventilation or enclosure is not used, respirators should be worn.
- * Wear protective work clothing.
- * Wash thoroughly immediately after exposure to **1,2-Dichloroethylene** and at the end of the workshift.
- * Post hazard and warning information in the work area. In addition, as part of an ongoing education and training effort, communicate all information on the health and safety hazards of **1,2-Dichloroethylene** to potentially exposed workers.

EMERGENCY NUMBERS

Poison Control: 1-800-222-1222
CHEMTREC: 1-800-424-9300
NYS Spill Hotline: 1-800-457-7362
National Response Center: 1-800-424-8802

This Fact Sheet is a summary source of information of all potential and most severe health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

HEALTH HAZARD INFORMATION

Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to **1,2-Dichloroethylene**:

- * **1,2-Dichloroethylene** can irritate the skin causing a rash or burning feeling on contact.
- * **1,2-Dichloroethylene** can irritate the eyes on contact.
- * Breathing **1,2-Dichloroethylene** can irritate the nose, throat and lungs.
- * Exposure to a high concentration can cause you to become dizzy, lightheaded and to pass out.

Chronic Health Effects

The following chronic (long-term) health effects can occur at some time after exposure to **1,2-Dichloroethylene** and can last for months or years:

Cancer Hazard

- * According to the information presently available to the New York State Department of Health, **1,2-Dichloroethylene** has not been tested for its ability to cause cancer in animals.

Reproductive Hazard

- * According to the information presently available to the New York State Department of Health, **1,2-Dichloroethylene** has not been tested for its ability to affect reproduction.

Other Long-Term Effects

- * Repeated exposure may affect the liver and kidneys.

MEDICAL

Medical Testing

If symptoms develop or overexposure is suspected, the following are recommended:

- * Liver and kidney function tests.

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under OSHA 1910.1020.

Mixed Exposures

- * Because more than light alcohol consumption can cause liver damage, drinking alcohol may increase the liver damage caused by **1,2-Dichloroethylene**.

WORKPLACE CONTROLS AND PRACTICES

Unless a less toxic chemical can be substituted for a hazardous substance, **ENGINEERING CONTROLS** are the most effective way of reducing exposure. The best protection is to enclose operations and/or provide local exhaust ventilation at the site of chemical release. Isolating operations can also reduce exposure. Using respirators or protective equipment is less effective than the controls mentioned above, but is sometimes necessary.

In evaluating the controls present in your workplace, consider: (1) how hazardous the substance is, (2) how much of the substance is released into the workplace and (3) whether harmful skin or eye contact could occur. Special controls should be in place for highly toxic chemicals or when significant skin, eye, or breathing exposures are possible.

In addition, the following controls are recommended:

- * Where possible, automatically pump liquid **1,2-Dichloroethylene** from drums or other storage containers to process containers.
- * Before entering a confined space where **1,2-Dichloroethylene** may be present, check to make sure that an explosive concentration does not exist.

Good **WORK PRACTICES** can help to reduce hazardous exposures. The following work practices are recommended:

- * Workers whose clothing has been contaminated by **1,2-Dichloroethylene** should change into clean clothing promptly.
- * Contaminated work clothes should be laundered by individuals who have been informed of the hazards of exposure to **1,2-Dichloroethylene**.
- * Eye wash fountains should be provided in the immediate work area for emergency use.
- * If there is the possibility of skin exposure, emergency shower facilities should be provided.
- * On skin contact with **1,2-Dichloroethylene**, immediately wash or shower to remove the chemical. At the end of the workshift, wash any areas of the body that may have contacted **1,2-Dichloroethylene**, whether or not known skin contact has occurred.
- * Do not eat, smoke, or drink where **1,2-Dichloroethylene** is handled, processed, or stored, since the chemical can be swallowed. Wash hands carefully before eating, drinking, applying cosmetics, smoking, or using the toilet.

PERSONAL PROTECTIVE EQUIPMENT

WORKPLACE CONTROLS ARE BETTER THAN PERSONAL PROTECTIVE EQUIPMENT. However, for some jobs (such as outside work, confined space entry, jobs done only once in a while, or jobs done while workplace controls are being installed), personal protective equipment may be appropriate.

OSHA 1910.132 requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

Clothing

- * Avoid skin contact with **1,2-Dichloroethylene**. Wear solvent-resistant gloves and clothing. Safety equipment suppliers/ manufacturers can provide recommendations on the most protective glove/clothing material for your operation.
- * All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

Eye Protection

- * Wear indirect-vent, impact and splash resistant goggles when working with liquids.
- * Wear a face shield along with goggles when working with corrosive, highly irritating or toxic substances.
- * Contact lenses should not be worn when working with this substance.

Respiratory Protection

IMPROPER USE OF RESPIRATORS IS DANGEROUS.

Such equipment should only be used if the employer has a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing and medical exams, as described in OSHA 1910.134.

- * Where the potential exists for exposure over **200 ppm**, use a NIOSH approved full facepiece respirator with an organic vapor cartridge. Increased protection is obtained from full facepiece powered-air purifying respirators.
- * If while wearing a filter or cartridge respirator you can smell, taste, or otherwise detect **1,2-Dichloroethylene**, or if while wearing particulate filters abnormal resistance to breathing is experienced, or eye irritation occurs while wearing a full facepiece respirator, leave the area immediately. Check to make sure the respirator-to-face seal is still good. If it is, replace the filter or cartridge. If the seal is no longer good, you may need a new respirator.
- * Be sure to consider all potential exposures in your workplace. You may need a combination of filters, prefilters or cartridges to protect against different forms of a chemical (such as vapor and mist) or against a mixture of chemicals.

- * Where the potential for high exposure exists, use a MSHA/NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive-pressure mode.
- * Exposure to **1,000 ppm** is immediately dangerous to life and health. If the possibility of exposure above **1,000 ppm** exists, use a NIOSH approved self-contained breathing apparatus with a full facepiece operated in a pressure-demand or other positive-pressure mode.

HANDLING AND STORAGE

- * Prior to working with **1,2-Dichloroethylene** you should be trained on its proper handling and storage.
- * **1,2-Dichloroethylene** forms explosive hazards with METAL and METAL ALLOYS (such as POTASSIUM, LITHIUM, MAGNESIUM, ALUMINUM DUSTS, COPPER and COPPER ALLOYS).
- * Mixtures with NITRIC ACID can be detonated by HEAT, IMPACT or FRICTION.
- * **1,2-Dichloroethylene** is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE); STRONG BASES (such as SODIUM HYDROXIDE and POTASSIUM HYDROXIDE); DIFLUOROMETHYLENE DIHYPOFLUORITE; and NITROGEN TETRAOXIDE.
- * Store in tightly closed containers in a cool, well-ventilated area away from AIR, LIGHT and MOISTURE as **1,2-Dichloroethylene** will decompose to form *Hydrogen Chloride*.
- * Sources of ignition, such as smoking and open flames, are prohibited where **1,2-Dichloroethylene** is used, handled, or stored.
- * Metal containers involving the transfer of **1,2-Dichloroethylene** should be grounded and bonded.
- * Use only non-sparking tools and equipment, especially when opening and closing containers of **1,2-Dichloroethylene**.
- * Wherever **1,2-Dichloroethylene** is used, handled, manufactured, or stored, use explosion-proof electrical equipment and fittings.

QUESTIONS AND ANSWERS

- Q: If I have acute health effects, will I later get chronic health effects?
- A: Not always. Most chronic (long-term) effects result from repeated exposures to a chemical.
- Q: Can I get long-term effects without ever having short-term effects?
- A: Yes, because long-term effects can occur from repeated exposures to a chemical at levels not high enough to make you immediately sick.

- Q: What are my chances of getting sick when I have been exposed to chemicals?
- A: The likelihood of becoming sick from chemicals is increased as the amount of exposure increases. This is determined by the length of time and the amount of material to which someone is exposed.
- Q: When are higher exposures more likely?
- A: Conditions which increase risk of exposure include physical and mechanical processes (heating, pouring, spraying, spills and evaporation from large surface areas such as open containers), and "confined space" exposures (working inside vats, reactors, boilers, small rooms, etc.).
- Q: Is the risk of getting sick higher for workers than for community residents?
- A: Yes. Exposures in the community, except possibly in cases of fires or spills, are usually much lower than those found in the workplace. However, people in the community may be exposed to contaminated water as well as to chemicals in the air over long periods. This may be a problem for children or people who are already ill.

The following information is available from:

New York State Department of Health
Right to Know
Bureau of Occupational Health and Injury Prevention
Empire State Plaza-Corning Tower, Room 1325
Albany, New York 12237
Phone: (518) 402-7900 or 800-458-1158
Web address: https://www.health.ny.gov/environmental/workplace/right_to_know/

Industrial Hygiene Information

Industrial hygienists are available to answer your questions regarding the control of chemical exposures using exhaust ventilation, special work practices, good housekeeping, good hygiene practices, and personal protective equipment including respirators. In addition, they can help to interpret the results of industrial hygiene survey data.

Medical Evaluation

If you think you are becoming sick because of exposure to chemicals at your workplace, you may call personnel at the Department of Health, and Occupational Health Service, who can help you find the information you need.

Public Presentations

Presentations and educational programs on occupational health or the Right to Know Act can be organized for labor unions, trade associations and other groups.

Right to Know Information Resources

The Right to Know Infoline can answer questions about the identity and potential health effects of chemicals, list of educational materials in occupational health, references used to prepare the Fact Sheets, preparation of the Right to Know Survey, education and training programs, labeling requirements, and general information regarding the Right to Know Act.

DEFINITIONS

ACGIH is the American Conference of Governmental Industrial Hygienists. It recommends upper limits (called TLVs) for exposure to workplace chemicals.

A **carcinogen** is a substance that causes cancer.

The **CAS number** is assigned by the Chemical Abstracts Service to identify a specific chemical.

A **combustible** substance is a solid, liquid or gas that will burn.

A **corrosive** substance is a gas, liquid or solid that causes irreversible damage to human tissue or containers.

DEC is the New York State Department of Environmental Conservation.

DOT is the Department of Transportation, the federal agency that regulates the transportation of chemicals.

EPA is the Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

A **fetus** is an unborn human or animal.

A **flammable** substance is a solid, liquid, vapor or gas that will ignite easily and burn rapidly.

The **flash point** is the temperature at which a liquid or solid gives off vapor that can form a flammable mixture with air.

HHAG is the Human Health Assessment Group of the federal EPA.

IARC is the International Agency for Research on Cancer, a scientific group that classifies chemicals according to their cancer-causing potential.

A **miscible** substance is a liquid or gas that will evenly dissolve in another.

mg/m³ means milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

A **mutagen** is a substance that causes mutations. A **mutation** is a change in the genetic material in a body cell. Mutations can lead to birth defects, miscarriages, or cancer.

NAERG is the North American Emergency Response Guidebook. It was jointly developed by Transport Canada, the United States Department of Transportation and the Secretariat of Communications and Transportation of Mexico. It is a guide for first responders to quickly identify the specific or generic hazards of material involved in a transportation incident, and to protect themselves and the general public during the initial response phase of the incident.

NCI is the National Cancer Institute, a federal agency that determines the cancer-causing potential of chemicals.

NFPA is the National Fire Protection Association. It classifies substances according to their fire and explosion hazard.

NIOSH is the National Institute for Occupational Safety and Health. It tests equipment, evaluates and approves respirators, conducts studies of workplace hazards, and proposes standards to OSHA.

NTP is the National Toxicology Program which tests chemicals and reviews evidence for cancer.

OSHA is the Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

PEL is the Permissible Exposure Limit which is enforceable by the Occupational Safety and Health Administration.

PESHA is the New York State Public Employees Safety and Health Act, which adopts and enforces health and safety standards in public workplaces.

PIH is a DOT designation for chemicals which are Poison Inhalation Hazards.

ppm means parts of a substance per million parts of air. It is a measure of concentration by volume in air.

A **reactive** substance is a solid, liquid or gas that releases energy under certain conditions.

A **teratogen** is a substance that causes birth defects by damaging the fetus.

TLV is the Threshold Limit Value, the workplace exposure limit recommended by ACGIH.

The **vapor pressure** is a measure of how readily a liquid or a solid mixes with air at its surface. A higher vapor pressure indicates a higher concentration of the substance in air and therefore increases the likelihood of breathing it in.

Right to Know Hazardous Substance Fact Sheet

Common Name: **1,4-DICHLOROBENZENE**

CAS Number: 106-46-7

DOT Number: UN 3077

DOT Hazard Class: 9 (Miscellaneous Hazardous Material)

RTK Substance number: 0643

Date: June 1998

Revision: December 2005

HAZARD SUMMARY

- * **1,4-Dichlorobenzene** can affect you when breathed in and by passing through your skin.
- * **1,4-Dichlorobenzene** should be handled as a **CARCINOGEN--WITH EXTREME CAUTION**.
- * Contact with the dust can irritate and burn the eyes and skin.
- * Breathing **1,4-Dichlorobenzene** can irritate the nose and throat causing coughing and wheezing.
- * Exposure can cause headache, dizziness, swelling around the eyes, nausea and vomiting.
- * Repeated exposure to **1,4-Dichlorobenzene** can damage the nervous system causing weakness, trembling and numbness in the arms and legs.
- * **1,4-Dichlorobenzene** may damage the liver and kidneys.
- * **1,4-Dichlorobenzene** may affect the lungs and blood cells causing anemia.

IDENTIFICATION

1,4-Dichlorobenzene is a colorless or white crystalline (sand-like) material with a mothball odor. It is used as a fumigant to control mildew and mold, and as an insecticide.

REASON FOR CITATION

- * **1,4-Dichlorobenzene** is on the Hazardous Substance List because it is regulated by OSHA and cited by ACGIH, DOT, NIOSH, NTP, DEC, IARC, IRIS, NFPA and EPA.
- * This chemical is on the Special Health Hazard Substance List because it is a **CARCINOGEN**.
- * Definitions are provided on page 5.

HOW TO DETERMINE IF YOU ARE BEING EXPOSED

The New York State Right to Know Act requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information and training concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard (29 CFR 1910.1200) requires private employers to provide similar training and information to their employees.

EMERGENCY NUMBERS

Poison Control: 1-800-222-1222

CHEMTREC: 1-800-424-9300

NYS Spill Hotline: 1-800-457-7362

National Response Center: 1-800-424-8802

- * Exposure to hazardous substances should be routinely evaluated. This may include collecting personal and area air samples. You can obtain copies of sampling results from your employer. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 1910.1020).
- * If you think you are experiencing any work-related health problems, see a doctor trained to recognize occupational diseases. Take this Fact Sheet with you.
- * **ODOR THRESHOLD = 0.048 to 0.12 ppm.**
- * The range of accepted odor threshold values is quite broad. Caution should be used in relying on odor alone as a warning of potentially hazardous exposures.

WORKPLACE EXPOSURE LIMITS

OSHA: The recommended airborne exposure limit is **75 ppm** averaged over an 8-hour workshift.

NIOSH: Recommends that exposure to occupational carcinogens be limited to the lowest feasible concentration.

ACGIH: The recommended airborne exposure limit is **10 ppm** averaged over an 8-hour workshift.

- * **1,4-Dichlorobenzene** may be a **CARCINOGEN** in humans. There may be no safe level of exposure to a carcinogen, so all contact should be reduced to the lowest possible level.
- * The above exposure limits are for air levels only. When skin contact also occurs, you may be overexposed, even though air levels are less than the limits listed above.

WAYS OF REDUCING EXPOSURE

- * Enclose operations and use local exhaust ventilation at the site of chemical release. If local exhaust ventilation or enclosure is not used, respirators should be worn.
- * Wear protective work clothing.
- * Wash thoroughly immediately after exposure to **1,4-Dichlorobenzene** and at the end of the workshift.
- * Post hazard and warning information in the work area. In addition, as part of an ongoing education and training effort, communicate all information on the health and safety hazards of **1,4-Dichlorobenzene** to potentially exposed workers.

This Fact Sheet is a summary source of information of all potential and most severe health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

HEALTH HAZARD INFORMATION

Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to **1,4-Dichlorobenzene**:

- * Contact with the dust can irritate and burn the eyes and skin.
- * Breathing **1,4-Dichlorobenzene** can irritate the nose and throat causing coughing and wheezing.
- * Exposure can cause headache, dizziness, swelling around the eyes, nausea and vomiting.

Chronic Health Effects

The following chronic (long-term) health effects can occur at some time after exposure to **1,4-Dichlorobenzene** and can last for months or years:

Cancer Hazard

- * **1,4-Dichlorobenzene** may be a CARCINOGEN in humans since it has been shown to cause kidney and liver cancer in animals.
- * Many scientists believe there is no safe level of exposure to a carcinogen. Such substances may also have the potential for causing reproductive damage in humans.

Reproductive Hazard

- * According to the information presently available to the New York State Department of Health, **1,4-Dichlorobenzene** has been tested and has not been shown to affect reproduction.

Other Long-Term Effects

- * Repeated exposure to **1,4-Dichlorobenzene** can damage the nervous system causing weakness, trembling and numbness in the arms and legs.
- * **1,4-Dichlorobenzene** may damage the liver and kidneys.
- * **1,4-Dichlorobenzene** may affect the lungs and blood cells causing anemia.

MEDICAL

Medical Testing

For those with frequent or potentially high exposure (half the TLV or greater), the following are recommended before beginning work and at regular times after that:

- * Liver and kidney function tests.
- * Lung function tests.

If symptoms develop or overexposure is suspected, the following are recommended:

- * Complete blood count.
- * Exam of the nervous system.

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 1910.1020).

Mixed Exposures

- * Because smoking can cause heart disease, as well as lung cancer, emphysema, and other respiratory problems, it may worsen respiratory conditions caused by chemical exposure. Even if you have smoked for a long time, stopping now will reduce your risk of developing health problems.
- * Because more than light alcohol consumption can cause liver damage, drinking alcohol can increase the liver damage caused by **1,4-Dichlorobenzene**.

WORKPLACE CONTROLS AND PRACTICES

Unless a less toxic chemical can be substituted for a hazardous substance, **ENGINEERING CONTROLS** are the most effective way of reducing exposure. The best protection is to enclose operations and/or provide local exhaust ventilation at the site of chemical release. Isolating operations can also reduce exposure. Using respirators or protective equipment is less effective than the controls mentioned above, but is sometimes necessary.

In evaluating the controls present in your workplace, consider: (1) how hazardous the substance is, (2) how much of the substance is released into the workplace and (3) whether harmful skin or eye contact could occur. Special controls should be in place for highly toxic chemicals or when significant skin, eye, or breathing exposures are possible.

In addition, the following control is recommended:

- * Where possible, automatically transfer **1,4-Dichlorobenzene** from drums or other storage containers to process containers.

Good **WORK PRACTICES** can help to reduce hazardous exposures. The following work practices are recommended:

- * Workers whose clothing has been contaminated by **1,4-Dichlorobenzene** should change into clean clothing promptly.
- * Do not take contaminated work clothes home. Family members could be exposed.
- * Contaminated work clothes should be laundered by individuals who have been informed of the hazards of exposure to **1,4-Dichlorobenzene**.

- * Eye wash fountains should be provided in the immediate work area for emergency use.
- * If there is the possibility of skin exposure, emergency shower facilities should be provided.
- * On skin contact with **1,4-Dichlorobenzene**, immediately wash or shower to remove the chemical. At the end of the workshift, wash any areas of the body that may have contacted **1,4-Dichlorobenzene**, whether or not known skin contact has occurred.
- * Do not eat, smoke, or drink where **1,4-Dichlorobenzene** is handled, processed, or stored, since the chemical can be swallowed. Wash hands carefully before eating, drinking, smoking, or using the toilet.
- * Use a vacuum or a wet method to reduce dust during clean-up. DO NOT DRY SWEEP.

PERSONAL PROTECTIVE EQUIPMENT

WORKPLACE CONTROLS ARE BETTER THAN PERSONAL PROTECTIVE EQUIPMENT. However, for some jobs (such as outside work, confined space entry, jobs done only once in a while, or jobs done while workplace controls are being installed), personal protective equipment may be appropriate.

The OSHA Personal Protective Equipment Standard (29 CFR 1910.132) requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

Clothing

- * Avoid skin contact with **1,4-Dichlorobenzene**. Wear protective gloves and clothing. Safety equipment suppliers/manufacturers can provide recommendations on the most protective glove/clothing material for your operation.
- * Safety equipment manufacturers recommend *Viton®*; and *Tychem® F*, *BR/LV*, *Responder*, *TK* and *Reflector* as protective materials for *Dichlorobenzene*.
- * All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

Eye Protection

- * Wear eye protection with side shields or goggles.
- * Wear a face shield along with goggles when working with corrosive, highly irritating or toxic substances.
- * Contact lenses should not be worn when working with this substance.

Respiratory Protection

IMPROPER USE OF RESPIRATORS IS DANGEROUS. Such equipment should only be used if the employer has a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing, and medical exams, as described in the OSHA Respiratory Protection Standard (29 CFR 1910.134).

- * For field applications check with your supervisor and your safety equipment supplier regarding the appropriate respiratory equipment.
- * Where the potential exists for exposure over **10 ppm**, use a NIOSH approved full facepiece respirator with an organic vapor cartridge and particulate prefilters. Increased protection is obtained from full facepiece powered-air purifying respirators.
- * Where the potential exists for exposure over **100 ppm**, use a NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive-pressure mode.
- * Exposure to **150 ppm** is immediately dangerous to life and health. If the possibility of exposure above **150 ppm** exists, use a NIOSH approved self-contained breathing apparatus with a full facepiece operated in a pressure-demand or other positive-pressure mode equipped with an emergency escape air cylinder.

QUESTIONS AND ANSWERS

Q: If I have acute health effects, will I later get chronic health effects?

A: Not always. Most chronic (long-term) effects result from repeated exposures to a chemical.

Q: Can I get long-term effects without ever having short-term effects?

A: Yes, because long-term effects can occur from repeated exposures to a chemical at levels not high enough to make you immediately sick.

Q: What are my chances of getting sick when I have been exposed to chemicals?

A: The likelihood of becoming sick from chemicals is increased as the amount of exposure increases. This is determined by the length of time and the amount of material to which someone is exposed.

Q: When are higher exposures more likely?

A: Conditions which increase risk of exposure include dust releasing operations (grinding, mixing, blasting, dumping, etc.), other physical and mechanical processes (heating, pouring, spraying, spills and evaporation from large surface areas such as open containers), and "confined space" exposures (working inside vats, reactors, boilers, small rooms, etc.).

Q: Is the risk of getting sick higher for workers than for community residents?

A: Yes. Exposures in the community, except possibly in cases of fires or spills, are usually much lower than those found in the workplace. However, people in the community may be exposed to contaminated water as well as to chemicals in the air over long periods. This may be a problem for children or people who are already ill.

Q: Don't all chemicals cause cancer?

A: No. Most chemicals tested by scientists are not cancer-causing.

Q: Should I be concerned if a chemical causes cancer in animals?

A: Yes. Most scientists agree that a chemical that causes cancer in animals should be treated as a suspected human carcinogen unless proven otherwise.

Q: But don't they test animals using much higher levels of a chemical than people usually are exposed to?

A: Yes. That's so effects can be seen more clearly using fewer animals. But high doses alone don't cause cancer unless it's a cancer agent. In fact, a chemical that causes cancer in animals at high doses could cause cancer in humans exposed to low doses.

The following information is available from:

New York State Department of Health
Right to Know
Bureau of Occupational Health and Injury Prevention
Empire State Plaza-Corning Tower, Room 1325
Albany, New York 12237
Phone: (518) 402-7900 or 800-458-1158
Web address: https://www.health.ny.gov/environmental/workplace/right_to_know/

Industrial Hygiene Information

Industrial hygienists are available to answer your questions regarding the control of chemical exposures using exhaust ventilation, special work practices, good housekeeping, good hygiene practices, and personal protective equipment including respirators. In addition, they can help to interpret the results of industrial hygiene survey data.

Medical Evaluation

If you think you are becoming sick because of exposure to chemicals at your workplace, you may call personnel at the Department of Health and Senior Services, Occupational Health Service, who can help you find the information you need.

Public Presentations

Presentations and educational programs on occupational health or the Right to Know Act can be organized for labor unions, trade associations and other groups.

Right to Know Information Resources

The Right to Know Infoline can answer questions about the identity and potential health effects of chemicals, list of educational materials in occupational health, references used to prepare the Fact Sheets, preparation of the Right to Know Survey, education and training programs, labeling requirements, and general information regarding the Right to Know Act.

DEFINITIONS

ACGIH is the American Conference of Governmental Industrial Hygienists. It recommends upper limits (called TLVs) for exposure to workplace chemicals.

A **carcinogen** is a substance that causes cancer.

The **CAS number** is assigned by the Chemical Abstracts Service to identify a specific chemical.

CFR is the Code of Federal Regulations, which consists of the regulations of the United States government.

A **combustible** substance is a solid, liquid or gas that will burn.

A **corrosive** substance is a gas, liquid or solid that causes irreversible damage to human tissue or containers.

DEC is the New York State Department of Environmental Conservation.

DOT is the Department of Transportation, the federal agency that regulates the transportation of chemicals.

EPA is the Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

A **fetus** is an unborn human or animal.

A **flammable** substance is a solid, liquid, vapor or gas that will ignite easily and burn rapidly.

The **flash point** is the temperature at which a liquid or solid gives off vapor that can form a flammable mixture with air.

IARC is the International Agency for Research on Cancer, a scientific group that classifies chemicals according to their cancer-causing potential.

IRIS is the Integrated Risk Information System database of the federal EPA.

A **miscible** substance is a liquid or gas that will evenly dissolve in another.

mg/m³ means milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

A **mutagen** is a substance that causes mutations. A **mutation** is a change in the genetic material in a body cell. Mutations can lead to birth defects, miscarriages, or cancer.

NAERG is the North American Emergency Response Guidebook. It was jointly developed by Transport Canada, the United States Department of Transportation and the Secretariat of Communications and Transportation of Mexico. It is a guide for first responders to quickly identify the specific or generic hazards of material involved in a transportation incident, and to protect themselves and the general public during the initial response phase of the incident.

NFPA is the National Fire Protection Association. It classifies substances according to their fire and explosion hazard.

NIOSH is the National Institute for Occupational Safety and Health. It tests equipment, evaluates and approves respirators, conducts studies of workplace hazards, and proposes standards to OSHA.

NTP is the National Toxicology Program which tests chemicals and reviews evidence for cancer.

OSHA is the Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

PEL is the Permissible Exposure Limit which is enforceable by the Occupational Safety and Health Administration.

PESHA is the New York State Public Employees Safety and Health Act, which adopts and enforces health and safety standards in public workplaces.

PIH is a DOT designation for chemicals which are Poison Inhalation Hazards.

ppm means parts of a substance per million parts of air. It is a measure of concentration by volume in air.

A **reactive** substance is a solid, liquid or gas that releases energy under certain conditions.

STEL is a Short Term Exposure Limit which is usually a 15-minute exposure that should not be exceeded at any time during a work day.

A **teratogen** is a substance that causes birth defects by damaging the fetus.

TLV is the Threshold Limit Value, the workplace exposure limit recommended by ACGIH.

The **vapor pressure** is a measure of how readily a liquid or a solid mixes with air at its surface. A higher vapor pressure indicates a higher concentration of the substance in air and therefore increases the likelihood of breathing it in.



Right to Know Hazardous Substance Fact Sheet

Common Name: **TRICHLOROACETIC ACID**

CAS Number: 76-03-9

DOT Number: UN 1839

UN 2564 (Solution)

RTK Substance number: 1883

Date: May 1997

Revision: May 2004

HAZARD SUMMARY

- * **Trichloroacetic Acid** can affect you when breathed in.
- * **Trichloroacetic Acid** is a CORROSIVE CHEMICAL and contact can severely irritate and burn the skin and eyes with possible eye damage.
- * Breathing **Trichloroacetic Acid** can irritate the nose and throat.
- * Breathing **Trichloroacetic Acid** can irritate the lungs causing coughing and/or shortness of breath. Higher exposures can cause a build-up of fluid in the lungs (pulmonary edema), a medical emergency, with severe shortness of breath.
- * **Trichloroacetic Acid** may affect the liver.

IDENTIFICATION

Trichloroacetic Acid is a colorless, crystalline (sand-like) solid which is used in liquid solutions. It is used in making medicines, pharmaceuticals, and pesticides.

REASON FOR CITATION

- * **Trichloroacetic Acid** is on the Hazardous Substance List because it is cited by ACGIH, DOT, NIOSH, IARC and IRIS.
- * This chemical is on the Special Health Hazard Substance List because it is **CORROSIVE**.
- * Definitions are provided on page 5.

HOW TO DETERMINE IF YOU ARE BEING EXPOSED

The New York State Right to Know Act requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information and training concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard, 1910.1200, requires private employers to provide similar training and information to their employees.

- * Exposure to hazardous substances should be routinely evaluated. This may include collecting personal and area air samples. You can obtain copies of sampling results from your employer. You have a legal right to this information under OSHA 1910.1020.

- * If you think you are experiencing any work-related health problems, see a doctor trained to recognize occupational diseases. Take this Fact Sheet with you.

WORKPLACE EXPOSURE LIMITS

NIOSH: The recommended airborne exposure limit is **1 ppm** averaged over a 10-hour workshift.

ACGIH: The recommended airborne exposure limit is **1 ppm** averaged over an 8-hour workshift.

WAYS OF REDUCING EXPOSURE

- * Where possible, enclose operations and use local exhaust ventilation at the site of chemical release. If local exhaust ventilation or enclosure is not used, respirators should be worn.
- * Wear protective work clothing.
- * Wash thoroughly immediately after exposure to **Trichloroacetic Acid** and at the end of the workshift.
- * Post hazard and warning information in the work area. In addition, as part of an ongoing education and training effort, communicate all information on the health and safety hazards of **Trichloroacetic Acid** to potentially exposed workers.

EMERGENCY NUMBERS

Poison Control: 1-800-222-1222

CHEMTREC: 1-800-424-9300

NYS Spill Hotline: 1-800-457-7362

National Response Center: 1-800-424-8802

This Fact Sheet is a summary source of information of all potential and most severe health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

HEALTH HAZARD INFORMATION

Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to **Trichloroacetic Acid**:

- * Contact can severely irritate and burn the skin and eyes with possible eye damage.
- * Breathing **Trichloroacetic Acid** can irritate the nose and throat.
- * Breathing **Trichloroacetic Acid** can irritate the lungs causing coughing and/or shortness of breath. Higher exposures can cause a build-up of fluid in the lungs (pulmonary edema), a medical emergency, with severe shortness of breath.

Chronic Health Effects

The following chronic (long-term) health effects can occur at some time after exposure to **Trichloroacetic Acid** and can last for months or years:

Cancer Hazard

- * While **Trichloroacetic Acid** has been tested, it is not classifiable as to its potential to cause cancer.

Reproductive Hazard

- * There is limited evidence that **Trichloroacetic Acid** is a teratogen in animals. Until further testing has been done, it should be treated as a possible teratogen in humans.

Other Long-Term Effects

- * **Trichloroacetic Acid** can irritate the lungs. Repeated exposure may cause bronchitis to develop with cough, phlegm, and/or shortness of breath.
- * **Trichloroacetic Acid** may affect the liver.

MEDICAL

Medical Testing

If symptoms develop or overexposure is suspected, the following are recommended:

- * Chest x-ray and lung function tests.
- * Liver function tests.

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under OSHA 1910.1020.

Mixed Exposures

- * Because smoking can cause heart disease, as well as lung cancer, emphysema, and other respiratory problems, it may worsen respiratory conditions caused by chemical exposure. Even if you have smoked for a long time, stopping now will reduce your risk of developing health problems.
- * Because more than light alcohol consumption can cause liver damage, drinking alcohol may increase the liver damage caused by **Trichloroacetic Acid**.

WORKPLACE CONTROLS AND PRACTICES

Unless a less toxic chemical can be substituted for a hazardous substance, **ENGINEERING CONTROLS** are the most effective way of reducing exposure. The best protection is to enclose operations and/or provide local exhaust ventilation at the site of chemical release. Isolating operations can also reduce exposure. Using respirators or protective equipment is less effective than the controls mentioned above, but is sometimes necessary.

In evaluating the controls present in your workplace, consider: (1) how hazardous the substance is, (2) how much of the substance is released into the workplace and (3) whether harmful skin or eye contact could occur. Special controls should be in place for highly toxic chemicals or when significant skin, eye, or breathing exposures are possible.

In addition, the following control is recommended:

- * Where possible, automatically transfer solid **Trichloroacetic Acid** or pump liquid **Trichloroacetic Acid** from drums or other storage containers to process containers.

Good **WORK PRACTICES** can help to reduce hazardous exposures. The following work practices are recommended:

- * Workers whose clothing has been contaminated by **Trichloroacetic Acid** should change into clean clothing promptly.
- * Do not take contaminated work clothes home. Family members could be exposed.
- * Contaminated work clothes should be laundered by individuals who have been informed of the hazards of exposure to **Trichloroacetic Acid**.
- * Eye wash fountains should be provided in the immediate work area for emergency use.
- * If there is the possibility of skin exposure, emergency shower facilities should be provided.
- * On skin contact with **Trichloroacetic Acid**, immediately wash or shower to remove the chemical. At the end of the workshift, wash any areas of the body that may have contacted **Trichloroacetic Acid**, whether or not known skin contact has occurred.

- * Do not eat, smoke, or drink where **Trichloroacetic Acid** is handled, processed, or stored, since the chemical can be swallowed. Wash hands carefully before eating, drinking, smoking, or using the toilet.
- * For solid **Trichloroacetic Acid** use a vacuum or a wet method to reduce dust during clean-up. DO NOT DRY SWEEP.

PERSONAL PROTECTIVE EQUIPMENT

WORKPLACE CONTROLS ARE BETTER THAN PERSONAL PROTECTIVE EQUIPMENT. However, for some jobs (such as outside work, confined space entry, jobs done only once in a while, or jobs done while workplace controls are being installed), personal protective equipment may be appropriate.

OSHA 1910.132 requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

Clothing

- * Avoid skin contact with **Trichloroacetic Acid**. Wear acid-resistant gloves and clothing. Safety equipment suppliers/manufacturers can provide recommendations on the most protective glove/clothing material for your operation.
- * All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.
- * Safety equipment manufacturers recommend *Viton* as a protective material.

Eye Protection

- * For solid **Trichloroacetic Acid**, wear eye protection with side shields or goggles.
- * Wear indirect-vent, impact and splash resistant goggles when working with liquids.
- * Wear a face shield along with goggles when working with corrosive, highly irritating or toxic substances.
- * Contact lenses should not be worn when working with this substance.

Respiratory Protection

IMPROPER USE OF RESPIRATORS IS DANGEROUS.

Such equipment should only be used if the employer has a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing and medical exams, as described in OSHA 1910.134.

- * Where the potential exists for exposure over **1 ppm**, use a NIOSH approved full facepiece respirator with high efficiency particulate prefilters and an acid gas cartridge/canister. Greater protection is provided by a powered-air purifying respirator. Particulate filters must be

checked every day before work for physical damage, such as rips or tears, and replaced as needed.

- * If while wearing a filter or cartridge respirator you can smell, taste, or otherwise detect **Trichloroacetic Acid**, or if while wearing particulate filters abnormal resistance to breathing is experienced, or eye irritation occurs while wearing a full facepiece respirator, leave the area immediately. Check to make sure the respirator-to-face seal is still good. If it is, replace the filter or cartridge. If the seal is no longer good, you may need a new respirator.
- * Be sure to consider all potential exposures in your workplace. You may need a combination of filters, prefilters or cartridges to protect against different forms of a chemical (such as vapor and mist) or against a mixture of chemicals.
- * Where the potential for high exposure exists, use a MSHA/NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive-pressure mode.

QUESTIONS AND ANSWERS

Q: If I have acute health effects, will I later get chronic health effects?

A: Not always. Most chronic (long-term) effects result from repeated exposures to a chemical.

Q: Can I get long-term effects without ever having short-term effects?

A: Yes, because long-term effects can occur from repeated exposures to a chemical at levels not high enough to make you immediately sick.

Q: What are my chances of getting sick when I have been exposed to chemicals?

A: The likelihood of becoming sick from chemicals is increased as the amount of exposure increases. This is determined by the length of time and the amount of material to which someone is exposed.

Q: When are higher exposures more likely?

A: Conditions which increase risk of exposure include dust releasing operations (grinding, mixing, blasting, dumping, etc.), other physical and mechanical processes (heating, pouring, spraying, spills and evaporation from large surface areas such as open containers), and "confined space" exposures (working inside vats, reactors, boilers, small rooms, etc.).

Q: Is the risk of getting sick higher for workers than for community residents?

A: Yes. Exposures in the community, except possibly in cases of fires or spills, are usually much lower than those found in the workplace. However, people in the community may be exposed to contaminated water as well as to chemicals in the air over long periods. This may be a problem for children or people who are already ill.

- Q: Can men as well as women be affected by chemicals that cause reproductive system damage?
- A: Yes. Some chemicals reduce potency or fertility in both men and women. Some damage sperm and eggs, possibly leading to birth defects.
- Q: Who is at the greatest risk from reproductive hazards?
- A: Pregnant women are at greatest risk from chemicals that harm the developing fetus. However, chemicals may affect the ability to have children, so both men and women of childbearing age are at high risk.
- Q: Should I be concerned if a chemical is a teratogen in animals?
- A: Yes. Although some chemicals may affect humans differently than they affect animals, damage to animals suggests that similar damage can occur in humans.

The following information is available from:
 New York State Department of Health
 Right to Know
 Bureau of Occupational Health and Injury Prevention
 Empire State Plaza-Corning Tower, Room 1325
 Albany, New York 12237
 Phone: (518) 402-7900 or 800-458-1158
 Web address: https://www.health.ny.gov/environmental/workplace/right_to_know/

Industrial Hygiene Information

Industrial hygienists are available to answer your questions regarding the control of chemical exposures using exhaust ventilation, special work practices, good housekeeping, good hygiene practices, and personal protective equipment including respirators. In addition, they can help to interpret the results of industrial hygiene survey data.

Medical Evaluation

If you think you are becoming sick because of exposure to chemicals at your workplace, you may call personnel at the Department of Health, and Occupational Health Service, who can help you find the information you need.

Public Presentations

Presentations and educational programs on occupational health or the Right to Know Act can be organized for labor unions, trade associations and other groups.

Right to Know Information Resources

The Right to Know Infoline can answer questions about the identity and potential health effects of chemicals, list of educational materials in occupational health, references used to prepare the Fact Sheets, preparation of the Right to Know Survey, education and training programs, labeling requirements, and general information regarding the Right to Know Act.

DEFINITIONS

ACGIH is the American Conference of Governmental Industrial Hygienists. It recommends upper limits (called TLVs) for exposure to workplace chemicals.

A **carcinogen** is a substance that causes cancer.

The **CAS number** is assigned by the Chemical Abstracts Service to identify a specific chemical.

CFR is the Code of Federal Regulations, which consists of the regulations of the United States government.

A **combustible** substance is a solid, liquid or gas that will burn.

A **corrosive** substance is a gas, liquid or solid that causes irreversible damage to human tissue or containers.

DEC is the New York State Department of Environmental Conservation.

DOT is the Department of Transportation, the federal agency that regulates the transportation of chemicals.

EPA is the Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

A **fetus** is an unborn human or animal.

A **flammable** substance is a solid, liquid, vapor or gas that will ignite easily and burn rapidly.

The **flash point** is the temperature at which a liquid or solid gives off vapor that can form a flammable mixture with air.

IARC is the International Agency for Research on Cancer, a scientific group that classifies chemicals according to their cancer-causing potential.

IRIS is the Integrated Risk Information System database of the federal EPA.

A **miscible** substance is a liquid or gas that will evenly dissolve in another.

mg/m³ means milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

A **mutagen** is a substance that causes mutations. A **mutation** is a change in the genetic material in a body cell. Mutations can lead to birth defects, miscarriages, or cancer.

NAERG is the North American Emergency Response Guidebook. It was jointly developed by Transport Canada, the United States Department of Transportation and the Secretariat of Communications and Transportation of Mexico. It is a guide for first responders to quickly identify the specific or generic hazards of material involved in a transportation incident, and to protect themselves and the general public during the initial response phase of the incident.

NFPA is the National Fire Protection Association. It classifies substances according to their fire and explosion hazard.

NIOSH is the National Institute for Occupational Safety and Health. It tests equipment, evaluates and approves respirators, conducts studies of workplace hazards, and proposes standards to OSHA.

NTP is the National Toxicology Program which tests chemicals and reviews evidence for cancer.

OSHA is the Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

PEL is the Permissible Exposure Limit which is enforceable by the Occupational Safety and Health Administration.

PESHA is the New York State Public Employees Safety and Health Act, which adopts and enforces health and safety standards in public workplaces.

PIH is a DOT designation for chemicals which are Poison Inhalation Hazards.

ppm means parts of a substance per million parts of air. It is a measure of concentration by volume in air.

A **reactive** substance is a solid, liquid or gas that releases energy under certain conditions.

STEL is a Short Term Exposure Limit which is usually a 15-minute exposure that should not be exceeded at any time during a work day.

A **teratogen** is a substance that causes birth defects by damaging the fetus.

TLV is the Threshold Limit Value, the workplace exposure limit recommended by ACGIH.

The **vapor pressure** is a measure of how readily a liquid or a solid mixes with air at its surface. A higher vapor pressure indicates a higher concentration of the substance in air and therefore increases the likelihood of breathing it in.

HANDLING AND STORAGE

- * Prior to working with **Trichloroacetic Acid** you should be trained on its proper handling and storage.
- * A violent reaction may occur when **Trichloroacetic Acid** is mixed with COPPER in DIMETHYL SULFOXIDE.
- * **Trichloroacetic Acid** is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE); and STRONG BASES (such as SODIUM HYDROXIDE and POTASSIUM HYDROXIDE).
- * Store in tightly closed containers in a cool, well-ventilated area away from METALS and MOISTURE.

FIRST AID

For POISON INFORMATION call 1-800-222-1222

- ## Eye Contact

- * Immediately flush with large amounts of water. Continue without stopping for at least 30 minutes, occasionally lifting upper and lower lids. Seek medical attention immediately.

Skin Contact

- * Quickly remove contaminated clothing. Immediately wash area with large amounts of soap and water. Seek medical attention immediately.

Breathing

- * Remove the person from exposure.
- * Begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.
- * Transfer promptly to a medical facility.
- * Medical observation is recommended for 24 to 48 hours after breathing overexposure, as pulmonary edema may be delayed.

Flash Point: greater than 230°F (110°C)

Water Solubility: Soluble

Chemical Name:

Acetic Acid, Trichloro-

For more information, please contact:

New York State Department of Health

Right to Know

Bureau of Occupational Health and Injury Prevention

Empire State Plaza-Corning Tower, Room 1325

Albany, New York 12237

Phone: (518) 402-7900 or 800-458-1158

Web address: https://www.health.ny.gov/environmental/workplace/right_to_know/

This Right to Know Hazardous Substance Fact Sheets is not intended to be copied and sold for commercial purposes.

Common Name: **VINYL CHLORIDE**

Synonyms: Chloroethylene; Monochloroethylene; VCM

Chemical Name: Ethene, Chloro-

Date: November 2010

Revision: October 2015

CAS Number: 75-01-4

RTK Substance Number: 2001

DOT Number: UN 1086

Description and Use

Vinyl Chloride is a colorless gas, with a sweet odor at high concentrations, that is usually handled as a liquid under pressure. It is used to make *Polyvinyl Chloride* for pipes, wire, and cable coatings, and in furniture, automobiles, and adhesives.

- ▶ **ODOR THRESHOLD = >3,000 ppm**
- ▶ Odor thresholds vary greatly. Do not rely on odor alone to determine potentially hazardous exposures.

Reasons for Citation

- ▶ **Vinyl Chloride** is on the Right to Know Hazardous Substance List because it is cited by OSHA, ACGIH, DOT, NIOSH, NTP, DEC, IARC, NFPA and EPA.
- ▶ This chemical is on the Special Health Hazard Substance List.

SEE GLOSSARY ON PAGE 5.

FIRST AID

Eye Contact

- ▶ Immediately flush with large amounts of water for at least 30 minutes, lifting upper and lower lids. Remove contact lenses, if worn, while flushing. Seek medical attention.

Skin Contact

- ▶ Immerse affected part in warm water. Seek medical attention.

Inhalation

- ▶ Remove the person from exposure.
- ▶ Begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.
- ▶ Transfer promptly to a medical facility.

EMERGENCY NUMBERS

Poison Control: 1-800-222-1222

CHEMTREC: 1-800-424-9300

NYS Spill Hotline: 1-800-457-7362 National

Response Center: 1-800-424-8802

EMERGENCY RESPONDERS >>>> SEE LAST PAGE

Hazard Summary

Hazard Rating	NYDOH	NFPA
HEALTH	4	2
FLAMMABILITY	4	4
REACTIVITY	2	2
CARCINOGEN FLAMMABLE AND REACTIVE POISONOUS GASES ARE PRODUCED IN FIRE CONTAINERS MAY EXPLODE IN FIRE		

Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

- ▶ **Vinyl Chloride** can affect you when inhaled.
- ▶ **Vinyl Chloride** is a CARCINOGEN and MUTAGEN. HANDLE WITH EXTREME CAUTION.
- ▶ **Vinyl Chloride** can cause reproductive damage.
- ▶ Exposure to **Vinyl Chloride** can severely irritate and burn the skin and eyes with possible eye damage. Contact with the *liquid or gas* can cause frostbite.
- ▶ Inhaling **Vinyl Chloride** can irritate the nose, throat and lungs.
- ▶ **Vinyl Chloride** can cause headache, nausea, vomiting, dizziness, fatigue, weakness and confusion. Higher levels can cause lightheadedness and passing out.
- ▶ Prolonged or repeated exposure can damage the liver, nervous system and lungs.
- ▶ Repeated exposure can damage the skin (scleroderma), bones (acro-osteolysis) and blood vessels in the hands (Raynaud's Syndrome).
- ▶ **Vinyl Chloride** is FLAMMABLE and REACTIVE and a DANGEROUS FIRE and EXPLOSION HAZARD.
- ▶ EXPLOSIVE POLYMERIZATION may occur at elevated temperatures if **Vinyl Chloride** is not inhibited.

Workplace Exposure Limits

OSHA: The legal airborne permissible exposure limit (PEL) is **1 ppm** averaged over an 8-hour workshift and **5 ppm**, not to be exceeded during any 15-minute work period.

NIOSH: Recommends that exposure to occupational carcinogens be limited to the lowest feasible concentration.

ACGIH: The threshold limit value (TLV) is **1 ppm** averaged over an 8-hour workshift.

Vinyl Chloride is a CARCINOGEN in humans. There may be no safe level of exposure to a carcinogen, so all contact should be reduced to the lowest possible level.

Determining Your Exposure

- ▶ Read the product manufacturer's Material Safety Data Sheet (MSDS) and the label to determine product ingredients and important safety and health information about the product mixture.
- ▶ You have a right to this information under the New York State Right-to-Know Law and the New York State Public Employees Safety and Health Act (PESHA), and under the federal Occupational Safety and Health Act (OSHA) if you are a private worker.
- ▶ The New York State Right-to-Know Law requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard (29 CFR 1910.1200) and the PESHA Hazard Communication Standard require employers to provide similar information and training to their employees.

This Fact Sheet is a summary of available information regarding the health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

Health Hazard Information

Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to **Vinyl Chloride**:

- ▶ Exposure to **Vinyl Chloride** can severely irritate and burn the skin and eyes with possible eye damage. Contact with the *liquid or gas* can cause frostbite.
- ▶ Inhaling **Vinyl Chloride** can irritate the nose, throat and lungs causing coughing, wheezing and/or shortness of breath.
- ▶ **Vinyl Chloride** can cause headache, nausea, vomiting, dizziness, fatigue, weakness and confusion. Higher levels can cause lightheadedness and passing out.

Chronic Health Effects

The following chronic (long-term) health effects can occur at some time after exposure to **Vinyl Chloride** and can last for months or years:

Cancer Hazard

- ▶ **Vinyl Chloride** is a CARCINOGEN in humans. It has been shown to cause liver, brain, lung, and other types of cancer.
- ▶ Many scientists believe there is no safe level of exposure to a carcinogen.

Reproductive Hazard

- ▶ **Vinyl Chloride** may damage the developing fetus.
- ▶ There is limited evidence that **Vinyl Chloride** is a teratogen in animals. Until further testing has been done, it should be treated as a possible teratogen in humans.
- ▶ There is limited evidence that **Vinyl Chloride** may damage the male reproductive system (including decreasing the sperm count) and may affect male fertility.
- ▶ An excess of spontaneous abortions has been reported among spouses of workers who had been exposed to **Vinyl Chloride**.

Other Effects

- ▶ Prolonged or repeated exposure can damage the liver, nervous system and lungs.
- ▶ Repeated exposure can cause a disease called "scleroderma." This causes the skin to become very smooth, tight and shiny. It causes the bones of the fingers to erode (acro-osteolysis), and damages the blood vessels in the hands or feet (Raynaud's syndrome). This causes the fingers or toes to turn numb, pale or blue, with even mild cold exposure.

Medical

Medical Testing

Before first exposure and every 12 months thereafter, OSHA requires your employer to provide (for persons exposed to **0.5 ppm** of **Vinyl Chloride**) a work and medical history and exam which shall include:

- ▶ Liver function tests
- ▶ Chest x-ray and lung function tests

If symptoms develop or overexposure is suspected, the following are recommended:

- ▶ Exam of the nervous system
- ▶ Exam of the skin

OSHA requires your employer to provide you and your doctor with a copy of the OSHA **Vinyl Chloride** Standard (29 CFR 1910.1017).

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 1910.1020).

Mixed Exposures

- ▶ More than light alcohol consumption can cause liver damage. Drinking alcohol may increase the liver damage caused by **Vinyl Chloride**.

Workplace Controls and Practices

Very toxic chemicals, or those that are reproductive hazards or sensitizers, require expert advice on control measures if a less toxic chemical cannot be substituted. Control measures include: (1) enclosing chemical processes for severely irritating and corrosive chemicals, (2) using local exhaust ventilation for chemicals that may be harmful with a single exposure, and (3) using general ventilation to control exposures to skin and eye irritants. For further information on workplace controls, consult the NIOSH document on Control Banding at www.cdc.gov/niosh/topics/ctrlbanding/.

The following work practices are also recommended:

- ▶ Label process containers.
- ▶ Provide employees with hazard information and training.
- ▶ Monitor airborne chemical concentrations.
- ▶ Use engineering controls if concentrations exceed recommended exposure levels.
- ▶ Provide eye wash fountains and emergency showers.
- ▶ Wash or shower if skin comes in contact with a hazardous material.
- ▶ Always wash at the end of the workshift.
- ▶ Change into clean clothing if clothing becomes contaminated.
- ▶ Do not take contaminated clothing home.
- ▶ Get special training to wash contaminated clothing.
- ▶ Do not eat, smoke, or drink in areas where chemicals are being handled, processed or stored.
- ▶ Wash hands carefully before eating, smoking, drinking, applying cosmetics or using the toilet.

In addition, the following may be useful or required:

- ▶ Specific actions are required for this chemical by OSHA. Refer to the OSHA **Vinyl Chloride** Standard (29 CFR 1910.1017).
- ▶ Before entering a confined space where **Vinyl Chloride** may be present, check to make sure that an explosive concentration does not exist.
- ▶ Transfer **Vinyl Chloride** from cylinders or other containers to process containers in an enclosed system.

Personal Protective Equipment

The OSHA Personal Protective Equipment Standard (29 CFR 1910.132) requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

Gloves and Clothing

- ▶ Avoid skin contact with **Vinyl Chloride**. Wear personal protective equipment made from material which can not be permeated or degraded by this substance. Safety equipment suppliers and manufacturers can provide recommendations on the most protective glove and clothing material for your operation.
- ▶ The recommended glove materials for **Vinyl Chloride** are Viton, Viton/Butyl, Silver Shield®/4H® and Barrier®.

- ▶ The recommended protective clothing materials for **Vinyl Chloride** are Tychem® BR, CSM and TK; and Trelchem® HPS and VPS or the equivalent.
- ▶ Where exposure to cold equipment, vapors, or liquid may occur, employees should be provided with *insulated* gloves and special clothing designed to prevent the freezing of body tissues.
- ▶ All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

Eye Protection

- ▶ Wear non-vented, impact resistant goggles when working with fumes, gases, or vapors.
- ▶ Wear a face shield along with goggles when working with corrosive, highly irritating or toxic substances. Do not wear contact lenses when working with this substance.

Respiratory Protection

Improper use of respirators is dangerous. Respirators should only be used if the employer has implemented a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing, and medical exams, as described in the OSHA Respiratory Protection Standard (29 CFR 1910.134).

- ▶ Where the potential exists for exposure over **1 ppm**, use a NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus or an emergency escape air cylinder.
- ▶ **DO NOT USE CHEMICAL CARTRIDGE OR CANISTER RESPIRATORS.**

Fire Hazards

If employees are expected to fight fires, they must be trained and equipped as stated in the OSHA Fire Brigades Standard (29 CFR 1910.156).

- ▶ **Vinyl Chloride** is a FLAMMABLE AND REACTIVE GAS that can EXPLOSIVELY POLYMERIZE if not inhibited.
- ▶ DO NOT attempt to extinguish fire unless flow can be stopped. Shut off supply or let burn.
- ▶ Use dry chemical or CO₂ for small fires.
- ▶ POISONOUS GASES ARE PRODUCED IN FIRE, including *Hydrogen Chloride* and *Phosgene*.
- ▶ CONTAINERS MAY EXPLODE IN FIRE.
- ▶ Use water spray to reduce vapors and to keep containers cool.
- ▶ Vapor is heavier than air and may travel a distance to cause a fire or explosion far from the source or flash back.
- ▶ Flow or agitation may generate electrostatic charges.
- ▶ **Vinyl Chloride** may form an ignitable vapor/air mixture in closed tanks or containers.

Spills and Emergencies

If employees are required to clean-up spills, they must be properly trained and equipped. The OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) may apply.

If **Vinyl Chloride** is leaked, take the following steps:

- ▶ Evacuate personnel and secure and control entrance to the area.
- ▶ Eliminate ignition sources.
- ▶ Ventilate area of leak to disperse the gas.
- ▶ Stop flow of gas. If source of leak is a cylinder and the leak cannot be stopped in place, remove the leaking cylinder to a safe place in the open air, and repair leak or allow cylinder to empty.
- ▶ Absorb liquids in dry sand, earth, or a similar material and place into sealed containers for disposal.
- ▶ Turn leaking cylinder with leak up to prevent escape of gas in liquid state.
- ▶ Ventilate area of spill or leak.
- ▶ Keep **Vinyl Chloride** out of confined spaces, such as sewers, because of the possibility of an explosion.
- ▶ DO NOT wash into sewer.
- ▶ It may be necessary to contain and dispose of **Vinyl Chloride** as a HAZARDOUS WASTE. Contact your state Department of Environmental Conservation (DEC) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.

Handling and Storage

Prior to working with **Vinyl Chloride** you should be trained on its proper handling and storage.

- ▶ A regulated, marked area should be established where **Vinyl Chloride** is handled, used or stored as required by the OSHA **Vinyl Chloride** Standard (29 CFR 1910.1017).
- ▶ **Vinyl Chloride** can polymerize rapidly or explosively when exposed to elevated temperatures (over 125°F (52°C)), or when exposed to AIR or LIGHT in the presence of a CATALYST.
- ▶ **Vinyl Chloride** reacts violently with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE).
- ▶ **Vinyl Chloride** is not compatible with WATER; METALS (such as COPPER, ALUMINUM, IRON and STEEL); METAL CARBIDES; and METAL ALLOYS as fires and/or explosions may occur.
- ▶ *Phenol* should be used as an inhibitor to prevent violent polymerization of **Vinyl Chloride**.
- ▶ Store in tightly closed containers in a cool, well-ventilated area away from MOISTURE, HEAT SOURCES and METALS.
- ▶ Sources of ignition, such as smoking and open flames, are prohibited where **Vinyl Chloride** is used, handled, or stored.
- ▶ Metal containers involving the transfer of **Vinyl Chloride** should be grounded and bonded.
- ▶ Use explosion-proof electrical equipment and fittings wherever **Vinyl Chloride** is used, handled, manufactured, or stored.
- ▶ Use only non-sparking tools and equipment, especially when opening and closing containers of **Vinyl Chloride**.
- ▶ **Vinyl Chloride** may accumulate static electricity.

Occupational Health Information Resources

The New York State Department of Health offers multiple services in occupational health. These services include providing informational resources, educational materials, public presentations, and industrial hygiene and medical investigations and evaluations.

For more information, please contact:

New York State Department of Health
Right to Know
Bureau of Occupational Health and Injury Prevention
Empire State Plaza-Corning Tower, Room 1325
Albany, New York 12237
Phone: (518) 402-7900 or 800-458-1158
Web address: https://www.health.ny.gov/environmental/workplace/right_to_know/

This Right to Know Hazardous Substance Fact Sheets is not intended to be copied and sold for commercial purposes.

GLOSSARY

ACGIH is the American Conference of Governmental Industrial Hygienists. They publish guidelines called Threshold Limit Values (TLVs) for exposure to workplace chemicals.

Acute Exposure Guideline Levels (AEGs) are established by the EPA. They describe the risk to humans resulting from once-in-a lifetime, or rare, exposure to airborne chemicals.

Boiling point is the temperature at which a substance can change its physical state from a liquid to a gas.

A **carcinogen** is a substance that causes cancer.

The **CAS number** is unique, identifying number, assigned by the Chemical Abstracts Service, to a specific chemical.

CFR is the Code of Federal Regulations, which are the regulations of the United States government.

A **combustible** substance is a solid, liquid or gas that will burn.

A **corrosive** substance is a gas, liquid or solid that causes destruction of human skin or severe corrosion of containers.

The **critical temperature** is the temperature above which a gas cannot be liquefied, regardless of the pressure applied.

DEC is the New York State Department of Environmental Conservation.

DOT is the Department of Transportation, the federal agency that regulates the transportation of chemicals.

EPA is the Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

ERG is the Emergency Response Guidebook. It is a guide for emergency responders for transportation emergencies involving hazardous substances.

Emergency Response Planning Guideline (ERPG) values provide estimates of concentration ranges where one reasonably might anticipate observing adverse effects.

A **fetus** is an unborn human or animal.

A **flammable** substance is a solid, liquid, vapor or gas that will ignite easily and burn rapidly.

The **flash point** is the temperature at which a liquid or solid gives off vapor that can form a flammable mixture with air.

IARC is the International Agency for Research on Cancer a scientific group.

Ionization Potential is the amount of energy needed to remove an electron from an atom or molecule. It is measured in electron volts.

IRIS is the Integrated Risk Information System database on human health effects that may result from exposure to various chemicals, maintained by federal EPA.

LEL or Lower Explosive Limit, is the lowest concentration of a combustible substance (gas or vapor) in the air capable of continuing an explosion.

mg/m³ means milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

A **mutagen** is a substance that causes mutations. A **mutation** is a change in the genetic material in a body cell. Mutations can lead to birth defects, miscarriages, or cancer.

NFPA is the National Fire Protection Association. It classifies substances according to their fire and explosion hazard.

NIOSH is the National Institute for Occupational Safety and Health. It tests equipment, evaluates and approves respirators, conducts studies of workplace hazards, and proposes standards to OSHA.

NTP is the National Toxicology Program which tests chemicals and reviews evidence for cancer.

OSHA is the federal Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

PESHA is the New York State Public Employees Safety and Health Act, which adopts and enforces health and safety standards in public workplaces.

Permeated is the movement of chemicals through protective materials.

ppm means parts of a substance per million parts of air. It is a measure of concentration by volume in air.

Protective Action Criteria (PAC) are values established by the Department of Energy and are based on AEGs and ERPGs. They are used for emergency planning of chemical release events.

A **reactive** substance is a solid, liquid or gas that releases energy under certain conditions.

STEL is a Short Term Exposure Limit which is usually a 15-minute exposure that should not be exceeded at any time during a work day.

A **teratogen** is a substance that causes birth defects by damaging the fetus.

UEL or Upper Explosive Limit is the highest concentration in air above which there is too much fuel (gas or vapor) to begin a reaction or explosion.

Vapor Density is the ratio of the weight of a given volume of one gas to the weight of another (usually *Air*), at the same temperature and pressure.

The **vapor pressure** is a force exerted by the vapor in equilibrium with the solid or liquid phase of the same substance. The higher the vapor pressure the higher concentration of the substance in air.

Common Name: **VINYL CHLORIDE**

Synonyms: Chloroethylene; Monochloroethylene; VCM

CAS No: 75-01-4

Molecular Formula: $\text{CH}_2 = \text{CHCl}$

RTK Substance No: 2001

Description: Colorless gas, with a sweet odor at high concentrations, that is usually handled as a liquid under pressure

HAZARD DATA

Hazard Rating	Firefighting	Reactivity
4 - Health 4 - Fire 2 - Reactivity DOT#: UN 1086 ERG Guide #: 116P Hazard Class: 2.1 (Flammable Gas)	FLAMMABLE AND REACTIVE GAS that can EXPLOSIVELY POLYMERIZE if not inhibited. DO NOT attempt to extinguish fire unless flow can be stopped. Shut off supply or let burn. Use dry chemical or CO_2 for small fires. POISONOUS GASES ARE PRODUCED IN FIRE, including <i>Hydrogen Chloride</i> and <i>Phosgene</i> . CONTAINERS MAY EXPLODE IN FIRE. Use water spray to reduce vapors and to keep containers cool. Vapor is heavier than air and may travel a distance to cause a fire or explosion far from the source or flash back. Flow or agitation may generate electrostatic charges. Vinyl Chloride may form an ignitable vapor/air mixture in closed tanks or containers.	Vinyl Chloride can polymerize rapidly or explosively when exposed to elevated temperatures (over 125°F (52°C)), or when exposed to AIR or LIGHT in the presence of a CATALYST. Vinyl Chloride reacts violently with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE). Vinyl Chloride is not compatible with WATER; METALS (such as COPPER, ALUMINUM, IRON and STEEL); METAL CARBIDES; and METAL ALLOYS as fires and/or explosions may occur. <i>Phenol</i> should be used as an inhibitor to prevent violent polymerization of Vinyl Chloride . Vinyl Chloride may accumulate static electricity.

SPILL/LEAKS

Isolation Distance:

Spill: 100 meters (330 feet)

Fire: 800 meters (1/2 mile)

Stop flow of gas. If source of leak is a cylinder and the leak cannot be stopped in place, remove the leaking cylinder to a safe place in the open air, and repair leak or allow cylinder to empty.

Absorb liquids in dry sand, earth, or a similar material and place into sealed containers for disposal.

Keep **Vinyl Chloride** out of confined spaces, such as sewers, because of the possibility of an explosion.

Turn leaking cylinder with leak up to prevent escape of gas in liquid state.

Use non-sparking tools and ground and bond containers when transferring **Vinyl Chloride**.

Vinyl Chloride is hazardous to the environment.

PHYSICAL PROPERTIES

Odor Threshold:	>3,000 ppm
Flash Point:	-108°F (-78°C)
LEL:	3.6%
UEL:	33%
Auto Ignition Temp:	882°F (472°C)
Vapor Density:	2.2 (air = 1)
Vapor Pressure:	2,524 mm Hg at 68°F (20°C)
Specific Gravity:	0.9 (water = 1)
Water Solubility:	Very slightly soluble
Boiling Point:	17°F (-8.3°C)
Freezing Point:	-245° to -256°F (-154° to -160°C)
Ionization Potential:	9.99 eV
Critical Temperature:	306° to 317.3°F (152° to 158.5°C)
Molecular Weight:	62.5

EXPOSURE LIMITS

OSHA: 1 ppm, 8-hr TWA; 5 ppm, Ceiling

NIOSH: Lowest feasible concentration

ACGIH: 1 ppm, 8-hr TWA

The Protective Action Criteria values are:

PAC-1 = 250 ppm PAC-2 = 1,200 ppm

PAC-3 = 4,800 ppm

PROTECTIVE EQUIPMENT

Gloves:	Insulated Viton, Viton/Butyl, Silver Shield®/4H® and Barrier® (>8-hr breakthrough)
Coveralls:	Tychem® BR, CSM and TK; Trellchem HPS and VPS (8-hr breakthrough) >10% of the LEL wear flash protection or turnout gear
Respirator:	SCBA

HEALTH EFFECTS

Eyes:	Irritation and burns, contact with <i>liquid</i> or <i>gas</i> may cause frostbite
Skin:	Irritation and burns, contact with <i>liquid</i> or <i>gas</i> may cause frostbite
Inhalation:	Nose, throat and lung irritation with coughing, wheezing and shortness of breath Headache, dizziness, lightheadedness and passing out
Chronic:	Cancer (liver, brain, and lung) in humans

FIRST AID AND DECONTAMINATION

Remove the person from exposure.
Flush eyes with large amounts of water for at least 30 minutes. Remove contact lenses if worn. Seek medical attention.
Immerse affected part in warm water. Seek medical attention.
Begin artificial respiration if breathing has stopped and CPR if necessary.
Transfer promptly to a medical facility.

Right to Know Hazardous Substance Fact Sheet

Common Name: **1,2,4-TRICHLOROBENZENE**

CAS Number: 120-82-1
DOT Number: UN 2321
DOT Hazard Class: 6.1 (Toxic)

RTK Substance number: 1887
Date: May 1998 Revision: August 2005

HAZARD SUMMARY

- * **1,2,4-Trichlorobenzene** can affect you when breathed in and by passing through your skin.
- * Contact can irritate the skin and eyes. Prolonged contact may cause skin burns.
- * Breathing **1,2,4-Trichlorobenzene** can irritate the nose and throat.
- * **1,2,4-Trichlorobenzene** may damage the liver and kidneys.

IDENTIFICATION

1,2,4-Trichlorobenzene is a colorless liquid with a pleasant odor. It is used in heat transfer fluids, as a dielectric fluid, and in making chemicals, insecticides and fungicides.

REASON FOR CITATION

- * **1,2,4-Trichlorobenzene** is on the Hazardous Substance List because it is cited by ACGIH, DOT, NIOSH, DEC, IRIS, NFPA and EPA.
- * Definitions are provided on page 5.

HOW TO DETERMINE IF YOU ARE BEING EXPOSED

The New York State Right to Know Act requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information and training concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard, 1910.1200, requires private employers to provide similar training and information to their employees.

- * Exposure to hazardous substances should be routinely evaluated. This may include collecting personal and area air samples. You can obtain copies of sampling results from your employer. You have a legal right to this information under OSHA 1910.1020.
- * If you think you are experiencing any work-related health problems, see a doctor trained to recognize occupational diseases. Take this Fact Sheet with you.

WORKPLACE EXPOSURE LIMITS

NIOSH: The recommended airborne exposure limit is **5 ppm**, which should not be exceeded at any time.

ACGIH: The recommended airborne exposure limit is **5 ppm**, which should not be exceeded at any time.

- * The above exposure limits are for air levels only. When skin contact also occurs, you may be overexposed, even though air levels are less than the limits listed above.

WAYS OF REDUCING EXPOSURE

- * Where possible, enclose operations and use local exhaust ventilation at the site of chemical release. If local exhaust ventilation or enclosure is not used, respirators should be worn.
- * Wear protective work clothing.
- * Wash thoroughly immediately after exposure to **1,2,4-Trichlorobenzene** and at the end of the workshift.
- * Post hazard and warning information in the work area. In addition, as part of an ongoing education and training effort, communicate all information on the health and safety hazards of **1,2,4-Trichlorobenzene** to potentially exposed workers.

EMERGENCY NUMBERS

Poison Control: 1-800-222-1222
CHEMTREC: 1-800-424-9300
NYS Spill Hotline: 1-800-457-7362
National Response Center: 1-800-424-8802

This Fact Sheet is a summary source of information of all potential and most severe health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

HEALTH HAZARD INFORMATION

Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to **1,2,4-Trichlorobenzene**:

- * Contact can irritate the skin and eyes. Prolonged contact may cause skin burns.
- * Breathing **1,2,4-Trichlorobenzene** can irritate the nose and throat.

Chronic Health Effects

The following chronic (long-term) health effects can occur at some time after exposure to **1,2,4-Trichlorobenzene** and can last for months or years:

Cancer Hazard

- * While **1,2,4-Trichlorobenzene** has been tested, further testing is required to assess its potential to cause cancer.

Reproductive Hazard

- * According to the information presently available to the New York State Department of Health, **1,2,4-Trichlorobenzene** has been tested and has not been shown to affect reproduction.

Other Long-Term Effects

- * **1,2,4-Trichlorobenzene** may damage the liver and kidneys.

MEDICAL

Medical Testing

If symptoms develop or overexposure is suspected, the following are recommended:

- * Liver and kidney function tests.

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under OSHA 1910.1020.

Mixed Exposures

- * Because more than light alcohol consumption can cause liver damage, drinking alcohol can increase the liver damage caused by **1,2,4-Trichlorobenzene**.

WORKPLACE CONTROLS AND PRACTICES

Unless a less toxic chemical can be substituted for a hazardous substance, **ENGINEERING CONTROLS** are the most effective way of reducing exposure. The best protection is to enclose operations and/or provide local exhaust ventilation at the site of chemical release. Isolating operations can also reduce exposure. Using respirators or protective equipment is less effective than the controls mentioned above, but is sometimes necessary.

In evaluating the controls present in your workplace, consider: (1) how hazardous the substance is, (2) how much of the substance is released into the workplace and (3) whether harmful skin or eye contact could occur. Special controls should be in place for highly toxic chemicals or when significant skin, eye, or breathing exposures are possible.

In addition, the following control is recommended:

- * Where possible, automatically pump liquid **1,2,4-Trichlorobenzene** from drums or other storage containers to process containers.

Good **WORK PRACTICES** can help to reduce hazardous exposures. The following work practices are recommended:

- * Workers whose clothing has been contaminated by **1,2,4-Trichlorobenzene** should change into clean clothing promptly.
- * Contaminated work clothes should be laundered by individuals who have been informed of the hazards of exposure to **1,2,4-Trichlorobenzene**.
- * Eye wash fountains should be provided in the immediate work area for emergency use.
- * If there is the possibility of skin exposure, emergency shower facilities should be provided.
- * On skin contact with **1,2,4-Trichlorobenzene**, immediately wash or shower to remove the chemical. At the end of the workshift, wash any areas of the body that may have contacted **1,2,4-Trichlorobenzene**, whether or not known skin contact has occurred.
- * Do not eat, smoke, or drink where **1,2,4-Trichlorobenzene** is handled, processed, or stored, since the chemical can be swallowed. Wash hands carefully before eating, drinking, smoking, or using the toilet.

PERSONAL PROTECTIVE EQUIPMENT

WORKPLACE CONTROLS ARE BETTER THAN PERSONAL PROTECTIVE EQUIPMENT. However, for some jobs (such as outside work, confined space entry, jobs done only once in a while, or jobs done while workplace controls are being installed), personal protective equipment may be appropriate.

OSHA 1910.132 requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

Clothing

- * Avoid skin contact with **1,2,4-Trichlorobenzene**. Wear solvent-resistant gloves and clothing. Safety equipment suppliers/ manufacturers can provide recommendations on the most protective glove/clothing material for your operation.
- * Safety equipment manufacturers recommend *Viton* as a protective material.
- * All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

Eye Protection

- * Wear indirect-vent, impact and splash resistant goggles when working with liquids.
- * Wear a face shield along with goggles when working with corrosive, highly irritating or toxic substances.
- * Contact lenses should not be worn when working with this substance.

Respiratory Protection

IMPROPER USE OF RESPIRATORS IS DANGEROUS.

Such equipment should only be used if the employer has a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing and medical exams, as described in OSHA 1910.134.

- * Where the potential exists for exposure over **5 ppm**, use a NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive-pressure mode.

QUESTIONS AND ANSWERS

Q: If I have acute health effects, will I later get chronic health effects?

A: Not always. Most chronic (long-term) effects result from repeated exposures to a chemical.

Q: Can I get long-term effects without ever having short-term effects?

A: Yes, because long-term effects can occur from repeated exposures to a chemical at levels not high enough to make you immediately sick.

Q: What are my chances of getting sick when I have been exposed to chemicals?

A: The likelihood of becoming sick from chemicals is increased as the amount of exposure increases. This is determined by the length of time and the amount of material to which someone is exposed.

Q: When are higher exposures more likely?

A: Conditions which increase risk of exposure include physical and mechanical processes (heating, pouring, spraying, spills and evaporation from large surface areas such as open containers), and "confined space" exposures (working inside vats, reactors, boilers, small rooms, etc.).

Q: Is the risk of getting sick higher for workers than for community residents?

A: Yes. Exposures in the community, except possibly in cases of fires or spills, are usually much lower than those found in the workplace. However, people in the community may be exposed to contaminated water as well as to chemicals in the air over long periods. This may be a problem for children or people who are already ill.

The following information is available from:

New York State Department of Health
Right to Know
Bureau of Occupational Health and Injury Prevention
Empire State Plaza-Corning Tower, Room 1325
Albany, New York 12237
Phone: (518) 402-7900 or 800-458-1158
Web address: https://www.health.ny.gov/environmental/workplace/right_to_know/

Industrial Hygiene Information

Industrial hygienists are available to answer your questions regarding the control of chemical exposures using exhaust ventilation, special work practices, good housekeeping, good hygiene practices, and personal protective equipment including respirators. In addition, they can help to interpret the results of industrial hygiene survey data.

Medical Evaluation

If you think you are becoming sick because of exposure to chemicals at your workplace, you may call personnel at the Department of Health and Senior Services, Occupational Health Service, who can help you find the information you need.

Public Presentations

Presentations and educational programs on occupational health or the Right to Know Act can be organized for labor unions, trade associations and other groups.

Right to Know Information Resources

The Right to Know Infoline can answer questions about the identity and potential health effects of chemicals, list of educational materials in occupational health, references used to prepare the Fact Sheets, preparation of the Right to Know Survey, education and training programs, labeling requirements, and general information regarding the Right to Know Act.

DEFINITIONS

ACGIH is the American Conference of Governmental Industrial Hygienists. It recommends upper limits (called TLVs) for exposure to workplace chemicals.

A **carcinogen** is a substance that causes cancer.

The **CAS number** is assigned by the Chemical Abstracts Service to identify a specific chemical.

CFR is the Code of Federal Regulations, which consists of the regulations of the United States government.

A **combustible** substance is a solid, liquid or gas that will burn.

A **corrosive** substance is a gas, liquid or solid that causes irreversible damage to human tissue or containers.

DEC is the New York State Department of Environmental Conservation.

DOT is the Department of Transportation, the federal agency that regulates the transportation of chemicals.

EPA is the Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

A **fetus** is an unborn human or animal.

A **flammable** substance is a solid, liquid, vapor or gas that will ignite easily and burn rapidly.

The **flash point** is the temperature at which a liquid or solid gives off vapor that can form a flammable mixture with air.

IARC is the International Agency for Research on Cancer, a scientific group that classifies chemicals according to their cancer-causing potential.

IRIS is the Integrated Risk Information System database of the federal EPA.

A **miscible** substance is a liquid or gas that will evenly dissolve in another.

mg/m³ means milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

A **mutagen** is a substance that causes mutations. A **mutation** is a change in the genetic material in a body cell. Mutations can lead to birth defects, miscarriages, or cancer.

NAERG is the North American Emergency Response Guidebook. It was jointly developed by Transport Canada, the United States Department of Transportation and the Secretariat of Communications and Transportation of Mexico. It is a guide for first responders to quickly identify the specific or generic hazards of material involved in a transportation incident, and to protect themselves and the general public during the initial response phase of the incident.

NFPA is the National Fire Protection Association. It classifies substances according to their fire and explosion hazard.

NIOSH is the National Institute for Occupational Safety and Health. It tests equipment, evaluates and approves respirators, conducts studies of workplace hazards, and proposes standards to OSHA.

NTP is the National Toxicology Program which tests chemicals and reviews evidence for cancer.

OSHA is the Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

PEL is the Permissible Exposure Limit which is enforceable by the Occupational Safety and Health Administration.

PESHA is the New York State Public Employees Safety and Health Act, which adopts and enforces health and safety standards in public workplaces.

PIH is a DOT designation for chemicals which are Poison Inhalation Hazards.

ppm means parts of a substance per million parts of air. It is a measure of concentration by volume in air.

A **reactive** substance is a solid, liquid or gas that releases energy under certain conditions.

STEL is a Short Term Exposure Limit which is usually a 15-minute exposure that should not be exceeded at any time during a work day.

A **teratogen** is a substance that causes birth defects by damaging the fetus.

TLV is the Threshold Limit Value, the workplace exposure limit recommended by ACGIH.

The **vapor pressure** is a measure of how readily a liquid or a solid mixes with air at its surface. A higher vapor pressure indicates a higher concentration of the substance in air and therefore increases the likelihood of breathing it in.

Appendix H

Sessler Wrecking Daily Toolbox Talk



Daily Safety Meeting

Date:

Project No.:	Project Name:
Customer:	Site Address:

Superintendent:	Foreman:	Safety Manager:
-----------------	----------	-----------------

Primary Daily Hazards		
Tasks	Hazards	Controls

Tasks	<input type="checkbox"/> SS HASP*	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Subcontractors	<input type="checkbox"/> Confined Space	<input type="checkbox"/> High Pressure Equipment
	<input type="checkbox"/> Mobilization	<input type="checkbox"/> Select Demolition	<input type="checkbox"/> Asbestos Demo In Place	<input type="checkbox"/> Working With Chemicals	<input type="checkbox"/> Excavation
	<input type="checkbox"/> Site Preparation	<input type="checkbox"/> Heavy Equipment Use	<input type="checkbox"/> ACM Waste Load Out	<input type="checkbox"/> ACM Floor Tile	<input type="checkbox"/> Asbestos Final Clean
	<input type="checkbox"/> Structural Demolition	<input type="checkbox"/> Electric Hand Tools	<input type="checkbox"/> Traffic Flagging	<input type="checkbox"/> ACM Roofing	<input type="checkbox"/> ACM Present
	<input type="checkbox"/> Equipment Deliveries	<input type="checkbox"/> Importing Fill	<input type="checkbox"/> Moving Equipment	<input type="checkbox"/> Hoisting/Rigging	<input type="checkbox"/> Friable
	<input type="checkbox"/> Soil Excavation	<input type="checkbox"/> Exporting Waste	<input type="checkbox"/> Truck Loading	<input type="checkbox"/> Crane Use	<input type="checkbox"/> Non Friable

*SS HASP to be completed on 1st day of the start of a Project and when a new Employee comes on site

Hazards	<input type="checkbox"/> Lifting/Bending	<input type="checkbox"/> Working at Heights	<input type="checkbox"/> Traffic	<input type="checkbox"/> Equipment Operation	<input type="checkbox"/> Water
	<input type="checkbox"/> Pinch Points	<input type="checkbox"/> Ladder Use	<input type="checkbox"/> Electrocution	<input type="checkbox"/> Haul Truck Operation	<input type="checkbox"/> Pressurized Equip
	<input type="checkbox"/> Slips/Trips/ Falls	<input type="checkbox"/> Wet Surfaces	<input type="checkbox"/> Fire	<input type="checkbox"/> Cutting/Grinding	<input type="checkbox"/> Lining Trucks
	<input type="checkbox"/> Struck By Equipment	<input type="checkbox"/> Inhalation	<input type="checkbox"/> Heat/Cold Stress	<input type="checkbox"/> Heat/Cold Exposure	<input type="checkbox"/> Falls
	<input type="checkbox"/> Falling Objects	<input type="checkbox"/> Sharp Objects	<input type="checkbox"/> Unstable Ground	<input type="checkbox"/> Walking Working Surface	<input type="checkbox"/> Silica

Personal Protective Equipment (PPE)	<input type="checkbox"/> Hard Hat	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> High Vis Vest	<input type="checkbox"/> Gloves	<input type="checkbox"/> Safety Glasses
	<input type="checkbox"/> Respirator	<input type="checkbox"/> Fall Protection	<input type="checkbox"/> Poly Spun Tyvek	<input type="checkbox"/> Face Shield	<input type="checkbox"/> Life Jacket
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Hearing Protection	<input type="checkbox"/> Nitrile Gloves	<input type="checkbox"/> Cotton Gloves	<input type="checkbox"/> Level C PPE

SAFETY MEETING / TOOLBOX TALK ATTENDANCE

By signing this document, I certify that I have attended this Safety Briefing and understand the topics discussed

Attendees	
1	7
2	8
3	9
4	10
5	11
6	12

Appendix I

Amphibious Medics Swift Water Rescue Operational Guidelines



AMPHIBIOUS MEDICS

SWIFT WATER RESCUE

OPERATIONAL
GUIDELINES

PREPARED FOR :


SESSLER
WRECKING



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WHO WE ARE



Amphibious Medics is a nationwide, multi-discipline emergency, occupational health and wellness services firm. We specialize in large scale construction site first aid stations and infirmaries, industrial wellness clinics, incident data management, claims administration, regulatory compliance and on-site drug and alcohol screening for pre-employment or post-incident.

We partner with general contractors, industrial operators, and government agencies to offer comprehensive and customized First Aid & EHS support solutions.

MEET THE MANAGEMENT TEAM



TERENCE CURRAN

Chief Operating Officer

tcurran@theamphibiousgroup.com

(909) 273-5897



JULIO CENTENO

Director of On Site Operations

jcenteno@amphibiousmedics.com

(562) 760-1298



RAHQUAN BROWN

Operations Manager

rbrown@amphibiousmedics.com

(562) 477-1574

SECTION I: PURPOSE

The purpose of this SOP is to provide a guideline for conducting water rescue/recovery operations involving swift water. Swift water rescue is a subset of technical rescue that involves the use of specially trained personnel, ropes, mechanical advantage systems and river rafting equipment. All members of Amphibious Medics “AM” shall adhere to this procedure.

GENERAL:

A water rescue incident is best organized into four phases. The first phase involves Amphibious Medics arriving on scene, initiating command, and performing a size up. The second phase includes pre-rescue operations to prepare AM personnel for victim removal. The third phase includes rescue operations and victim removal. The fourth phase involves termination of the incident.

LEGAL AND OTHER REQUIREMENTS

Federal, State, Local Regulations

- OSHA 29 CFR 1910.401 Subpart T - Commercial Diving Operations - Scope and application
- OSHA 29 CFR 1915 Subparts A, B, C, D, H, I - Occup. Safety and Health Standards for Shipyard Employment
- OSHA 29 CFR 1926.106 Subpart E - Personal Protective and Life Saving Equipment - Working over or near water
- OSHA 29 CFR 1926.605 Subpart O - Motor Vehicles, Mechanized Equipment, and Marine Operations - Marine operations and equipment
- United States Coast Guard Diving Policies and Procedures Manual, June 2009

SECTION II: APPLICABILITY

This policy applies to all personnel assigned to any location Amphibious Medics is providing water rescue standby operations.

SECTION III: DEFINITIONS

ALS – Advanced Life Support

ATR – Advanced Technical Rescue

BLS – Basic Life Support

DFRS – Department Fire and Rescue Services

ECC – Emergency Communications Center

EMS – Emergency Medical Services

FEMA – Federal Emergency Management Agency

ICS – Incident Command System

JPR – Job Performance Requirements

KSA – Knowledge, Skills and Abilities

NFPA – National Fire Protection Association

NICS – National Incident Command System

NWS – National Weather Service

SOP – Standard Operating Procedures

SWRR – Swift Water Rescue Response

USCG – United States Coast Guard

WRSU – Water Rescue Support Unit

SECTION IV: POLICY

A. Training

Technical rescue training is inherently dangerous, and attention shall be given to all safety practices needed during training evolutions.

1. Minimum Training Requirements Awareness

- i. Required for all fire / rescue / EMS members available to respond on water rescue incidents.
- ii. Entry-level training consisting of a two-hour orientation to water rescue equipment.
- iii. This is for self-help to be around a water rescue incident. Personnel cannot assist in the warm zone.

2. Operations

- i. Entry-level training consisting of a two-hour orientation to water rescue equipment and SOP for support personnel.
- ii. Allows work in the warm zone. Consistent with NFPA 1001.4.42.
- iii. Any personnel responding shall also have the following ICS certifications: ICS 100, ICS 200, ICS 700.

3. Technician I (Swiftwater Rescue Technician 1, STR-1)

- i. Must possess the KSA as noted in Appendix I.
- ii. Minimum training required to access the hot zone on working incidents, including boat operations.
- iii. Required for boat and WRSU company members responding on water rescue incidents to meet minimum staffing.

4. Boat Operator

- i. All boat operators must hold specific verifiable training in boat operations as follows:
 - a. KSA as noted in Appendix I required for all Watercraft.
 - b. Additional KSA for specialized watercraft such as, but not limited to, airboats.

5. Personnel failing to maintain an adequate level of skills maintenance may be removed from the operational status on SWRR by their respective affiliated agency/corporation.

B. Barges

1. General Requirements

- a. Equip each barge with:
 - i. USCG approved thirty (30) inch life rings with ninety (90) foot line attached and secured either to a stationary anchor or stanchion
 - ii. Guardrails, where practicable
 - iii. Two twenty (20) pound ABC dry chemical fire extinguishers
 - iv. A first aid kit to handle severe injuries and to stop bleeding from large wounds, and a floating stokes basket (stretcher) with removable backboard and neck brace/stabilizer
 - v. A gangplank with standard guardrails (height forty-two (42) inches plus or minus three (3) inches) along the full length on both sides
 - vi. Mooring lines
 - vii. Spill kits
 - viii. Flashlights
 - ix. Additional life preservers
 - x. A two-way radio
- b. Ladders for access and rescue must be of sufficient length to be able to reach the water.
- c. The foreman on each barge is responsible for keeping a supply of personal protective equipment on hand.
- d. All superintendents, engineers, and foremen will have up-to-date First Aid/CPR/AED training.
- e. Signs should be posted on the barge with the company name and emergency contact phone number so the company can be contacted should the barge break free.
- f. Post "NO WAKE" signs. When working on float stages, the wake can cause the workers to lose their balance and fall into the water.
- g. Maintain tires on the sides of barges near ladders to prevent damage to ladders and provide a safe zone if someone falls into the water.
- h. Barges that have fuel storage compartments must have a Shipboard Oil Pollution Emergency Plan ("SOPEP").
- i. Barges must have the capability to accommodate crane tie-downs.
- j. Any project-specific requirements for this section are listed here.

C. Access to Barges

1. Vehicular ramps will be of adequate strength, provided with sideboards, well maintained, and properly secured.
 - a. These should be treated as temporary works and should be tagged, inspected, and display signage with weight capacity and the number of people allowed on the ramps.
2. Personnel ramps or gangways shall be sturdy, equipped with standard guardrails on both sides, and a minimum of twenty (20) inches wide.
3. Ramps or gangways are required at all times for access from barge to barge and barge to shore.
4. Ramps or gangways should be secured at one end only to allow for movement and tidal fluctuations.
5. Adequately illuminate ramps or gangways for their full length.
6. Non-slip paint or tape should be used to improve traction. Cleats are required on steep walkways.
7. Keep walkways clean and clear of mud, ice, snow, trash, oil spills, ropes, hoses, electric cords, and other obstructions.
8. Do not climb over materials such as timber piling or debris unless they are stable and a reasonable walkway has been provided.
9. Any project-specific requirements for this section are listed here

D. Working Surface of Barges

1. Provide a three (3) foot clear walkway grab rail or taut hand line around the perimeter of barges.
2. Marine superintendents will have access to and lay-down area to assist in housekeeping.
3. Keep rigging materials on racks.
4. Fuel and oil tanks must not be filled beyond the manufacturer's capacity.
5. Keep spill kits readily available to contain and clean up spills.
6. Before storing large quantities of fuel or oil on a barge, contact an environmental clean-up service, that can respond immediately if a large spill occurs that the project team cannot handle.
7. In the event of a spill, contact local environmental authorities, the USCG, and the construction manager.
8. Any project-specific requirements for this section are listed here.

E. Securing Barges

1. Each barge, tug, crew boat, or other sizeable vessel should be secured with at least two spuds, anchors, or mooring lines. Inspect all lines on a daily basis and replace rotted, worn or undersized ropes. Do not leave a vessel until it has been properly secured.
2. Superintendents must monitor the rise and fall of the tide and make sure that mooring lines have enough slack so they will not be stretched to the breaking point.
3. Paint areas where anchor lines cross barge decks with bright colored striping.
4. Do not sit or stand on anchor lines or use them as a handhold.
5. Post signs stating, "Do Not Stand Here," in areas where cables can potentially strike employees if they break (i.e., anchor lines, snatch blocks, fairleads).
6. Lights are required to warn boaters of barges, anchor lines, and other marine obstructions. When lights are not possible, use buoys, flags, signs, Styrofoam® (or equivalent) blocks, balls, or other visual warnings.
7. Give written notice to the USCG requesting that they publish the location of barges and other marine obstructions in the "Notice to Mariners." Post the names and phone numbers of the USCG representatives in case of an emergency.
8. On docks, roads, ramps, Flexi-floats, barges, etc., where vehicles or equipment are being driven or operated, use berms or sideboards of adequate strength and height to keep equipment from driving off into the water.
9. Secure all rubber-tired equipment and unstable objects that can roll or be thrown overboard by wind, waves, or vandals.
10. Remove stub ups and tie downs that are no longer in use from the decks of the barges to prevent tripping. Mark protrusions that cannot be removed with a bright-colored paint, cone, or other obvious markings.
11. Equip cranes and other heavy equipment with swing radius protection.
12. Tie-down cranes and other heavy equipment to the barge.
13. De-rate crane load charts while operating on marine barges in accordance with manufacturer requirements.
14. Post a marine-rated load chart in every crane that is set up on a barge or other marine vessel. Make operators aware of the reduced lifting capacity and other different handling characteristics of a barge-mounted crane.
15. Cranes and other aerial equipment such as man lifts must stop immediately (except to correct the list) on any barge that is listing out of the ordinary.
16. Load and unload boats, barges, and Flexifloats® (or equivalent) carefully to keep them stable and balanced.

17. The competent person on each shift will visually check floating equipment for listing or instability due to leaks or unbalanced loads.
18. Keep pumps readily available for leaking boats and barges.
19. Only enter barge voids under the supervision and direction of a trained and designated Shipyard Competent Person acting under the guidance of a Certified Marine Chemist. Follow the Confined Space Procedures in this EHS Manual.
20. Install guardrails or temporary barricades around all open hatches.
21. Include a severe weather plan in the project's emergency action plan.
22. Project team shall determine what conditions, such as strong currents or large waves will halt the use of small boats.
23. Any project-specific requirements for this section are listed here.

F. Staffing

1. The following minimum levels of staffing are required for response
 - i. All boats will have a minimum of 1 approved boat operator and 1 Technician level certified person.
 - ii. A WRSU will have a minimum of 2 NFPA Technician level personnel to respond.
 - iii. If this minimum staffing does not exist, or there is a mechanical failure prohibiting response, the unit will notify ECC that response is not possible or delayed

G. Pre-Response Preparations

1. A drill shall be recommended to be held between local municipalities and Amphibious Medics Personnel once during the assignment.

H. Response

1. The SWRR shall respond to all incidents involving water as defined below:
 - i. Still Water – defined as a pond, lake, reservoir (except overflow areas which are defined as streams)
 - a. Shore Tech – Skiff Deployment
 - ii. Swift Water – defined as any moving water
 - b. Shore Tech – Skiff Deployment – Local Emergency response activated
2. Water-related searches will follow the same criteria as listed above for body of water type and conditions under the direction/request of the jurisdictional law enforcement agency.

I. Operations

1. Scene Management

i. Command

- a. All working incidents will be operated within the NIMS command structure as adopted by Amphibious Medics and utilized by responding companies are known as the Incident Command System.
- b. The designated AM SWRR (1) shall assume the position of Water Rescue Branch Director and shall advise the incident commander and/or operations Section Chief of the same.
- c. The Water Rescue Branch Director shall consult with the Incident Commander and/or Operations Section Chief for the scene size-up.
- d. Additional resources (FCATR, MSP Aviation, Technical Specialists, etc) Shall be requested for any complex or extended operations if not already dispatched by local municipalities.

2. Scene Control

- i. Personnel are prohibited from entering any hazardous area without the proper protective equipment and training, and until the area has been determined to be safe.
 - a. Any area within ten feet of water or over water shall be considered a hazardous area.
 - b. Hot Zone = In water or in a boat
 - c. Warm Zone = Within ten horizontal feet of water or over water.
 - d. Cold Zone = Greater than ten feet from the water.
 - e. Dry / Wet suits or cold-water suits shall be worn in hazard areas when combination of air and water temperature is less than 100 degrees F.
 - f. Dry suits should be worn when entering any floodwaters.
 - g. No structural turnout gear is to be worn in the hot or warm zones.

- ii. Scene control shall be established as follows:
 - a. Barrier tape should be used to mark the hazard zone in the immediate area of operations and as terrain permits.
 - b. Personnel and equipment staging areas will be Established (Prior to the incident) outside the designated hazard zone (in the cold zone) but in close proximity to the incident
 - c. Upstream observers and downstream safety shall be established as needed.

3. The following tactical RETHROC options shall be utilized:

- i. Option 1 – Reach. 1st arriving AM SWRR feels they are capable of safely performing a rescue by simply reaching the victim, with minimal risk to personnel or victim.
- ii. Option 2 – THROW. 1st arriving AM SWRR feels they are capable of safely performing a rescue by simply throwing a device to the victim, with minimal risk to personnel or victim.
- iii. Option 3 – Row. 1st arriving SKIFF feels they are capable of safely performing a rescue by “independent” boat operations, with minimal risk to personnel or victim.
- iv. Option 4 – GO. SWRR Operation, no attempts are possible or made until a formal rescue team is assembled and operational. Requires advanced personnel to insure accountability and safety.
 - a. Option 4a – Boat operations above objective using rope system to lower and retrieve the boat.
 - b. Option 4b- Boat operations below the objective using a motor to maneuver upstream to the objective in Class 3 or greater water.
 - c. Option 4c- Shallow water crossing technique.
 - d. Option 4d – Tethered rescue swimmer

v. Assessing the Victim

- a. Once the rescuers have reached the victim, they should do an immediate assessment of the victim - a quick assessment of the ABCs and the exact method of entrapment. If the victim is conscious, the rescuer should determine if the victim can assist in his/her own rescue. If the victim is unconscious, the rescue must be quick.
- b. When the victim is brought to safety, an assessment should be done by the onsite AM SWRR or local municipalities personnel. Treatment shall be administered according to local protocol. If necessary, the victim shall be transported to the appropriate facility.

4. Lifesaving Boats

- i. Keep a boat that meets regulatory requirements ready and immediately available for emergency rescue. The boat must be in the water or capable of being quickly launched by one designated person.
- ii. There must be at least one person present and specifically designated to respond to water emergencies and operate the boat at all times when there are employees over water.
 - a. The designated operator must remain in the immediate area to be able to quickly reach the boat and get underway.
 - b. When the operator is on break, another operator must be designated to provide coverage.
 - c. The boat operator may be assigned other tasks provided they do not interfere with the operator's ability to quickly reach the boat.
- iii. Use a communication system, such as a walkie-talkie, to inform the operator of the emergency and its location.
- iv. Equip the boat with both a motor and oars. Some jurisdictions restrict the use of two-stroke engines.
- v. Do not overload boats.
- vi. Secure boats to prevent theft or vandalism (secure the oar(s) to prevent use by unauthorized individuals) during non-working hours.

5. Tactical – Chain of Command

i. Incident Commander

- a. The first due senior officer will establish other command functions as needed within the ICS.
- b. Determine the condition of the scene and the rescue. If additional personnel or rescue services are determined to be needed contact 911 immediately.

ii. Water Rescue Branch Director

- a. Responsible for the tactical operation of the water rescue components under the direction of the Operations Section Chief or the Incident Commander.
- b. Will normally operate at the rescue site providing direct supervision of the operation.
- c. On complex incidents will operate at the command area or other locations as designated by the Incident Commander and be responsible for management of the water rescue component through Division/Group supervisors, Team Leaders, or Single Resource Bosses.

iii. Water Rescue Branch Safety Officer

- a. The Water Rescue Branch Safety Officer is responsible for the safety of the water rescue operational component in conjunction with the Water Rescue Branch Director and Incident Safety Officer.
- b. The Water Rescue Branch Safety Officer will normally operate at the rescue site assisting with direct supervision of the operation.
- c. On complex incidents a Safety Officer will be established as needed for each division, group, or team.
- d. The Water Rescue Branch Safety Officer is authorized and required to stop and correct any unsafe operation.
- e. The Water Rescue Branch Safety Officer will have water samples collected and decon procedures implemented at incidents involving rescuer contact with floodwater or possibly contaminated water.

- iv. Water Rescue Branch Staging Area Manager
 - a. Responsible for managing the water rescue assets at the staging area and controlling access to the rescue site.
 - b. Will confirm that all personnel entering the hazard zone are authorized to do so.

6. Termination Procedure

- i. Upon determination that operations are terminated by the incident commander the Water Rescue Branch will stand down and assets will return to the staging area for accountability and demobilization.
- ii. The Water Rescue Branch Staging Area Manager will assign personnel to assist with the collection of equipment.
- iii. Equipment will be placed back in service per procedure including any gross deacon at the scene.
- iv. First report of injury and exposure reports will be filed on any injury case or known exposure to harmful material.

Additional Considerations:

- 1. HEAT. Consider rotation of crews.
- 2. COLD. Consider the effects of hypothermia on victims and rescuers.
- 3. RAIN/SNOW. Consider the effects of rain or snow on the hazard profile.
- 4. TIME OF DAY. Is there sufficient lighting for operations extending into the night?
- 5. Consider the effect on family and friends; keep family informed.
- 6. Consider news media; assign a P.I.O.

SECTION V (SITE SPECIFIC PLAN OF ACTION)

Address for Operations

Site Address: 1 Sumpter Street, Hudson Falls NY 12893

Staging Address: 57 Hudson Falls Rd, South Glens Falls, NY 12803, United States

- Follow down the hill to the boat ramp access.

Daily Briefings and Daily Operations (Safety Stand-downs)

Amphibious Medics will attend all daily briefings on operational discussions – during the briefings any concerns for the day will be outlined and discussed prior to operations commencing.

1. SWRR techs – will review weather reports from the news and USGS link.
During the meeting, AM will brief the client on weather reports.
 - a. www.accuweather.com/en/us/national/weather-radar
2. PTP will be discussed and confirm staging area for the day
3. All equipment and Skiff will be inspected each morning prior to briefing to ensure an on-time start for daily operations.
4. The skiff will be deployed and operated 3 times a day to ensure it is operational.
 - a. Am (Prior to operation start)
 - b. Mid-day (prior to lunch break)
 - c. End of day (prior to demobilization)
5. Any concerns are to be immediately addressed with COO Terence Curran and site POC via phone call.
6. Upon completion of daily meeting and inspection. SWRR Tech 1 will be responsible for notifying over the radio Rescue team is ready for daily operations.

A. Staging

Techs will be staged under a tent and monitor the operation from the shoreline.

1. SWRR Tech 1 – will be dressed and ready to mobilize an option detailed in section I subsection 3.
2. SWRR Tech 2 – will be the designated boat operator.
3. Techs will rotate every 2 hours.



B. Man Overboard (From watercraft/waters Edge)

1. Immediate actions on the watercraft / Waters Edge

- i. Yell 'man overboard' x 3 to alert the crew and prepare them to take action.
- ii. One long blast from a whistle and notification over the radio "3" times Man overboard, man overboard, man overboard.
- iii. Throw a heaving line or safety device to the MOB
- iv. Keep the MOB in sight. Delegate one person to constantly watch and point at the MOB throughout the recovery maneuver.
- v. A skiff will be deployed to the last known location of the MOB and perform a skiff rescue.

2. Shoreline Operations

- i. SWRR Tech 1 – During operations will be monitoring all employees on the watercraft and the water's edge from above.
- ii. SWRR Tech 2 – During operations, will monitor the USGS website for all weather concerns within the geographic area.
 - In the event of inclement weather – SWRR 2 will call site POC and notify them of the weather concerns during operational hours.
 - A go – no go will be determined due to weather to continue operations by the POC.

3. Zones

During Onsite operations AM has designated a green, orange, and red zone as outlined in photo 1A for operational determination of when to activate the 911 system.

Green Zone

- During watercraft and near waters edge operations, AM will be readily available to respond from the staging or in the skiff.
- Man overboard protocol
 - Watercraft – Approach the employee in the water on an angle in order to head off the employee from reaching the orange zone.
 - Water's Edge – In the event an employee falls from the top of the ledge, 911 will be notified immediately due to suspected MOI from the height of the fall.
- All employees will be medically evaluated by AM and determine if additional resources are needed.

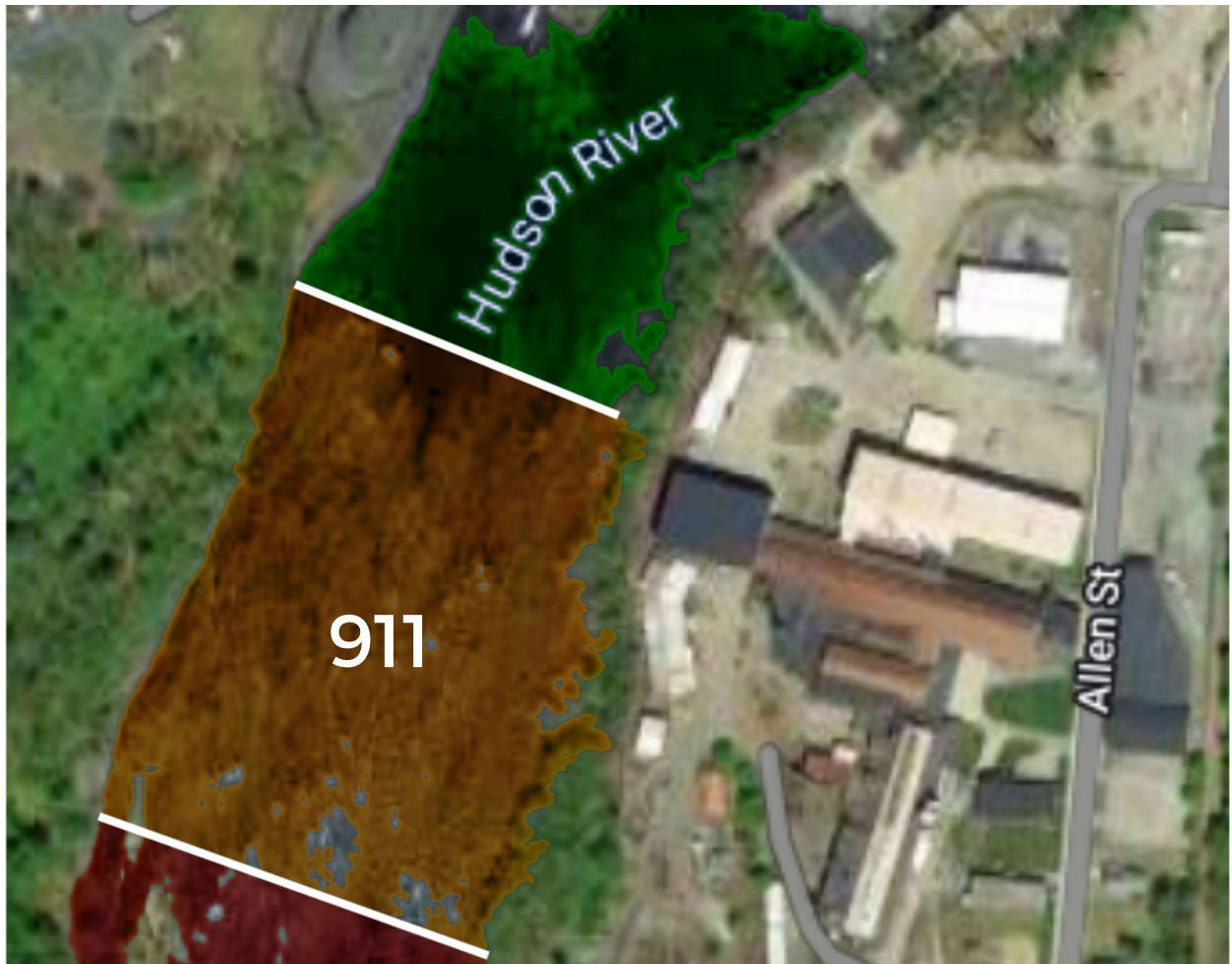
Orange Zone

- In the event an employee is drifting into the orange zone, the designated response team from "the Client" will wade into the shallow water and assist the SWRR team with a throw approach to the drifting employee.
- SWRR will determine if additional resources are to be called for support.
 - Water's Edge – In the event, an employee falls from the top of the ledge, 911 will be notified immediately due to suspected MOI from the height of the fall.
 - All employees will be medically evaluated by medical support.

Red Zone

- In the event an employee has made it past the green and orange zone, the 9-11 system will be immediately activated.
- All employees will be medically evaluated by medical support.





4. Water Craft

SWRR Watercraft

AM SWRR will be assigned a watercraft onsite to perform water operations if an employee requires rescue.

Watercraft Fish Master

1. 14 ft – 4 passenger model F14CFS
2. Motor Mercury Pro Kicker 9.9 hp

The skiff can travel into the RedZone and continue to monitor and support Local Fire until they arrive and support operations.



C. Operational Training

1. Onsite training will be held prior to the start of operations onsite.
 - i. SWRR tech will demonstrate an operation response for all options outlined in section I subsection 3. i-iv in front of the site personnel.
 - ii. Ensure the team members onsite assigned to the barge are comfortable with performing a reach and throw operation from the barge to assist with rescue operations.
 - iii. Once a month perform a MOCK rescue with site personnel. Time and date TBD by site POC.
2. Amphibious Medics will work to coordinate a joint rescue operation plan with local municipalities.
 - i. If available, we will coordinate a Joint rescue demonstration for emergency response.
3. OSHA Deck and Barge Safety
<https://www.osha.gov/sites/default/files/publications/3358deck-barge-safety.pdf>

D. Onsite Contact information

1. Amphibious Medics SWRR

- i. Phone Number: 562.837.7768
- ii. Email Address: SWRR.NY@amphibiousmedics.com

2. Sessler

- a. **Penny Hanshaw**- Safety and Compliance Manager (Onsite, Full)
 - i. Phone Number: 315.269.7406
 - ii. Email Address: phanshaw@sesslercompanies.com
- b. **Dan Skinner** -General Superintendent (Onsite, Full-time)
 - i. Phone Number: 315.415.8637
 - ii. Email: DSkinner@SesslerWrecking.com
- c. **Kevin Sessler**- 2nd General Superintendent (Onsite Backup)
 - i. Phone Number: 315.719.2522
 - ii. kevin@sesslerwrecking.com
- d. **Gustabo Rivera** -Director of Health and Safety
 - i. Phone Number: 518.577.9386
 - ii. Email: GRivera@SesslerCompanies.com
- e. **Frank McKeon**- 2nd 3rd Party Qualified Electrical Spotter
 - i. Phone Number: 518.424.1861
 - ii. Email: Frankm@ambient-env.com
- f. **Joe Resciniti**- Main 3rd Party Safety Manager
 - i. Phone Number 518.892.5219
 - ii. Email: Joe.Resciniti@gmail.com
- g. **Joseph Melino**- Main 3rd Party Safety Manager
 - i. Phone Number: 919.649.3131
 - ii. Email: Joseph.Melino@gmail.com

3. Local Emergency Response Non-emergency line (In an emergency dial 911)

a. Fire Department

- i. Name: Hudson Falls Fire Department
- ii. Address: 220 Main St Hudson Falls NY 12839
- iii. Phone Number: 518.747.4412

b. EMS

- i. Name: Hudson Falls Fire Department
- ii. Address: 220 Main St Hudson Falls NY 12839
- iii. Phone Number: 518.747.4412

c. Police

- i. Name: Hudson Falls Police Department
- ii. Address: 218 Main Street Hudson Falls NY 12839
- iii. Phone Number: 518.747.4011

d. Hospital

- i. Name: Glens Falls Hospital
- ii. Address: 325 Main Street Hudson Falls NY 12839
- iii. Phone Number: 518.747.1073
- iv. Website: www.glensfallshospital.org

e. Urgent Care

- i. Name: Saratoga Hospital Urgent Care
- ii. Address: 959 Route 9 Queensbury NY 12804
- iii. Phone Number: 518.223.0155
- iv. Hours of Operation: 7 – days weekly 9 am to 7 pm
- v. Website: www.urgentcareadirondack.org

APPENDIX I

Awareness Level KSA

Per the job requirements as stipulated in NFPA 1006

This is a self-help course only

Operations Level KSA

Per the job requirements as stipulated in NFPA 1006

Use of related tools, devices, and equipment

Technician Level I KSA

Per the job performance requirements as stipulated in NFPA 1006

Training in the rating of Class 3, per AW Section VI Safety Code or higher whitewater

Use of related tools, devices, and equipment

ICS 100: Introduction to ICS

ICS 200: Basic ICS

FEMA IS-700: NIMS, an Introduction

Boat Operator KSA

Per the job performance requirements as stipulated in NFPA 1006

Operate craft in Class 1-3, per AW section VI Safety Code

Use of related tools, devices, and equipment

Use of power and paddle craft in the aquatic environment

Boat support (maintenance, trailering, and repair)

GPS/map and compass

ICS-100: Introduction to ICS

ICS -200: Basic ICS

FEMA IS-700: NIMS, An Introduction

APPENDIX II

EQUIPMENT STANDARDS

Each station is to have available the following and carried on the piece of equipment that responds to Water Rescue calls.

- 2 - Type 3 Personal Floatation Devices
- 2 - Water Rescue type safety helmets
- 2 - Water Rescue type whistles

WATER RESCUE SUPPORT UNITS (SHORELINE)

- 2 - 70 foot Rope Throw bags
- 2 - USCG Type III or V Personal Floatation Devices with whistle and knife
- 2 - water rescue helmets
- 2 - pair water shoes
- 2 - pair water gloves
- 2 - pair of safety eyewear
- 2 - Drysuits OR wetsuits
- 2 - hand lights
- 2 - USCG Type II Personal Floatation Devices for victims
- 2 - USCG Type IV devices (Throw Ring)
- 1 - 6 foot pole or hook
- 2 - 100 foot 3/8 inch or 1/2 inch kernmantle rope

WHILE ON THE BOAT AM PERSONNEL

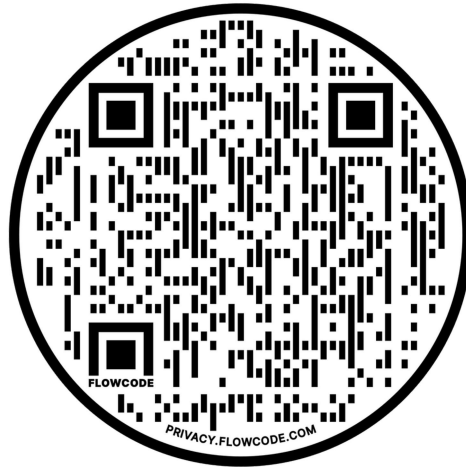
- 2 – USCG Type III or V Personal Floatation Devices with whistle and knife, 2 of these must be USCG Type V with tethered swimmer with a whistle, knife, and locator flashing light
- 2 – Water rescue helmets
- 2 – Pair water shoes
- 2 – Pair water gloves
- 2 – Headlamps
- 4 – Pair of safety eyewear
- 1 – Pair swimming goggles
- 1 – Pair fins
- 2 – Drysuits OR wetsuits
- 2 – Cold water rescue suits (Seasonal)
- 2 – Hand lights
- 2 – 70 foot Rope Throw bags
- 2 – USCG Type II Personal Floatation Devices for victims
- 1 – Waterproof radio bag
- 1 – Rescue swimmer board
- 12 – Chemical light sticks
- 2 – USCG Type IV devices (Throw Ring)
- 1 – 6 foot pole or hook
- 1 – Megaphone or PA system
- 1 – Boat with USCG minimum rating for 4 persons, with appropriate gas engine
- 2 – Paddles or oars
- 1 – ABC fire extinguisher
- 1 – Anchor
- 2 – Mooring lines
- 1 – Crew 1st aid kit that meets county standards
- 1 – Blanket
- 1 – Stokes type litter with floatation
- 1 – Floatation type spine board with straps
- 1 – Line throwing device
- 1 – Decon kit (brush, Clorox, anti-bacterial soap, peroxide)

DEFINITION OF ROW AND GO

ROW - If it is determined that a boat-based operation shall be run, Command will dispatch the Skiff on the opposite bank to assist in establishing contact with the victim and perform boat rescue operations safely. The AM SWRR on the opposite bank will be made aware of the action plan prior to the launch of the skiff. The rescue team will consist of 1 boat operator and 1 AM SWRR at all times during water operations.

GO - If it is not possible to ROW (boat base operation) to the victim, the Rescue should consider putting a rescuer in the water to reach the victim. This is a very high-risk operation. Only rescuers with the proper training and equipment should be allowed to enter the water. Before the rescuer actually enters the water, they shall discuss the action plan, including specific tasks and objectives, hazards, and alternate plans. The rescuer shall never be attached to a lifeline without the benefit of a quick-release mechanism. The rescuer should take PPE of at least a PFD to the victim. Members shall not do a breath-hold surface dive in an attempt to locate a victim beneath the surface of the water at any time.

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION



When working above water, employers must provide fall protection if the distance from the walking/working surface to the water's surface is 6 feet (1.8 m) or more.

29 CFR 1926.501(b)(1) states that "each employee on a walking/working surface (horizontal and vertical surface) with an unprotected side or edge which is 6 feet (1.8 m) or more above a lower level shall be protected from falling by the use of guardrail systems, safety net systems, or personal fall arrest systems." The preamble to the standard states the term "lower level surface" includes liquids (volume 59 of the Federal Register, page 40,681). Therefore, employers must provide fall protection during construction activities when employees are working 6 feet or more above the water.

When fall protection is provided on walking/working surfaces located above the water and no drowning hazard exists, employees do not need to wear U.S. Coast Guard-approved life jackets or buoyant work vests.

Section 1926.106(a) states that "employees working over or near water, where the danger of drowning exists, shall be provided with U.S. Coast Guard-approved life jacket or buoyant work vests." In general, when continuous fall protection is used (without exception) to prevent employees from falling into the water, the employer has effectively removed the drowning hazard, and life jackets or buoyant work vests are not needed (but see below regarding the use of nets).

When using Safety Nets as fall protection, U.S. Coast Guard-approved life jacket or buoyant work vests are usually required.

The use of safety nets as fall protection during marine construction activities usually will not eliminate the drowning hazard. In many cases (such as in bridge construction) there is a risk that materials heavy enough to damage the nets may fall. In such cases, the personal flotation device and the other applicable requirements of §1926.106 apply. Also, the §1926.106 requirements apply during the installation of the nets.

The use of fall protection, including fall protection that eliminates drowning hazards, does not relieve employers from having to provide ring buoys and a lifesaving skiff under §1926.106(c) and (d).

The requirements in §1926.106(c) and (d) for ring buoys and a skiff address the hazard of falls that may occur in the event of a failure of the operation of fall protection devices or a lapse in their use. Therefore, ring buoys and a skiff must be provided irrespective of the fall protection provided on the marine construction site.

29 CFR 1926 does not apply to ship repairing, shipbuilding, and ship breaking employment and related employment. Construction activities in ship repairs and shipbuilding are covered by 29 CFR 1915, Occupational Safety and Health Standards for Shipyard Employment.

Should you have any additional questions, please do not hesitate to write us at USDOL-OSHA, Directorate of Construction, Office of Construction Standards and Compliance Assistance, Room N3468, 200 Constitution Ave., NW, Washington, DC 20210.

The background of the entire page is a photograph of a boat crew. In the upper half, five men are visible on the deck of a boat. One man in the foreground is wearing a green wetsuit and sunglasses, smiling. Next to him is a man in a black wetsuit and sunglasses. In the center, a man in a dark shirt and a bucket hat is looking towards the camera. To his right, a man in a red and blue cap and sunglasses is smiling. On the far right, a man in a blue wetsuit and a blue cap with "National" written on it is also smiling. A red cooler is visible on the deck. The lower half of the image shows a close-up of a man in a red cap and sunglasses, smiling. The text "CONTACT US" is overlaid in white on a blue rectangular background.

CONTACT US

THANK YOU



**AMPHIBIOUS
MEDICS**



www.amphibiousmedics.com



info@amphibiousmedics.com

Appendix J
SSHASP PLAN ACCEPTANCE FORM

Pre-entry Briefing / SSHASP Acceptance Form

Each employee, and subcontractor, conducting fieldwork shall sign this form after the pre-entry briefing is completed and prior to starting work on site.

Employee Sign Off

I have attended a pre-entry briefing outlining the specific health and safety provisions on this site. I have read and will comply with the provisions contained in this Site-Specific Health and Safety Plan.

[illegible]



Site Specific Health and Safety Plan

Revision 19 b

Project Name: National Grid
Former Powerhouse and Allen Mill Demolition
Hudson Falls, New York

Project Number: 30124290
Client Name: National Grid
Date: 8/8/2022
HASP Expires: 8/8/2023
Revision:

Approvals:

HASP Developer: Tyler Howe

Project Manager: John C. Brussel, PE

HASP Reviewer: Liz Hover

HASP Reviewer Name Typed

A handwritten signature in blue ink, appearing to read 'Liz Hover', written over a horizontal line.

HASP Reviewer Signature (handwritten or digital signature)

Emergency Information

Site Address:

Intersection of Sumpter St. & John St.
Hudson Falls, NY 12839

Emergency Phone Numbers:

Emergency (fire, police, ambulance)

911

Emergency (facility specific, if applicable):

Emergency Other (specify):

Primary Client Contact:

Steven DiLella

585-520-5192

WorkCare (non-life-threatening injury/illness):

1-888-449-7787

Project H&S:

Tom Carey

716-523-9634

Task Manager:

Carey Healy

315-671-9338

Project Manager:

John Brussel

315-671-9441

H&S Specialist:

Alec MacAdam

720-454-0948

Area H&S Director:

Andrew McDonald

410-200-3752

Hospital Name and Address:

Glens Falls Hospital

100 Park St

Glens Falls, NY 12801

Hospital Phone Number:

518-926-1000

Supplemental Client Contact Information:

Laurie Scheuing, General Electric Company

518-429-4505

Other Important Phone Numbers:

Poison Control Center

1-800-222-1222

Nat. Response Ctr. (spills in reportable quantities)

1-800-424-8802

U.S. Coast Guard (spills to water)

1-800-424-8802

Bruce Mason - Washington County EMS

911

Mike McEvoy - Saratoga County Emergency Services

518-885-2232

Josh Smith - Fort Edward Rescue Squad

518-747-6198

Incident Reporting Protocol Within Arcadis

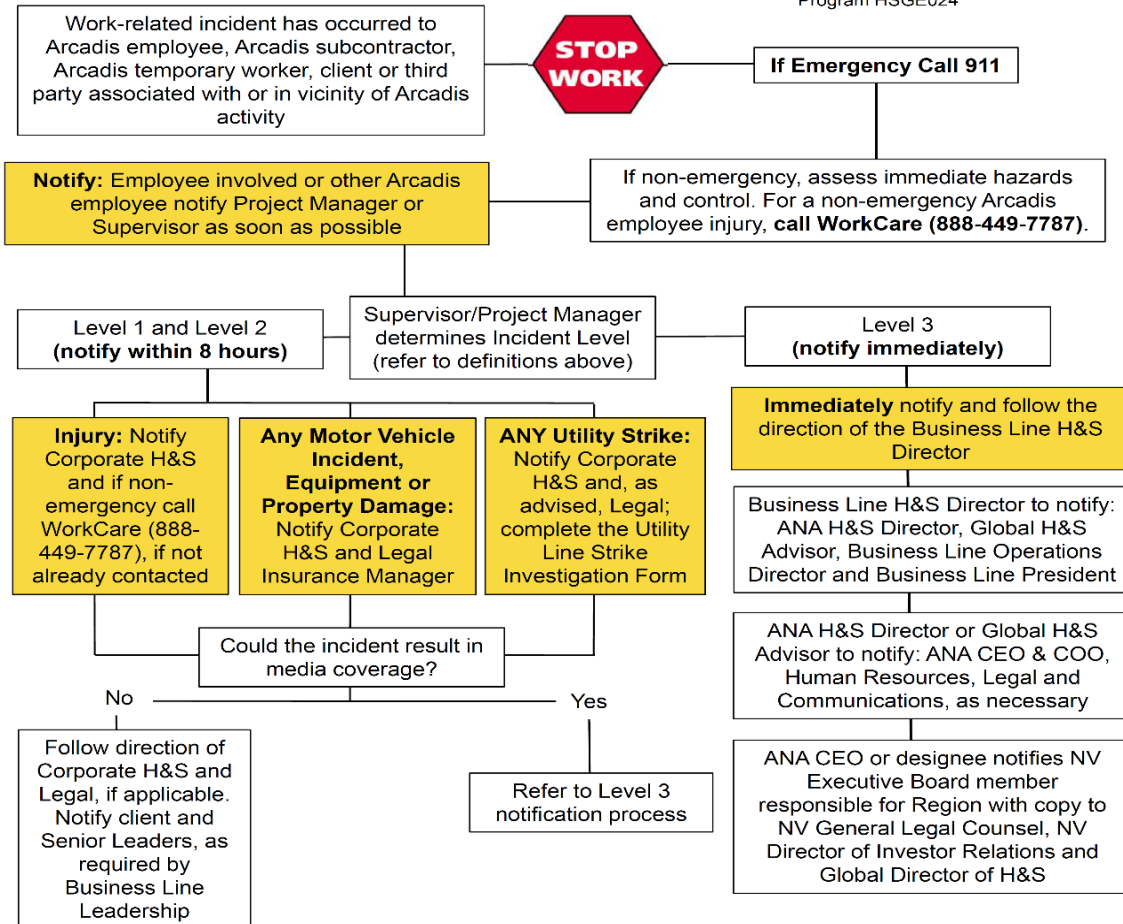
Incident Levels

Level 1: First aid/self-treated, work-related injury (contact WorkCare as soon as possible); minor property or equipment damage (less than or equal to \$100); vehicle loss event* (no injuries, no third-party involvement or other vehicle involvement).

Level 2: Professional Medical Treatment (if non-emergency injury or illness, employee must contact WorkCare as soon as possible); moderate property or equipment damage (greater than \$100 but less than or equal to \$5,000); ANY utility strike incident, any motor vehicle accident* (including injury or third-party involvement).

Level 3: Immediately report fatality, severe or catastrophic injury and/or overnight hospitalization required; significant property or equipment damage (greater than \$5,000); missing person or incident that generates media coverage.

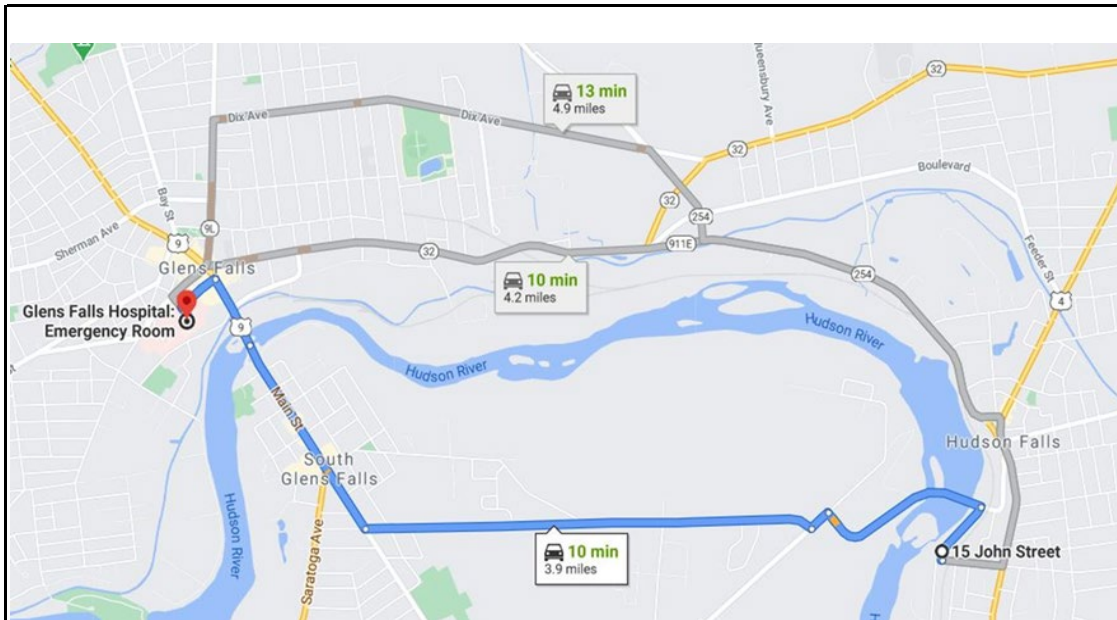
* Refer to Motor Vehicle Safety Program HSGE024



Client Incident Reporting Protocol

1. Dial 911/WorkCare as applicable.
2. Contact PM (John Brussel).
3. Contact Corporate H&S (Dennis Balcer).
4. Contact Client (Steven DiLella).

Route to the Hospital



from 15 John St, Hudson Falls, NY 12839
to Glens Falls Hospital, 100 Park St, Glens Falls, NY 12801

10 min (3.9 miles)



via Harrison Ave

Fastest route, the usual traffic

15 John St

Hudson Falls, NY 12839

- Follow Sumpter St to Bridge St/Hudson Falls Rd

39 s (0.2 mi)

- Take Harrison Ave and Main St to Park St in Glens Falls

8 min (3.4 mi)

- Continue on Park St to your destination

1 min (0.2 mi)

Glens Falls Hospital

100 Park St, Glens Falls, NY 12801

Site Type

The project site is an inactive facility which historically had the following attributes:

Buildings	
Industrial	
Remote Area	

If a lone worker is used for a remote project area, additional communication and emergency action planning (HASP supplement or JSA) is required for the lone worker.

All vehicles must be backed into parking spaces. On-site speed limits is <10 miles per hour (mph).

Surrounding Land Use and Topography

The site consists of several above grade and below grade brick/concrete structures along the shore of the Hudson River. The surrounding area is predominantly industrial facilities. Topography is flat with more steep areas in proximity to the river bank.

Simultaneous Operations (SimOps)

SimOps is expected or will be conducted in proximity to Arcadis work activities on the project site. SimOps creates unique hazards that could affect Arcadis employees and subcontractors and SimOps hazards identified on site will be addressed in the JSA or similar governing document (i.e. permit) for affected Arcadis work tasks. If the SimOps work activities create a high hazard to Arcadis staff or subcontractors, Arcadis will utilize stop work until the SimOps activity is complete or will coordinate work activities with SimOps workers and/or client to ensure SimOps work hazards are mitigated.

Site Background

The Powerhouse is located along the Hudson River in the Village of Hudson Falls, Washington County, New York. The site is bordered by the Hudson River to the west, commercial property to the south and GE property to the east. The Allen Mill is located immediately north of the Powerhouse and the Bakers Falls dam is located north of the Allen Mill. A private hydroelectric facility it located along the western shore of the Hudson River.

The Powerhouse was constructed into a steep bedrock and soil bank of the east shore of the Hudson River. The top of bank immediately behind (east of) the Powerhouse is located approximately 70 feet above the Hudson River. In addition to the Powerhouse and Allen Mill, the foundations/remnants of various former buildings remain near the Powerhouse and Allen Mill, including the stone wall of a former building that adjoined the south side of the Powerhouse.

Project Tasks

The following tasks are identified for this project:

1	Mobilization - Loading and unloading vehicles
2	Driving - Motor vehicles
3	Inspections and audits - Buildings
4	Survey - Unmanned aerial vehicle (drone) operation
5	Debris/Demolition - Contractor oversight
6	Monitoring - Air monitoring using hand held or stationary equipment - non-radiation
7	Monitoring - Arcadis oversight of air monitoring using handheld or stationary equipment - non-radiation
8	Decontamination - Arcadis oversight of contractors performing decontamination
9	Office work - Field trailer
10	Oversight - Oversight of contractors
11	Waste- Arcadis oversight of contractors performing IDW containment, segregation and/or sampling
12	Select
13	Select
14	Select
15	Select
16	Select
17	Select
18	Select
19	Select
20	Select

The following documents and/or plans associated with the above task(s) are required and attached:

- Client specific COVID-19 protocols and current Arcadis COVID-19 prevention recommendations/guidance

<input checked="" type="checkbox"/>	Required Checklists/Work Forms
	<i>Tailgate Safety Briefing Form</i>
	<i>Vehicle Inspection Checklist</i>

<input type="checkbox"/>	Required Permits
	<i>Not Applicable</i>

<input type="checkbox"/>	Required H&S Standards
	<i>Not applicable</i>

Short Service Employees (SSEs), Part Time As Needed Employees (PTANs) and Temporary Agency Employees

SSEs (employees who are employed with Arcadis for less than 1 year or are Inexperienced Workers), PTANS and Temporary Workers are not anticipated to be working on this project. If staffing changes occur during this project and these workers are utilized, the project team working in conjunction with the administrative supervisor will ensure applicable requirements of ARC HSGE019 "Short Service Employees" are completed. These workers will be identified in the project Tailgate Safety Meeting

Roles and Responsibilities

Name	Role	Short Service Employee
1 John C. Brussel	Project Manager (PM)	
2 NA	Associate Project Manager (APM)	
3 Carey Healy	Task Manager	
4 Tom Carey	Field Technical Lead	
5 Tom Carey	Site Safety Officer (SSO) (HAZWOPER)	
6		
7		
8		
9		
10		

Training

All Arcadis employees are required to have the following training to be on site:

Hazwoper 40-Hour
Defensive Driving - Smith On-Line
Hazwoper 8-Hour Annual Refresher
PPE (non-certificate)
None
None
None
None
None
None
None
None
None
Client specific:
Other:

Selected Arcadis employees are required to have the following additional training:

Names or Numbers from above	
DOT HazMat #1	4,5
Silica General Awareness	4,5
First Aid/CPR	4,5
Asbestos Awareness	4,5
Construction Safety - 10 Hour	4,5
Construction Safety - 30 Hour	4,5
None	
None	
None	
None	
None	
None	
None	
None	
None	
Other:	

The Arcadis Fundamental H&S Principles

Staff working on any of the task(s) listed above must utilize the six Arcadis Fundamental H&S Principles to ensure work is conducted safely. These principles include: 1) Use of TRACK, 2) H&S Planning, 3) Stop Work Authority, 4) "If Not Me Then Who", 5) Stewardship, and 6) Incident Reporting. Every project team member plays an important role in project health and safety. This is more than just having a HASP, training, or PPE. Proactive staff engagement with these principles is critical to a safe work environment.



General Task Hazard Assessment and Risk Control (HARC)

General:		Site-Wide																																													
The 12 hazard category HARC ratings are not available in this General THA. The mitigated and unmitigated ratings for the hazards presented are based on the Risk Assessment Matrix below. Modify hazards and ratings as necessary to meet project needs.																																															
<table><tr><th colspan="2">Risk Assessment Matrix</th><th colspan="4">Likelihood Ratings</th></tr><tr><th colspan="2">Consequences Ratings</th><th>A</th><th>B</th><th>C</th><th>D</th></tr><tr><th>People</th><th>Property</th><th>0 Almost Impossible</th><th>1 Possible but Unlikely</th><th>2 Likely to Happen</th><th>3 Almost Certain to Happen</th></tr><tr><td>1-Slight or No Health Effect</td><td>Slight or No Damage</td><td>0-Low</td><td>1-Low</td><td>2-Low</td><td>3-Low</td></tr><tr><td>2-Minor Health Effect</td><td>Minor Damage</td><td>0-Low</td><td>2-Low</td><td>4-Medium</td><td>6-Medium</td></tr><tr><td>3-Major Health Effect</td><td>Local Damage</td><td>0-Low</td><td>3-Low</td><td>6-Medium</td><td>9-High</td></tr><tr><td>4-Fatalities</td><td>Major Damage</td><td>0-Low</td><td>4-Medium</td><td>8-High</td><td>12-High</td></tr></table>		Risk Assessment Matrix		Likelihood Ratings				Consequences Ratings		A	B	C	D	People	Property	0 Almost Impossible	1 Possible but Unlikely	2 Likely to Happen	3 Almost Certain to Happen	1-Slight or No Health Effect	Slight or No Damage	0-Low	1-Low	2-Low	3-Low	2-Minor Health Effect	Minor Damage	0-Low	2-Low	4-Medium	6-Medium	3-Major Health Effect	Local Damage	0-Low	3-Low	6-Medium	9-High	4-Fatalities	Major Damage	0-Low	4-Medium	8-High	12-High				
Risk Assessment Matrix		Likelihood Ratings																																													
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3-Major Health Effect	Local Damage	0-Low	3-Low	6-Medium	9-High																																										
4-Fatalities	Major Damage	0-Low	4-Medium	8-High	12-High																																										
Hazard #1																																															
Driving - On road - Injury or vehicle damage from motor vehicle accident or incident																																															
Suggested FHSB Ref:	3.4	To mitigate this hazard, use TRACK and the following:																																													
Overall Unmitigated Risk:	HIGH	Smith System (on line)																																													
Mitigated Risk:	MEDIUM	JSAs																																													
Comments:	Use Smith System "5-Keys" when driving. See Driving JSA for details.																																														
Hazard #2																																															
Driving - Driver - Injury, death or property damage due to driver distraction, fatigue, etc.																																															
Suggested FHSB Ref:	3.4, 3.21	To mitigate this hazard, use TRACK and the following:																																													
Overall Unmitigated Risk:	HIGH	Smith System (on line)																																													
Mitigated Risk:	LOW	Driver awareness and use of stop work authority																																													
Comments:	Use route planning. Keep eyes moving while driving. See Driving JSA.																																														
Hazard #3																																															
Biological - skin/eye irritation or damage from poisonous plants																																															
Suggested FHSB Ref:	3.17.11	To mitigate this hazard, use TRACK and the following:																																													
Overall Unmitigated Risk:	LOW	See HASP Tick/Poisonous Plant Section																																													
Mitigated Risk:	LOW	Job Briefing/Site Awareness																																													
Comments:	Use skin pre-treatment lotions when available.																																														
Hazard #4																																															
Biological - bites or stings from exposure to insects or arachnids																																															
Suggested FHSB Ref:	3.17: 2,3,7,8,9,10	To mitigate this hazard, use TRACK and the following:																																													
Overall Unmitigated Risk:	MEDIUM	PPE (see HASP "PPE" section)																																													
Mitigated Risk:	LOW	Job Briefing/Site Awareness																																													
Comments:	Do body check daily. For ticks see also HASP Tick/Poisonous Plant section																																														
Hazard #5																																															
Biological - cuts, scrapes, skin/eye puncture from exposure to physically damaging plants																																															
Suggested FHSB Ref:	3.17.11	To mitigate this hazard, use TRACK and the following:																																													
Overall Unmitigated Risk:	MEDIUM	Job Briefing/Site Awareness																																													
Mitigated Risk:	LOW	PPE (see HASP "PPE" section)																																													
Comments:																																															

General Task HARC (continued)

Hazard #6		
Environmental - Thermal stress - Injury or illness from heat or cold		
Suggested FSHB Ref:	3.16	To mitigate this hazard, use TRACK and the following:
Overall Unmitigated Risk:	MEDIUM	Field H&S Handbook (see ref. above)
Mitigated Risk:	LOW	JSAs
Comments:	Use job rotation or rest breaks. Stay hydrated and eat regularly.	
Hazard #7		
Environmental - Inclement weather - Injury or equipment damage from inclement weather		
Suggested FSHB Ref:	3.12	To mitigate this hazard, use TRACK and the following:
Overall Unmitigated Risk:	MEDIUM	Weather Monitoring
Mitigated Risk:	LOW	Cont./Emerg. Planning
Comments:	Use 30/30 rule for lightning. See FSHB for details.	
Hazard #8		
Motion - Musculoskeletal - Injury from lifting, twisting, stooping, or awkward body positions		
Suggested FSHB Ref:	3.29.1	To mitigate this hazard, use TRACK and the following:
Overall Unmitigated Risk:	MEDIUM	Engineering Controls (specify in comments)
Mitigated Risk:	LOW	Admin. Controls (specify in comments)
Comments:	Use proper lifting techniques. Use job rotation when applicable. See FSHB for details.	
Hazard #9		
Motion - Musculoskeletal - Injury from repeated work activity or body motion		
Suggested FSHB Ref:	3.29.2	To mitigate this hazard, use TRACK and the following:
Overall Unmitigated Risk:	MEDIUM	Engineering Controls (specify in comments)
Mitigated Risk:	LOW	Admin. Controls (specify in comments)
Comments:	Use proper lifting techniques. Use job rotation when applicable. See FSHB for details.	
Hazard #10		
Gravity - Falls - Injury due to slips and trips		
Suggested FSHB Ref:	3.26.4, 4.11	To mitigate this hazard, use TRACK and the following:
Overall Unmitigated Risk:	MEDIUM	Site Awareness
Mitigated Risk:	LOW	Housekeeping
Comments:	Use footwear appropriate for site conditions, plan routes and do not hurry while walking.	
Hazard #11		
None		
Suggested FSHB Ref:	None	To mitigate this hazard, use TRACK and the following:
Overall Unmitigated Risk:	Not Ranked	Select
Mitigated Risk:	Not Ranked	Select
Comments:		
Hazard #12		
None		
Suggested FSHB Ref:	None	To mitigate this hazard, use TRACK and the following:
Overall Unmitigated Risk:	Not Ranked	Select
Mitigated Risk:	Not Ranked	Select
Comments:		

Task Specific HARC

Task 1:		Mobilization - Loading and unloading vehicles					
HARC Unmitigated Hazard Types (H-High, M-Medium, L-Low):		FHSB Ref:				3.9	
Biological*	-	Chemical	L	Driving*	-	Electrical	L
Environmental*	L	Gravity*	M	Mechanical	L	Motion*	M
Personal Safety	L	Pressure	L	Radiation	L	Sound	L
* Hazard rating, if present, excludes General THA hazards in this category.							
Hazard #1							
Mechanical - Pinch point - Injury by pinching of body part in mechanical process							
Suggested FHSB Ref:		3.27.4		To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:		MEDIUM		Site Awareness			
Mitigated Risk:		LOW		JSAs			
Comments:							
Hazard #2							
Motion - Struck by - Bodily injury from impact with moving object							
Suggested FHSB Ref:		2.5, 3.22		To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:		MEDIUM		Site Awareness			
Mitigated Risk:		LOW		JSAs			
Comments:							
Hazard #3							
None							
Suggested FHSB Ref:		None		To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:		Not Ranked		Select			
Mitigated Risk:		Not Ranked		Select			
Comments:							
Hazard #4							
None							
Suggested FHSB Ref:		None		To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:		Not Ranked		Select			
Mitigated Risk:		Not Ranked		Select			
Comments:							
Hazard #5							
None							
Suggested FHSB Ref:		None		To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:		Not Ranked		Select			
Mitigated Risk:		Not Ranked		Select			
Comments:							
Hazard #6							
None							
Suggested FHSB Ref:		None		To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:		Not Ranked		Select			
Mitigated Risk:		Not Ranked		Select			
Comments:							

Task Specific HARC (continued)

Task 2:		Driving - Motor vehicles					
HARC Unmitigated Hazard Types (H-High, M-Medium, L-Low):		FHSB Ref:				3.4	
Biological*	-	Chemical	-	Driving*	H	Electrical	-
Environmental*	-	Gravity*	-	Mechanical	-	Motion*	-
Personal Safety	L	Pressure	-	Radiation	-	Sound	L
Hazard #1							
Driving - Off road - Injury or vehicle damage from object impact/vehicle rollover/improper load securement							
Suggested FHSB Ref:		3.4.2.1		To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:		HIGH		Smith System (on line)			
Mitigated Risk:		LOW		JSAs			
Comments:							
Hazard #2							
None							
Suggested FHSB Ref:		None		To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:		Not Ranked		Select			
Mitigated Risk:		Not Ranked		Select			
Comments:							
Hazard #3							
None							
Suggested FHSB Ref:		None		To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:		Not Ranked		Select			
Mitigated Risk:		Not Ranked		Select			
Comments:							
Hazard #4							
None							
Suggested FHSB Ref:		None		To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:		Not Ranked		Select			
Mitigated Risk:		Not Ranked		Select			
Comments:							
Hazard #5							
None							
Suggested FHSB Ref:		None		To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:		Not Ranked		Select			
Mitigated Risk:		Not Ranked		Select			
Comments:							
Hazard #6							
None							
Suggested FHSB Ref:		None		To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:		Not Ranked		Select			
Mitigated Risk:		Not Ranked		Select			
Comments:							

Task Specific HARC (continued)

Task 3:		Inspections and audits - Buildings			
HARC Unmitigated Hazard Types (H-High, M-Medium, L-Low):		FHSB Ref:		3.9	
Biological*	L	Chemical	L	Driving*	L
Environmental*	L	Gravity*	L	Mechanical	M
Personal Safety	L	Pressure	L	Radiation	L
				Electrical	L
				Motion*	L
				Sound	L
Hazard #1					
Environmental - Sun or wind -Skin injury from sun or wind exposure					
Suggested FHSB Ref:	3.12	To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:	MEDIUM	PPE (see HASP "PPE" section)			
Mitigated Risk:	LOW	JSAs			
Comments:					
Hazard #2					
Motion - Cuts and scrapes - Injury from moving object impacting skin or eye					
Suggested FHSB Ref:	2.5, 3.22	To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:	MEDIUM	Site Awareness			
Mitigated Risk:	LOW	PPE (see HASP "PPE" section)			
Comments:					
Hazard #3					
None					
Suggested FHSB Ref:	None	To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:	Not Ranked	Select			
Mitigated Risk:	Not Ranked	Select			
Comments:					
Hazard #4					
None					
Suggested FHSB Ref:	None	To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:	Not Ranked	Select			
Mitigated Risk:	Not Ranked	Select			
Comments:					
Hazard #5					
None					
Suggested FHSB Ref:	None	To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:	Not Ranked	Select			
Mitigated Risk:	Not Ranked	Select			
Comments:					
Hazard #6					
None					
Suggested FHSB Ref:	None	To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:	Not Ranked	Select			
Mitigated Risk:	Not Ranked	Select			
Comments:					

Task Specific HARC (continued)

Task 4:		Survey - Unmanned aerial vehicle (drone) operation			
HARC Unmitigated Hazard Types (H-High, M-Medium, L-Low):					FHSHB Ref: 3.9
Biological*	-	Chemical	-	Driving*	-
Environmental*	-	Gravity*	M	Mechanical	-
Personal Safety	L	Pressure	-	Radiation	-
				Electrical	-
				Motion*	M
				Sound	L
Hazard #1					
Mechanical - Pinch point - Injury by pinching of body part in mechanical process					
Suggested FHSHB Ref:		3.27.4		To mitigate this hazard, use TRACK and the following:	
Overall Unmitigated Risk:		MEDIUM		PPE (see HASP "PPE" section)	
Mitigated Risk:		LOW		Site Awareness	
Comments:					
Hazard #2					
Environmental - Sun or wind -Skin injury from sun or wind exposure					
Suggested FHSHB Ref:		3.12		To mitigate this hazard, use TRACK and the following:	
Overall Unmitigated Risk:		MEDIUM		PPE (see HASP "PPE" section)	
Mitigated Risk:		LOW		JSAs	
Comments:					
Hazard #3					
Gravity - Struck by - Injury from falling object					
Suggested FHSHB Ref:		3.26.2		To mitigate this hazard, use TRACK and the following:	
Overall Unmitigated Risk:		MEDIUM		PPE (see HASP "PPE" section)	
Mitigated Risk:		LOW		Job Briefing/Site Awareness	
Comments:					
Hazard #4					
None					
Suggested FHSHB Ref:		None		To mitigate this hazard, use TRACK and the following:	
Overall Unmitigated Risk:		Not Ranked		Select	
Mitigated Risk:		Not Ranked		Select	
Comments:					
Hazard #5					
None					
Suggested FHSHB Ref:		None		To mitigate this hazard, use TRACK and the following:	
Overall Unmitigated Risk:		Not Ranked		Select	
Mitigated Risk:		Not Ranked		Select	
Comments:					
Hazard #6					
None					
Suggested FHSHB Ref:		None		To mitigate this hazard, use TRACK and the following:	
Overall Unmitigated Risk:		Not Ranked		Select	
Mitigated Risk:		Not Ranked		Select	
Comments:					

Task Specific HARC (continued)

Task 5:		Debris/Demolition - Contractor oversight			
HARC Unmitigated Hazard Types (H-High, M-Medium, L-Low):		FHSB Ref:		4.8	
Biological*	L	Chemical	L	Driving*	-
Environmental*	L	Gravity*	M	Mechanical	H
Personal Safety	-	Pressure	L	Radiation	-
				Electrical	M
				Motion*	H
				Sound	M
Hazard #1					
Motion - Struck by - Bodily injury from impact with moving object					
Suggested FHSB Ref:	2.5, 3.22		To mitigate this hazard, use TRACK and the following:		
Overall Unmitigated Risk:	MEDIUM		Site Awareness		
Mitigated Risk:	LOW		JSAs		
Comments:					
Hazard #2					
Motion - Struck by - Bodily injury from impact with moving object					
Suggested FHSB Ref:	2.5, 3.22		To mitigate this hazard, use TRACK and the following:		
Overall Unmitigated Risk:	MEDIUM		Site Awareness		
Mitigated Risk:	LOW		Job Briefing/Site Awareness		
Comments:					
Hazard #3					
None					
Suggested FHSB Ref:	None		To mitigate this hazard, use TRACK and the following:		
Overall Unmitigated Risk:	Not Ranked		Select		
Mitigated Risk:	Not Ranked		Select		
Comments:					
Hazard #4					
None					
Suggested FHSB Ref:	None		To mitigate this hazard, use TRACK and the following:		
Overall Unmitigated Risk:	Not Ranked		Select		
Mitigated Risk:	Not Ranked		Select		
Comments:					
Hazard #5					
None					
Suggested FHSB Ref:	None		To mitigate this hazard, use TRACK and the following:		
Overall Unmitigated Risk:	Not Ranked		Select		
Mitigated Risk:	Not Ranked		Select		
Comments:					
Hazard #6					
None					
Suggested FHSB Ref:	None		To mitigate this hazard, use TRACK and the following:		
Overall Unmitigated Risk:	Not Ranked		Select		
Mitigated Risk:	Not Ranked		Select		
Comments:					

Task Specific HARC (continued)

Task 6:		Monitoring - Air monitoring using hand held or stationary equipment - non-radiation			
HARC Unmitigated Hazard Types (H-High, M-Medium, L-Low):		FHSB Ref:		5.7	
Biological*	L	Chemical	M	Driving*	-
Environmental*	L	Gravity*	L	Mechanical	L
Personal Safety	L	Pressure	-	Radiation	-
				Electrical	L
				Motion*	L
				Sound	L
Hazard #1					
Mechanical - Pinch point - Injury by pinching of body part in mechanical process					
Suggested FHSB Ref:	3.27.4	To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:	MEDIUM	Inspections			
Mitigated Risk:	LOW	Site Awareness			
Comments:					
Hazard #2					
Chemical - solids/particulates, skin or eye irritation/damage/allergy					
Suggested FHSB Ref:	3.9, 3.22, 3.30, 3.33	To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:	MEDIUM	HASP			
Mitigated Risk:	LOW	PPE (see HASP "PPE" section)			
Comments:					
Hazard #3					
Chemical - gasses - injury due to inhalation, asphyxiation, skin/eye contact					
Suggested FHSB Ref:	3.30, 3.32	To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:	MEDIUM	JSAs			
Mitigated Risk:	LOW	Job Briefing/Site Awareness			
Comments:					
Hazard #4					
Electrical - Electrocution or arc flash - Injury or death from electrocution or arc flash from electrical					
Suggested FHSB Ref:	3.25,	To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:	HIGH	HASP			
Mitigated Risk:	MEDIUM	PPE (see HASP "PPE" section)			
Comments:					
Hazard #5					
None					
Suggested FHSB Ref:	None	To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:	Not Ranked	Select			
Mitigated Risk:	Not Ranked	Select			
Comments:					
Hazard #6					
None					
Suggested FHSB Ref:	None	To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:	Not Ranked	Select			
Mitigated Risk:	Not Ranked	Select			
Comments:					

Task Specific HARC (continued)

Task 7:	Monitoring - Arcadis oversight of air monitoring using handheld or stationary equip						
HARC Unmitigated Hazard Types (H-High, M-Medium, L-Low):			FHSB Ref: 5.7				
Biological*	L	Chemical	L	Driving*	-	Electrical	L
Environmental*	L	Gravity*	L	Mechanical	L	Motion*	L
Personal Safety	L	Pressure	-	Radiation	-	Sound	L
Hazard #1							
Mechanical - Pinch point - Injury by pinching of body part in mechanical process							
Suggested FHSB Ref:	3.27.4			To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:	MEDIUM			Inspections			
Mitigated Risk:	LOW			Site Awareness			
Comments:							
Hazard #2							
None							
Suggested FHSB Ref:	None			To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:	Not Ranked			Select			
Mitigated Risk:	Not Ranked			Select			
Comments:							
Hazard #3							
None							
Suggested FHSB Ref:	None			To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:	Not Ranked			Select			
Mitigated Risk:	Not Ranked			Select			
Comments:							
Hazard #4							
None							
Suggested FHSB Ref:	None			To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:	Not Ranked			Select			
Mitigated Risk:	Not Ranked			Select			
Comments:							
Hazard #5							
None							
Suggested FHSB Ref:	None			To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:	Not Ranked			Select			
Mitigated Risk:	Not Ranked			Select			
Comments:							
Hazard #6							
None							
Suggested FHSB Ref:	None			To mitigate this hazard, use TRACK and the following:			
Overall Unmitigated Risk:	Not Ranked			Select			
Mitigated Risk:	Not Ranked			Select			
Comments:							

Task Specific HARC (continued)

Task 8:		Decontamination - Arcadis oversight of contractors performing decontamination			
HARC Unmitigated Hazard Types (H-High, M-Medium, L-Low):					FHSHB Ref: 3.10.4
Biological*	L	Chemical	L	Driving*	-
Environmental*	L	Gravity*	M	Mechanical	-
Personal Safety	L	Pressure	L	Radiation	-
				Electrical	-
				Motion*	L
				Sound	M
Hazard #1					
Chemical - liquids, skin or eye irritation/damage/allergy					
Suggested FHSHB Ref:	3.9, 3.22, 3.30, 3.33		To mitigate this hazard, use TRACK and the following:		
Overall Unmitigated Risk:	MEDIUM		JSAs		
Mitigated Risk:	LOW		PPE (see HASP "PPE" section)		
Comments:					
Hazard #2					
Chemical- solids/particulates - injury or illness from skin absorption					
Suggested FHSHB Ref:	3.9, 3.22, 3.30, 3.33		To mitigate this hazard, use TRACK and the following:		
Overall Unmitigated Risk:	MEDIUM		PPE (see HASP "PPE" section)		
Mitigated Risk:	LOW		JSAs		
Comments:					
Hazard #3					
None					
Suggested FHSHB Ref:	None		To mitigate this hazard, use TRACK and the following:		
Overall Unmitigated Risk:	Not Ranked		Select		
Mitigated Risk:	Not Ranked		Select		
Comments:					
Hazard #4					
None					
Suggested FHSHB Ref:	None		To mitigate this hazard, use TRACK and the following:		
Overall Unmitigated Risk:	Not Ranked		Select		
Mitigated Risk:	Not Ranked		Select		
Comments:					
Hazard #5					
None					
Suggested FHSHB Ref:	None		To mitigate this hazard, use TRACK and the following:		
Overall Unmitigated Risk:	Not Ranked		Select		
Mitigated Risk:	Not Ranked		Select		
Comments:					
Hazard #6					
None					
Suggested FHSHB Ref:	None		To mitigate this hazard, use TRACK and the following:		
Overall Unmitigated Risk:	Not Ranked		Select		
Mitigated Risk:	Not Ranked		Select		
Comments:					

Task Specific HARC (continued)

Task 9:		Office work - Field trailer			
HARC Unmitigated Hazard Types (H-High, M-Medium, L-Low):		FHSB Ref:		3.2	
Biological*	L	Chemical	-	Driving*	-
Environmental*	-	Gravity*	L	Mechanical	-
Personal Safety	-	Pressure	-	Radiation	-
				Electrical	-
				Motion*	L
				Sound	L
Hazard #1					
Personal safety - Diet and medications- Injury or illness from improper eating and hydration or use of					
Suggested FHSB Ref:		2.2, 2.11		To mitigate this hazard, use TRACK and the following:	
Overall Unmitigated Risk:		MEDIUM		JSAs	
Mitigated Risk:		LOW		Job Briefing/Site Awareness	
Comments:					
Hazard #2					
Personal safety - Fatigue - Injury or illness caused while working when fatigued					
Suggested FHSB Ref:		3.21		To mitigate this hazard, use TRACK and the following:	
Overall Unmitigated Risk:		MEDIUM		Job Briefing/Site Awareness	
Mitigated Risk:		LOW		Job Rotation	
Comments:					
Hazard #3					
None					
Suggested FHSB Ref:		None		To mitigate this hazard, use TRACK and the following:	
Overall Unmitigated Risk:		Not Ranked		Select	
Mitigated Risk:		Not Ranked		Select	
Comments:					
Hazard #4					
None					
Suggested FHSB Ref:		None		To mitigate this hazard, use TRACK and the following:	
Overall Unmitigated Risk:		Not Ranked		Select	
Mitigated Risk:		Not Ranked		Select	
Comments:					
Hazard #5					
None					
Suggested FHSB Ref:		None		To mitigate this hazard, use TRACK and the following:	
Overall Unmitigated Risk:		Not Ranked		Select	
Mitigated Risk:		Not Ranked		Select	
Comments:					
Hazard #6					
None					
Suggested FHSB Ref:		None		To mitigate this hazard, use TRACK and the following:	
Overall Unmitigated Risk:		Not Ranked		Select	
Mitigated Risk:		Not Ranked		Select	
Comments:					

Task Specific HARC (continued)

Task 10:		Oversight - Oversight of contractors			
HARC Unmitigated Hazard Types (H-High, M-Medium, L-Low):					FHSB Ref: 3.9
Biological*	L	Chemical	L	Driving*	-
Environmental*	L	Gravity*	L	Mechanical	L
Personal Safety	L	Pressure	L	Radiation	L
				Electrical	L
				Motion*	L
				Sound	M
Hazard #1					
None					
Suggested FHSB Ref:		None		To mitigate this hazard, use TRACK and the following:	
Overall Unmitigated Risk:		Not Ranked		Select	
Mitigated Risk:		Not Ranked		Select	
Comments:					
Hazard #2					
None					
Suggested FHSB Ref:		None		To mitigate this hazard, use TRACK and the following:	
Overall Unmitigated Risk:		Not Ranked		Select	
Mitigated Risk:		Not Ranked		Select	
Comments:					
Hazard #3					
None					
Suggested FHSB Ref:		None		To mitigate this hazard, use TRACK and the following:	
Overall Unmitigated Risk:		Not Ranked		Select	
Mitigated Risk:		Not Ranked		Select	
Comments:					
Hazard #4					
None					
Suggested FHSB Ref:		None		To mitigate this hazard, use TRACK and the following:	
Overall Unmitigated Risk:		Not Ranked		Select	
Mitigated Risk:		Not Ranked		Select	
Comments:					
Hazard #5					
None					
Suggested FHSB Ref:		None		To mitigate this hazard, use TRACK and the following:	
Overall Unmitigated Risk:		Not Ranked		Select	
Mitigated Risk:		Not Ranked		Select	
Comments:					
Hazard #6					
None					
Suggested FHSB Ref:		None		To mitigate this hazard, use TRACK and the following:	
Overall Unmitigated Risk:		Not Ranked		Select	
Mitigated Risk:		Not Ranked		Select	
Comments:					

Hazard Communication (HAZCOM)/Global Harmonization System (GHS)

☐ HAZCOM/GHS for this project is managed by the client or general contractor

List the chemicals anticipated to be used by Arcadis on this project per HAZCOM/GHS requirements.

(Modify quantities as needed)

Preservatives		Qty	Decontamination		Qty	Calibration		Qty.
<input checked="" type="checkbox"/>	Not applicable		<input checked="" type="checkbox"/>	Not applicable		<input type="checkbox"/>	Not applicable	
<input type="checkbox"/>	Hydrochloric acid	<500 ml	<input type="checkbox"/>	Alconox	≤ 5 lbs	<input checked="" type="checkbox"/>	Isobutylene/air	1 cyl
<input type="checkbox"/>	Nitric acid	<500 ml	<input type="checkbox"/>	Liquinox	≤ 1 gal	<input type="checkbox"/>	Methane/air	1 cyl
<input type="checkbox"/>	Sulfuric acid	<500 ml	<input type="checkbox"/>	Acetone	≤ 1 gal	<input type="checkbox"/>	Pentane/air	1 cyl
<input type="checkbox"/>	Sodium hydroxide	<500 ml	<input type="checkbox"/>	Methanol	≤ 1 gal	<input type="checkbox"/>	Hydrogen/air	1 cyl
<input type="checkbox"/>	Zinc acetate	<500 ml	<input type="checkbox"/>	Hexane	≤ 1 gal	<input type="checkbox"/>	Propane/air	1 cyl
<input type="checkbox"/>	Ascorbic acid	<500 ml	<input type="checkbox"/>	Isopropyl alcohol	≤ 4 gal	<input type="checkbox"/>	Hydrogen sulfide/air	1 cyl
<input type="checkbox"/>	Acetic acid	<500 ml	<input type="checkbox"/>	Nitric acid	≤ 1 L	<input type="checkbox"/>	Carbon monoxide/air	1 cyl
<input type="checkbox"/>	Isopropyl alcohol	< 4 gal.	<input type="checkbox"/>	Other:		<input type="checkbox"/>	pH standards (4,7,10)	≤ 1 gal
<input type="checkbox"/>	Formalin (<10%)	< 4 gal.				<input type="checkbox"/>	Conductivity standards	≤ 1 gal
<input type="checkbox"/>	Methanol	<500 ml				<input type="checkbox"/>	Other:	
<input type="checkbox"/>	Sodium bisulfate	<500 ml						

Fuels		Qty.	Kits		Qty.
<input type="checkbox"/>	Not applicable		<input checked="" type="checkbox"/>	Not applicable	
<input checked="" type="checkbox"/>	Gasoline	≤ 5 gal	<input type="checkbox"/>	Hach (specify):	1 kit
<input type="checkbox"/>	Diesel	≤ 5 gal	<input type="checkbox"/>	DTECH (specify):	1 kit
<input type="checkbox"/>	Kerosene	≤ 5 gal	<input type="checkbox"/>	Other:	1 kit
<input type="checkbox"/>	Propane	1 cyl			
<input type="checkbox"/>	Other:				

Remediation		Qty.	Other:		Qty.	DOT(1):		Qty.
<input checked="" type="checkbox"/>	Not applicable		<input checked="" type="checkbox"/>	Not applicable		<input type="checkbox"/>	MOT eligible soils	
<input type="checkbox"/>			<input type="checkbox"/>	Spray paint	≤ 6 cans	<input type="checkbox"/>	MOT eligible water	
<input type="checkbox"/>			<input type="checkbox"/>	WD-40	≤ 1 can	<input type="checkbox"/>	MOT eligible solids	
<input type="checkbox"/>			<input type="checkbox"/>	Pipe cement	≤ 1 can	<input type="checkbox"/>	MOT eligible liquids	
<input type="checkbox"/>			<input type="checkbox"/>	Pipe primer	≤ 1 can	<input type="checkbox"/>		
<input type="checkbox"/>			<input type="checkbox"/>	Mineral spirits	≤ 1 gal	<input type="checkbox"/>		

(1) Attach applicable Materials of Trade (MOT) Quick Form to shipping determination or this HASP. SDS not generally applicable to this category.

SDSs for this project are attached to this HASP.

Contractor SDSs will be submitted to Arcadis in advance of work and will be filed with Arcadis SDSs as indicated above.

This project will not be utilizing materials subject to the HAZCOM Standard in bulk storage. In this HASP, bulk storage means any material stored on the project site in a bulk packaging >119 gallons (> 450 L) liquid capacity or a palletized quantity of a material in packaging ≤119 gallons (≤450 L) liquid capacity.

Air Monitoring

- ☐ There are no atmospheric chemical, radiological, or particulate hazards on this project requiring air monitoring.
- ☒ Air monitoring is the responsibility of the client, contractor, or subcontractor.

Constituents of Interest:

Time Weighted Averages (TWAs) are ACGIH 8-Hr Threshold Limit Values (TLVs) unless noted.

Particulates n.o.s.		Anticipated Breathing Zone Concentration <=	3	mg/m3
TWA	3 mg/m3, respirable	LEL/UEL (%):	NA/NA	
STEL	NA	VD (Air = 1):	NA	
IDLH	NA	VP (mmHg):	NA	

PCBs		Anticipated Breathing Zone Concentration <=	0.5	mg/m3
TWA	0.5 mg/m3, skin	LEL/UEL (%):	NA/NA	
STEL	NA	VD (Air = 1):	NA	
IDLH	5 mg/m3, NIOSH	VP (mmHg):	0.001	

Silica		Anticipated Breathing Zone Concentration <=	0.025	mg/m3
TWA	0.025 mg/m3, respirable, OSHA Reg. See Notes	LEL/UEL (%):	NA/NA	
STEL	NA	VD (Air = 1):	NA	
IDLH	25 mg/m3, NIOSH	VP (mmHg):	NA	

Asbestos		Anticipated Breathing Zone Concentration <=	0.1	f/cc
TWA	0.1 f/cc, MONITORING NOTICE See Notes	LEL/UEL (%):	NA/NA	
STEL	NA	VD (Air = 1):	NA	
IDLH	NA	VP (mmHg):	NA	

None				
TWA	NA	LEL/UEL (%):	NA	
STEL	NA	VD (Air = 1):	NA	
IDLH	NA	VP (mmHg):	NA	

None				
TWA	NA	LEL/UEL (%):	NA	
STEL	NA	RGD (Air = 1):	NA	
IDLH	NA	VP (mmHg):	NA	

TWA - Time Weighted Average (ACGIH TLV unless noted) LEL/UEL - Lower /Upper Explosive Limit
STEL - Short Term Exposure Limit RGD - Relative Gas Density
IDLH - Immediately Dangerous to Life and Health VP - Vapor Pressure

Notes:

One or more constituents above is listed with a skin notation. Avoid conditions where dusts, mists, or aerosols are created. Avoid skin contact with impacted media.

Asbestos monitoring must be addressed through a HASP supplement or permit. Particulate monitoring action levels in this HASP do not take asbestos into account when computing action levels.

As noted, one or more of the above constituents is an OSHA regulated substance. If exposure is expected to be above the TWA or STEL, contact a CIH or CSP for assistance unless otherwise permitted by a substance specific plan

Required Monitoring Instruments, Action Levels and Monitoring Frequency

Gray fields below are not automated. Make necessary selections from drop down menus.

Photoionization Detector

Select Lamp: 11.7 eV

Computed action levels (PID units) (1):		Computed action levels have been manually adjusted.
<	2.0	Continue working
	2.0 - 4.1	Levels sustained > 5 minutes, monitor continuously and review engineering controls and PPE. Proceed with caution.
	4.1	Stop work and contact SSO

(1) Computed action levels are for PIDs which have not been programmed to correct TLVs for specific constituents or mixtures.

Particulate/Aerosol monitoring is required.

Action levels are in mg/m3		Computed action levels have been manually adjusted.
<	1.5	Continue working
	1.50-3	Levels sustained > 5 minutes, monitor continuously and review engineering controls and PPE. Proceed with caution.
	3	Stop work and contact SSO

Breathing zone air monitoring using the above instruments will be performed at the following frequency:

Continuously

#N/A

Multigas (including LEL/O2 and Hg vapor) monitoring is not required.

LEL/O2 Meter	0-5% LEL	Continue work
	>5-10% LEL	Continually monitor, review engineering controls, proceed with caution
LEL/O2 Monitoring Not Required	>10% LEL	Stop work, evacuate, contact SSO
	19.5%-23.5% O2	Normal, continue work
	<19.5% O2	O2 deficient, stop work, evacuate, contact SSO
	>23.5% O2	O2 enriched, stop work, evacuate, contact SSO

Additional Gas/Vapor Monitoring is Not Required

	1/2 TLV	Stop Work Action Level	Comments
<input type="checkbox"/> Ammonia	12.5 ppm	25 ppm	
<input type="checkbox"/> Carbon dioxide	2500 ppm	5000 ppm	
<input type="checkbox"/> Carbon monoxide	12.5 ppm	25 ppm	
<input type="checkbox"/> Chlorine	0.05 ppm	0.1 ppm	
<input type="checkbox"/> Hydrogen cyanide	2.35 ppm (skin)	4.7 ppm* (skin)	
<input type="checkbox"/> Hydrogen sulfide	0.5 ppm	1 ppm	
<input type="checkbox"/> Methane	Simple Asphyxiant		
<input type="checkbox"/> Nitrogen dioxide	0.1 ppm	0.2 ppm	
<input type="checkbox"/> Phosphine	0.025 ppm	0.05 ppm	
<input type="checkbox"/> Sulfur dioxide	0.125 ppm	0.25* ppm	
<input type="checkbox"/> Mercury vapor	0.0125 mg/m3	0.025 mg/m3	

* Ceiling or STEL value

All air-monitoring instruments must be calibration checked daily, if used, per manufacturer's instructions. Calibration checks, including calibration gases used, must be documented.

Compound specific monitoring using indicator tubes or chips is not required.

Indicator:	<input type="checkbox"/> Tube <input type="checkbox"/> Chip	\leq TWA	Continue work
		$>$ TWA	Stop work, review engineering controls and PPE, contact SSO
Compound(s):			

Indicator tube/chip monitoring frequency:

Tick and Poisonous Plant Hazards

For all projects with outdoor work, biological hazards must be addressed in the tailgate safety meeting each day. The following controls must be used to mitigate biological hazards while working and must also be discussed in the tailgate safety meeting.

Controlling Tick Hazards

Risk Guide for Ticks:

Low	Paved areas; parking lots; well manicured lawns and fields; no work taking place within 15 feet of vegetated areas; work in REGIONS with no tick populations; sub-freezing temperatures, snow or ice cover on ground.*
Medium	Brush hogged fields, wetlands, and grasslands; forested areas with little undergrowth; weeds less than knee height; moderately dense foliage; sporadic or moderately vegetated shaded areas; average leaf accumulation and decaying material on the ground; work taking place in fields after application of insecticide; work in REGIONS with a recognized moderate tick populations; outdoor work during spring, summer and fall months.*
High	Uncut fields, wetlands, forested areas, and grasslands; weeds taller than knee height; heavy dense foliage; heavily vegetated shaded areas; excessive accumulations of leaves and decaying material on the ground; work in REGIONS with recognized heavy tick populations; areas with posted tick hazard warnings; outdoor work during spring, summer and fall months.*

*Cold weather does not eliminate risk of exposure to deer ticks as they may be active all year in areas that experience subfreezing temperatures.

Ticks are ranked as a **Medium** risk for this project

Care should be taken to avoid walking through or working in tall grasses, overgrown or bushy vegetation to the extent reasonable and practical. No single control is effective against ticks.

Select required controls below:

Engineering Controls

- ☐ Mowing of work area
- ☒ Clearing overgrown vegetation
- ☐ Pesticide application
- ☐ Other: _____

Administrative Controls

- ☒ Complete tick check morning/evening
- ☐ Scheduled tick check: _____
- ☒ Inspect backpacks, equipment cases, etc. daily
- ☒ Vehicle cab - maintain good housekeeping
- ☐ Other: _____

Personal Protective Equipment

- ☒ Light colored clothing
- ☒ Light colored hat/hardhat
- ☒ Pants tucked in boots
- ☒ Shirt tucked into pants
- ☒ Long sleeved shirt and long pants
- ☐ White Tyvek pants
- ☐ White coveralls/Tyvek
- ☒ Taped cuffs/pant legs
- ☐ Tick gators
- ☐ Double sided tape/duct tape sticky side out
- ☐ Insect mesh/netting for face/head or whole body suit
- ☐ Other: _____

Heat stress signs/symptoms and controls to also be addressed in tailgate safety meeting if temperatures >80°F

Repellents

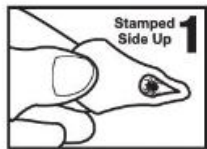
- ☐ Repellents will not be used
- ☐ Permethrin impregnated clothing (purchased)
- ☐ Permethrin (0.5% self applied/treated to clothing)
- ☐ Deet 20-40% applied to skin
- ☐ Other: _____

Tick Removal and First Aid

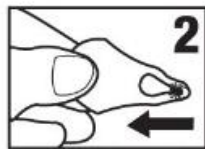
Ticks removed within 24 hours of embedment represent a very low risk for adverse outcomes. Perform tick checks as directed above. To properly remove a tick:

Using a Tick Removal Tool

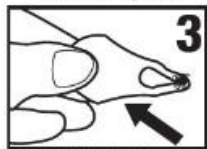
3 Easy Steps To Complete Tick Removal



Place the Key over the tick in the tear-drop hole.



Slide Tick Key flush against the skin to entrap tick in tapered slot.

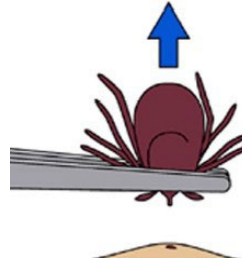


Do NOT Lift Tick Key. Continue pulling quickly in the same direction for proper removal.

- Early and proper tick removal is known to help prevent tick-borne diseases.
- Tick Key is made of durable, high-strength anodized aluminum. Disinfect with alcohol after each use. Thoroughly wash bite area and hands.

Use as directed. For tick removal only.

Using Tweezers



- 1) Use point tip tweezers, if available, to reduce potential of crushing the ticks body
- 2) Grasp the tick as close to skin as possible
- 3) Pull upward with even pressure.

Do not crush tick with fingers

After removal, wash affected area with alcohol or iodine. Wash hands thoroughly after removal. Document date/time of the removal in field notes, field form or H&S app. If rash or fever develops, call WorkCare

Poisonous Plants (Poison Ivy, Poison Oak, Poison Sumac)

All work outdoors, regardless of time of year, must address poisonous plant hazards and controls in the tailgate safety meeting. For low risk projects, the discussion should consider potential vegetation exposure near fences, buildings, work near trees, etc.

Controlling Exposure to Poisonous Plants

Poisonous Plants are ranked as a **Low** risk on this project

Select required controls below:

Engineering Controls

- ☒ Not applicable
- ☐ Mowing of work area
- ☐ Clearing overgrown vegetation
- ☐ Herbicide application
- ☐ Other: _____

Administrative Controls

- ☒ Identify and avoid (see ID Quick Guide below)
- ☒ Watch for signs or symptoms of exposure
- ☒ Vehicle cab - maintain good housekeeping
- ☐ Other: _____

Personal Protective Equipment

- ☒ Gloves
- ☒ Hat/hardhat/head covering
- ☒ Pants tucked in boots
- ☒ Shirt tucked into pants
- ☒ Long sleeved shirt and long pants

- ☐ White coveralls/Tyvek
- ☐ Taped cuffs/pant legs
- ☐ Dust mask (during burning activities, etc.)
- ☐ Other: _____

Heat stress signs/symptoms and controls to also be addressed in tailgate safety meeting if temperatures >80°F

Repellents

<input type="checkbox"/>	Repellents will not be used
<input type="checkbox"/>	Barrier creams
<input type="checkbox"/>	Other: _____

Skin Decontamination

<input checked="" type="checkbox"/>	Wash with post-exposure soap and water
<input checked="" type="checkbox"/>	Wash with soap and water (use hot water if available)
<input checked="" type="checkbox"/>	Hot shower at end of day
<input type="checkbox"/>	Other: _____

Equipment Decontamination

Due to the low risk associated with poisonous plants on this project, portable equipment and tools may still have a potential to be contaminated with urushiol (the oil that causes allergic reactions and dermatitis in poisonous plants covered by this plan). It is recommend to decontaminate handles, grips, and hand holds of tools and equipment with post-exposure soap and water or alcohol spray (if safe to do so for the equipment/tool being decontaminated) as a best practice.

Clothing Decontamination

Wash work clothing in hot water separate from other clothing. Even though there is a low risk for poisonous plants on this project, work boots should be considered potentially contaminated with urushiol. Decontaminate with post-exposure soap and water or hot soap and water. If safe for the boot, consider spraying with alcohol spray of post exposure soap is not available.

First Aid

If skin irritation or other signs of allergic reaction develops contact WorkCare for assistance. Document date and time of exposure, if known, in field notes, field form or H&S app.

Identification Quick Guide

Ticks:

American Dog Tick



Blacklegged (Deer) Tick



Brown Dog Tick



Groundhog Tick



Gulf Coast Tick



Lone Star Tick



Rocky Mountain Wood Tick



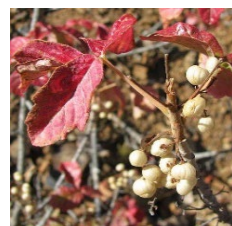
Soft Tick



Poison Ivy:



Poison Oak:



Poison Sumac:



For other biological hazards, address the hazards and controls in the JSA for the work task.

Personal Protective Equipment (PPE)

See JSA or Permit for the task being performed for required PPE. If work is not conducted under a JSA or Permit, refer to the governing document for PPE requirements. At a minimum, the following checked PPE is required for all tasks during field work (outside of field office trailers and vehicles) not covered by a JSA or Permit on this project:

Minimum PPE required to be worn by all staff on project:

Specify Type:

<input checked="" type="checkbox"/>	Hard hat	<input type="checkbox"/>	Snake chaps/guards	<input type="checkbox"/>	Coveralls:	
<input checked="" type="checkbox"/>	Safety glasses	<input type="checkbox"/>	Briar chaps	<input type="checkbox"/>	Apron:	
<input type="checkbox"/>	Safety goggles	<input type="checkbox"/>	Chainsaw chaps	<input type="checkbox"/>	Chem. resistant gloves:	
<input type="checkbox"/>	Face shield	<input type="checkbox"/>	Sturdy boot	<input type="checkbox"/>	Gloves other:	
<input type="checkbox"/>	Hearing protection	<input checked="" type="checkbox"/>	Steel or comp. toe boot	<input type="checkbox"/>	Chemical boot:	
<input type="checkbox"/>	Rain suit	<input type="checkbox"/>	Metatarsal boot	<input type="checkbox"/>	Boot other:	
<input type="checkbox"/>	Other:			<input checked="" type="checkbox"/>	Traffic vest, shirt or coat:	Class II
				<input type="checkbox"/>	Life vest:	

Task specific PPE:

Comments:

See **Tick and Poisonous Plant Hazards** section for additional PPE information.

Medical Surveillance

All Arcadis employees performing field work will be required to be current in HAZWOPER medical surveillance.

Client and DOT mandated drug and alcohol testing is not required for this project and will not be performed.

Hazardous Materials Shipping and Transportation

All materials subject to the shipping determination process will only be transported in an Arcadis vehicle or lab courier on this project. The Arcadis generic Materials of Trade shipping determination is attached to this HASP. If a lab courier is utilized, the employee driving the vehicle will be an employee of the laboratory.

Traffic Safety and Traffic Safety Plans (TSPs)

The scope of work on this project will not expose Arcadis workers or subcontractors to vehicular traffic. A traffic safety plan will not be required.

Arcadis Commercial Motor Vehicles (CMVs)

CMVs operated by Arcadis employees on public roadways will not be utilized on this project. Arcadis defines a CMV as any single vehicle with a gross vehicle weight rating (GVWR) $\geq 10,001$ pounds or a truck and trailer combination with a combined GVWR $\geq 10,001$ pounds (GVWR of truck + GVWR of trailer = $\geq 10,001$ pounds).

Site Control

Site control requirements are addressed in the applicable task JSA for this project. JSAs requiring site control are attached to this HASP.

Decontamination

Decontamination protocols are addressed in the applicable task JSA(s) for this project. The applicable JSAs are attached to this HASP.

Sanitation

Restroom facilities and potable water will be provided by the client for this project. Unless alternate requirements are stipulated in a plan supplement (i.e. Heat Injury and Illness Prevention Plan), permit or JSA, temporary restroom facilities will be provided with one toilet for every 20 project workers and bottled or non-plumbed potable water will be provided to project workers at 1 gallon/worker/day.

Safety Briefings

Arcadis field staff will attend safety briefings provided by the client. The content of the safety briefing will be documented by at least one Arcadis employee on a Tailgate Safety Briefing Form or logbook. If the client does not perform routine safety briefings (i.e. once daily), Arcadis employee(s) on the project site will perform a daily safety briefing or safety review and document the briefing/review on a Tailgate Safety Briefing Form or logbook.

Employee Health and Safety Engagement

The CPM or APM is responsible for reviewing and establishing H&S engagement goals for the project. These goals are summarized below.

Hazard Observations (via H&S App or TIP) required at the following frequency on this project:

1 per week

Close Call reporting (via H&S app) goals for this project:

1 during the completion of the project

Other (specify):

Safety Equipment and Supplies

Safety equipment/supply requirements are addressed in the JSA or Permit for the task being performed. If work is not performed under a JSA or Permit, the following safety equipment is required to be present on site in good condition unless otherwise noted (Check all that apply):

- | | |
|-------------------------------------|--------------------------|
| <input checked="" type="checkbox"/> | First aid kit |
| <input type="checkbox"/> | Bloodborne pathogens kit |
| <input checked="" type="checkbox"/> | Fire extinguisher |
| <input type="checkbox"/> | Eyewash (ANSI compliant) |
| <input checked="" type="checkbox"/> | Eyewash (bottle) |
| <input checked="" type="checkbox"/> | Drinking water |
| <input type="checkbox"/> | Other: |

- | | |
|-------------------------------------|---|
| <input type="checkbox"/> | Insect repellent: |
| <input checked="" type="checkbox"/> | Sunscreen |
| <input type="checkbox"/> | Air horn |
| <input checked="" type="checkbox"/> | Traffic cones |
| <input type="checkbox"/> | 2-way radios |
| <input type="checkbox"/> | Heat stress monitor |
| <input type="checkbox"/> | See Tick and Poisonous Plant Hazards section for additional equipment/supply information. |

International Travel

International travel is not required for this project.

Spill Control and Containment

Spill control and containment planning and implementation, if required, is the responsibility of another contractor working with Arcadis. Arcadis will validate the contractor has the necessary equipment and supplies on site to control and contain spills prior to start of work.

Use of Electronic Devices in Areas of Increased Safety Risk

Use of electronic devices (tablets, laptops, and/or cell phones) to collect data or document work is not anticipated on this project. If electronic devices are used, distraction hazards and use must be addressed and documented in the job briefing/safety briefing.



August 8, 2022

To whom it may concern:

Arcadis and its affiliates ("Arcadis") is a firm with experienced professionals and staff who support projects, activities, infrastructure and businesses essential to maintaining the public's health, safety and welfare.

Arcadis has been authorized by National Grid to complete the following activities:
Demolition Contractor Oversight
Community Air Monitoring

Arcadis personnel will be identifiable by:

- | | |
|-------------------------------------|-------------------------------------|
| <input checked="" type="checkbox"/> | Branded hard hat and/or safety vest |
| <input type="checkbox"/> | Branded vehicle |
| <input type="checkbox"/> | Buisness card or ID badge |
| <input type="checkbox"/> | Other: _____ |

If you have any questions related to the work being completed or Arcadis' presence at this location, please contact the following:

John Brussel	Arcadis Project Manager	at	315-671-9441
Steven DiLella	National Grid PM	at	585-520-5192

Signatures

I have read, understand and agree to abide by the requirements presented in this health and safety plan.
I understand that I have the absolute right to stop work if I recognize an unsafe condition affecting my work until corrected.

Printed Name	Signature	Date

Add additional sheets if necessary

You have an absolute right to STOP WORK if unsafe conditions exist!

Control Number: TSM- 30124290



TSM + project number plus date as follows: xxxxxxxx.xxxx.xxxx - dd/mm/year

TAILGATE HEALTH & SAFETY MEETING FORM

Project Name:	Project Location:
---------------	-------------------

Date:	Time:	Conducted by:	Signature/Title:
-------	-------	---------------	------------------

Issues or concerns from previous day's activities:

Task anticipated to be performed today:

☐ Additional permits/checklists attached

USE TRACK! Evaluate the hazards (h) for the tasks being performed today and rank as Low (L), Medium (M) or High (H). Use relevant JSAs, FHSB, permit or other work standard to communicate controls (c) to be used to eliminate or mitigate identified hazards.

<input type="checkbox"/> Gravity (i.e., ladder, trips) (L M H) h: _____ c: _____	<input type="checkbox"/> Motion (i.e., traffic, machinery) (L M H) h: _____ c: _____	<input type="checkbox"/> Mechanical (i.e., augers, motors) (L M H) h: _____ c: _____
--	--	--

<input type="checkbox"/> Electrical (i.e., utilities) (L M H) h: _____ c: _____	<input type="checkbox"/> Pressure (i.e., gas cyl., wells) (L M H) h: _____ c: _____	<input type="checkbox"/> Environment (i.e., heat, cold) (L M H) h: _____ c: _____
---	---	---

<input type="checkbox"/> Chemical (i.e., fuel, acid, paint) (L M H) h: _____ c: _____	<input type="checkbox"/> Biological (i.e., ticks, poison ivy) (L M H) h: _____ c: _____	<input type="checkbox"/> Radiation (i.e., alpha, sun, laser) (L M H) h: _____ c: _____
---	---	--

<input type="checkbox"/> Sound (i.e., machinery) (L M H) h: _____ c: _____	<input type="checkbox"/> Personal (i.e. alone, night) (L M H) h: _____ c: _____	<input type="checkbox"/> Driving (i.e. car, ATV, boat) (L M H) h: _____ c: _____
--	---	--

☐ Refer to the attached Hazard Analysis Sheet(s) or JSA

Comments:

Signature and Certification: I have read and understand the project specific HASP for this project.

SSE Employee*	Non-Life Threatening Injury or Illness Call WorkCare 1-888-449-7787		
	Printed Name/Signature/Company	Sign In Time	Sign Out Time

I will **STOP** the job any time anyone is concerned or uncertain about health & safety or if anyone identifies a hazard or additional mitigation not recorded in the site, project, job or task hazard assessment.

I will **be** alert to any changes in personnel, conditions at the work site or hazards not covered by the original hazard assessments.

If it is necessary to **STOP THE JOB**, I will perform **TRACK**; and then amend the hazard assessments or the HASP as needed.

I will **not assist** a subcontractor or other party with their work unless it is absolutely necessary and then only after I have done **TRACK** and I have thoroughly controlled the hazard.

All site staff should arrive fit for work. If not, they should report to the supervisor any restrictions or concerns.

In the event of an injury, employees will call **WorkCare at 1.888.449-7787** and then notify the field supervisor.

Utility strike, motor vehicle accident or 3rd party property damage - field supervisor will immediately notify the Project or Task Manager

*Short Service Employee (SSE) working for Arcadis <1 year.

THIS FORM MUST BE ENTIRELY COMPLETED PRIOR TO BEGINNING ANY INTRUSIVE WORK

Project Name: National GridFormer Powerhouse and All Start Date: _____

Project #: 30124290

End Date: _____

*Utility markings valid for 15 days. Initiate clearance renewal 5 days prior to expiration for ongoing work***PRE-FIELD WORK REQUIREMENTS**DigSafe 811 notified 48-72 hrs. in advance of work? ☐

DigSafe Ticket #: _____

Ticket Expiration Date: _____

[State Utility Laws: www.commongroundalliance.com/map](http://www.commongroundalliance.com/map)Ticket(s) Attached(Y/N)? ☐

List utility owners notified via DigSafe 811 & response status: _____

List addtl. utilities requiring notification not included in DigSafe811 Notice: _____

Review task details w/ private utility location subcontractor. ID work areas, clearance equipment needed, depth of clearance needed, types of features, utilities, anticipated/known/unknown. Verify DigSafe 811 markings to confirm public utility clearance.

Private Utility Locator Name, if used: _____

AUS onsite meeting (Y/N)? ☐**FIELD WORK REQUIREMENTS***This portion of the checklist must be completed on site. AUS staff must have a minimum of one year of field experience in identifying utilities to complete the checklist. Field staff will review the completed checklist with PM or designee prior to beginning intrusive work.**Heavy equipment/mechanized intrusive work w/in the Arcadis Tolerance Zone (utility or structure present within 30-in. of point of work) **REQUIRES** pre-approval by Corporate H&S prior to working at all such locations. **STOP WORK** if the Arcadis Tolerance Zone work has not been approved.*

List work type & locations for utility location and clearance as applicable to this checklist: _____

*3 Reliable Lines of Evidence are **REQUIRED** for EACH INTRUSIVE LOCATION prior to starting any subsurface intrusive work. Check corresponding boxes below to document utility clearance efforts.*☐ OneCall/DigSafe 811 Public Utility Locate (required by State law for subsurface work)*811 is only reliable as a Line of Evidence when working in/adjacent to a public ROW or easement.*Marking type: ☐ Paint☐ Pin Flags/Stakes☐ Other: _____☐ None☐ Client provided maps/drawings (Y/N)?☐ Maps/drawings not provided (Y/N)?☐ Client Clearance (Y/N)?

Name(s)/Affiliation(s): _____

☐ Interviews (Y/N)?

Name(s)/Affiliation(s): _____

☐ Specific subsurface feature types and depths provided by person interviewed (Y/N)?

Details provided: _____

☐ Site Inspected (Y/N)? (document on Pg. 2.) Photo Document Marked Utilities & Structures☐ Public records/Client Dwgs/As-Built(s) (Y/N)? Type: _____

List private locator tools used: _____

☐ Radio Freq. Detection☐ Electromagnetic☐ GPR☐ Metal Detector☐ Acoustic Pipe Locator☐ Downhole sonde

Other: _____

☐ Soft Dig Methods used (Y/N)?☐ Hand auger☐ Probing☐ Hand tools (shovel/rake)☐ Air knife☐ Hydro Knife☐ Potholing/Vacuum extraction☐ Other soft dig tools used (Y/N)?

If Yes, list here: _____

ALL BOXES BELOW MUST BE COMPLETED BEFORE PROCEEDING

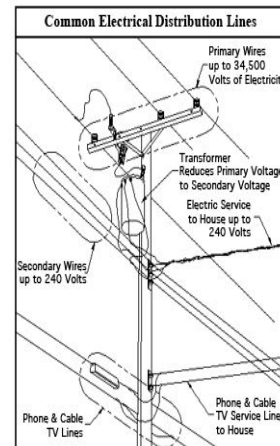
Site inspection also requires investigating vicinity outside of the work area for structures and utilities.

Noting "YES" requires add'l. investigation. Utilities must be field marked prior to intrusive work.

Is the utility present (Y/N)?	Utility Color Code	Is the utility present (Y/N)?	Utility Color Code
<input type="checkbox"/> Utilities entering/exiting structures?	No Color	<input type="checkbox"/> Evidence of stormwater network?	Green
<input type="checkbox"/> Intrusive work area marked out?	White	<input type="checkbox"/> Curb drains/catch basins/manholes?	Green
<input type="checkbox"/> Structural features above or below?	White	<input type="checkbox"/> Stormwater culverts, outfalls?	Green
<input type="checkbox"/> Public natural gas line or meter?	Yellow	ABOVEGROUND Features Present?	
<input type="checkbox"/> Private natural gas laterals/feeders?	Yellow	<input type="checkbox"/> Transportation tunnels/structures/markers present?	
<input type="checkbox"/> Public electrical service?	Red	<input type="checkbox"/> Overhead electrical lines?	Red
<input type="checkbox"/> Conduit from meter or on wall?	Red	<input type="checkbox"/> < 50 kV w/in 10 ft of work area?	Red
<input type="checkbox"/> Conduit from poles into ground?	Red	<input type="checkbox"/> >50-200 kV w/in 15 ft of work area?	Red
<input type="checkbox"/> Poles/devices w/ no visible lines?	Red	<input type="checkbox"/> >200-350 kV w/in 20 ft of work area?	Red
<input type="checkbox"/> Overhead electrical lines?	Red	<input type="checkbox"/> >350-500 kV w/in 25 ft of work area?	Red
<input type="checkbox"/> Solar arrays or wind turbines?	Red	<input type="checkbox"/> >500-750 kV w/in 35 ft of work area?	Red
<input type="checkbox"/> Public water line(s)?	Blue	<input type="checkbox"/> >750-1000 kV w/in 45 ft of work area?	Red
<input type="checkbox"/> Private water line(s) or lateral(s)?	Blue	<input type="checkbox"/> Aboveground fire suppression?	Blue
<input type="checkbox"/> Water meter onsite?	Blue	<input type="checkbox"/> Aboveground communications?	Orange
<input type="checkbox"/> Fire hydrants/post indicator valves?	Blue	<input type="checkbox"/> Aboveground chases/racks/trays?	Orange
<input type="checkbox"/> Irrigation system control box/valve?	Blue	<input type="checkbox"/> Private/Remediation system lines?	Various
<input type="checkbox"/> Sprinkler heads, drip lines, vaults?	Blue	<input type="checkbox"/> Unclassed utilities/anomalies?	Pink
<input type="checkbox"/> Water dispensers, fill stations?	Blue	<input type="checkbox"/> Warning signs/stakes/markers present?	
<input type="checkbox"/> Telecomm. overhead or buried?	Orange	<input type="checkbox"/> Heavy Equipment: Mark travel route for overhead, next to route, and/or under route (e.g. crush risk) utilities.	
<input type="checkbox"/> Telecomm. ground box or relays?	Orange	Signs of other utilities/ground disturbance	
<input type="checkbox"/> Telecomm./security CCTV devices?	Orange	<input type="checkbox"/> Signs of asphalt or concrete disturbance/repair?	
<input type="checkbox"/> Public sanitary sewer pipes?	Green	<input type="checkbox"/> Any ground subsidence or change in vegetation?	
<input type="checkbox"/> Combined sanitary/storm pipes?	Green	<input type="checkbox"/> Unknown manholes or valve covers in work area?	
<input type="checkbox"/> Private sanitary laterals/clean outs?	Green		
<input type="checkbox"/> Restrooms, kitchens, wash bays?	Green		

Tips for Thorough Utility Location (HSS Section 5.6):

1. Don't forget to look up for utilities
2. Be on-site with Private Utility Locators.
3. Ask Private Locators to "confirm" other's markings.
4. Also clear alternate/backup locations
5. Mark all known utilities.
6. No hammering, no pickaxes, no digging bars, no shortcutting.
7. No excessive turning or downward force of hand tools, especially hand augers.
8. Utilities may run in or directly under asphalt/concrete
9. Heavy equipment may damage shallow utilities. Especially during clearing and grubbing.
10. Use spotter for heavy equipment near aboveground utilities?



☐ Utilities & Structures Checklist reviewed by the PM or Designee (Y/N)? *If no, STOP WORK call PM*
 PM or Designee Name: _____

Name and Signature of person completing the checklist _____

Date of checklist review / update: _____

ALL SUSPECT UTILITY STRIKES REQUIRE CORPORATE H&S NOTIFICATION WITHIN 24 hrs. OF KNOWLEDGE OF STRIKE WITH A CONFIRMED RESPONSE FROM CORPORATE H&S.

Attachment A

COVID-19 Questionnaire and Field Guidance

Arcadis Field and Embedded Staff COVID-19 Guidance

16 February 2022

Version Control

Revision No.	Date Issued	Description
1	3/17/20	Original document.
2	3/20/20	Added guidance for multiple occupants traveling in the same vehicle.
3	3/24/20	Updated introduction to include links to Orange Line information; added requirement of Arcadis COVID-19 Health Screening Self-Assessment Questionnaires; moved client questionnaire section forward in the document; and made minor updates to the social distancing, vehicle/transportation, lodging and equipment sections.
4	3/30/20	Updated social distancing section to include CDC “close contact” definition; added section for work in team settings; added AirBnB to lodging discussion.
5	4/2/20	Document template updated and sections rearranged; updated Hand Hygiene section; updated Cleaning of Frequently Touched Surfaces section; updated close contact definition; added section on PPE; added section for Traveling Between States, Provinces and Territories; added section for Construction/Construction Management; added section on Post-Shift Work
6	4/3/20	Added Appendix D – Interim Guidance for the Use of Face Coverings; Updated links, Section 2.3 added bullet to avoid sharing tools and equipment unless cleaned; Section 4.7.2 updated with a bullet for maintaining social distancing at choke points; Section 4.8 added section for Face Coverings and guidance in Appendix D.
7	4/10/20	Added Section 2.8 Other Considerations for journey and emergency action planning; Section 4.6 updated with current information regarding COVID-19 in sewage; Section 4.8 and Appendix D updated to include CDC’s recommends of wearing cloth face coverings in public settings where other social distancing measures are difficult to maintain.
8	4/13/20	Revised Section 2.6 by adding information about gloves being required in some jurisdictions; revised Section 4.8 and Appendix D with latest CDC and Health Canada guidance information.
9	4/20/20	Revised Section 2.1 to discuss both digital and hardcopy COVID-19 Health Screening Self-Assessment Questionnaires; revised Section 2.3.1 to include instructions on alcohol-based hand sanitizer use.
10	4/26/20	Revised Section 2.1 by adding the definition of fever and process for elevated temperature; revised section 2.4 by adding a reminder to understand the appropriate uses and limitations of the disinfectant; revised Section 2.6 by adding link to PPE request form and email address; Section 3.1 added link to “Locations with Travel Restrictions”

Revision No.	Date Issued	Description
		dashboard; revised Section 3.2 to consider face coverings when multiple occupants are riding in a single vehicle; revised Section 4.2 adding critical infrastructure/essential worker language; updated hyperlinks
11	5/1/20	Section 1 revised with latest symptoms of COVID-19; Section 2.5 reinforced Stop Work Authority and reporting where social distancing is not being practiced; inserted Interim Guidelines for Cardiopulmonary Resuscitation as Section 2.8 and moved “Other Considerations” to Section 2.9; added a bullet referencing Continuity Plan in Section 2.9
12	5/4/20	Revised Appendix C per jurisdictional updates.
13	6/16/20	Updated symptom list per CDC guidance; revised CDC close contact definition notes (Section 2.4); added plan for breaks bullets in Section 4.2; added Section 4.9 KN95; updated CDC’s face covering laundering recommendations in Appendix D.
14	8/14/20	Updated footnotes for “close contact” definition (Section 2.5); updated Sections 3.1 and 3.3 to reflect current travel recommendations; updated Section 4.8 and Appendix D to indicate exhalation valves or vents should NOT be worn; added links to the Face Covering Guide in Section 4.8.
15	10/23/20	Added Appendix E with additional signage that may be used; added reference to signage (Section 2.3.1); updated social distancing and close contact definitions (Section 2.5); added Yellow Guidance sub bullet (Section 2.7); updated order hyperlink (Section 3.1); added airline and other transportation (Section 3.2); added reporting requirement documentation (Section 4.3); updated Section 4.7.1 to clarify occupancy and documentation of visitors for contact tracing; added guidance to hold meetings outside (Section 4.7.2); minor edits to Section 4.8 and Appendix D.
16	11/13/20	Section 3.2 updated protocol to only one person in a vehicle; Section 3.3 updated protocol regarding room sharing and dining; Sections 4.2 through 4.7 added a face covering bullet; Section 4.8 and Appendix D added information from recent study that face coverings provide protection to the wearer.
17	12/4/20	Revised the reporting process in Section 2.7 to contact WorkCare instead of Brian Kundert. Added Section 2.7.1 describing WorkCare’s risk stratification and return to work process.
18	1/29/21	Updated all hyperlinks to new Intranet; added COVID-19 vaccine to Section 2.3; moved the Face Covering and KN95 section from 4.8 and 4.9, respectively, to Section 2.6; renumbered all sections; Section 2.9 clarified the continuity plan is required by the jurisdiction or client and is

Revision No.	Date Issued	Description
		recommended for all projects; revised poster in Appendix B; Appendix D updated with current CDC language and added CDC graphics.
19	2/25/21	Updated links in Section 2.1.2; updated Section 2.6 and Appendix D with revised face covering and KN95 guidance.
20	5/18/21	Added U.S. quarantine exemptions in Section 2.8; updated U.S. ridesharing requirements in Section 3.2; updated U.S. dining protocol in Section 3.3; updated face covering bullets in Section 4.0 work-specific situations; template update.
21	7/23/2021	Updated Section 2.1 and 2.8.1 to reflect the revised WorkCare Daily Screen and risk stratification process; removed outdated Section 2.6.1; updated U.S. vehicle sharing protocol in Section 3.2; Section 4.7 updated with guidance for vaccinated and unvaccinated employees.
22	8/13/21	Removed “Jurisdictional Social Distancing” template from Appendix C and renumber appendices; changed temperature at which individuals will not visit an office or project site to 100.0°F (37.8°C) in Section 2.1; updated face covering protocol for indoor spaces in Section 2.6 and Appendix C; updated U.S. vehicle sharing protocol in Section 3.2.
23	9/10/21	Added Section 2.3 Vaccine Policy and renumbered sections; Section 2.8 removed reference to retired “Yellow Caution Status” flowchart; Section 3.2 updated Canada ridesharing; Section 3.3 updated Canada and U.S. dining protocol; Section 4.7.1 removed reference to unvaccinated employees.
24	2/14/22	Updated vaccination terminology and definition in Section 2.9; revised U.S. ridesharing and lodging requirements for unvaccinated staff in Sections 3.2 and 3.3, respectively; added requirement that staff entering residential settings must be vaccinated in Section 4.5; updated Appendix C with latest CDC mask guidance; updated hyperlinks throughout the document.
25	2/16/22	Revised Section 4.5 recommending staff entering residential settings be vaccinated and added recommendation for an N95.

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- Appendix B: Site Signage – Social Distancing
- Appendix C: Guidance for the Use of Face Coverings
- Appendix D: Additional Signage
- Appendix E: Arcadis Contact Tracing Log

Acronyms and Abbreviations

AED	Automated external defibrillators
CDC	U.S. Centers for Disease Control and Prevention
CPR	Cardiopulmonary resuscitation
HC	Health Canada
PPE	Personal protective equipment
SDS	Safety Data Sheet

1 Introduction

Currently Arcadis is following CDC and Health Canada guidelines, as well as applicable government directives. The health and safety of our people is of utmost importance to us. Arcadians are empowered to use TRACK to evaluate individual situations and Stop Work Authority anytime safety is at risk. Employees will not come to work if exhibiting any respiratory illness symptoms, including but not limited to COVID-19.

It is recommended that all field and embedded staff review and have access to the current version of this document. The most current version can be viewed and downloaded from the [ANA H&S COVID-19 Resources](#) intranet page. COVID-19 symptoms may appear 2-14 days after exposure to the virus. People with these symptoms or combinations of symptoms may have COVID-19:

- Fever or chills
- Cough
- Shortness of breath or difficulty breathing
- Fatigue
- Muscle or body aches
- Headache
- New loss of taste or smell
- Sore throat
- Congestion or runny nose
- Nausea or vomiting
- Diarrhea

This list is not all inclusive. Please consult your medical professional for any other symptoms that are severe or concerning to you.

2 Guidance for Project Activities

Employees will complete the following for all project activities.

2.1 Arcadis COVID-19 Health Screening Self-Assessment Questionnaires

All employees going to an Arcadis office, a project site, or a client site will be required to complete a Daily Screening through WorkCare's WorkMatters app, regardless of vaccination status. Individuals should continuously monitor for signs and symptoms of COVID-19 and, if not feeling well, complete the WorkCare Daily Screen Process again.

When individuals take their own temperature to evaluate whether they have a fever, the temperature measurements will be completed without the use of fever-reducing medicines that contains ibuprofen or acetaminophen and not within 30 minutes of exercise. The CDC defines a fever as a temperature of 100.4°F (38°C) or greater. If the individual's temperature is between 99°F (37.2°C) and 99.9°F (37.7°C) it is recommended the individual pay close attention for signs and symptoms of COVID-19 and complete the WorkCare COVID-19 Daily Screen Process more frequently. Individuals with temperatures of 100.0°F (37.8°C) or greater should not

visit an office or project site. You may also contact WorkCare's COVID-19 services if you are experiencing symptoms consistent with COVID-19 and are concerned it may be COVID-19.

2.1.1 COVID-19 Daily Screen Process

All Arcadis staff will register in WorkCare's WorkMatters app. Arcadis staff can use the WorkCare WorkMatters app once a day (or multiple times a day, if appropriate) to complete their COVID-19 health screening self-assessment using the Daily Screen Survey.

Upon completion of the COVID-19 Daily Screen Process in the WorkMatters app, the user will receive a green or red completion message:

- Green – Proceed to the office or project site.
- Red – Do not proceed to the office or project site. Complete Survey 2 and follow end guidance. You and your supervisor will receive an email that you have not been cleared to work. You will need to conduct contact tracing with Corporate Health & Safety, if necessary. You must log into the URL or App to complete the Daily Symptom Tracker, each day you are Not Cleared To Return To Work.

Once you have been cleared to Return to Work by a WorkCare physician, you and your supervisor will receive an email that states you have been Cleared to Return to Work.

2.1.2 COVID-19 Health Screening Self-Assessment Questionnaire (Hardcopy)

The COVID-19 Health Screening Self-Assessment Questionnaire must be:

- Distributed to scheduled visitors, clients, and contractors before visiting Arcadis offices or sites.
- Post the self-assessment questionnaire and post Appendix A at entrances and/or field trailers.

Minimize visitors on site. All visitors (staff, subcontractors, clients, anticipated guests, unanticipated guests) to the site must be asked to review the applicable questionnaire from the following list.

[Canada COVID-19 Health Screening Self-Assessment Questionnaire for Staff \(English\)](#)

[U.S. COVID-19 Health Screening Self-Assessment Questionnaire for Staff, Contractors and Visitors \(English\)](#)

[U.S. COVID-19 Health Screening Self-Assessment Questionnaire for Staff, Contractors and Visitors \(Spanish\)](#)

If a client has a similar questionnaire that Arcadis staff are required to complete, the client questionnaire may be substituted for Arcadis questionnaire.

2.2 Client COVID-19 Health Screening Forms

Some clients are requiring our employees to complete their COVID-19 health screening forms.

- You are not required to share personal medical information with clients; therefore, Arcadis is not requiring you to complete any form requesting medical information. Your disclosure of personal medical information to clients is completely voluntary.
- Please understand, if you do not complete the form, you will not be allowed on the client's sites and facilities, per the client's directive.
- Also, if you complete the form, you have an ongoing duty to provide prompt notice of any changes to any of your responses. (Some clients may require periodically signing updated forms).
- If you are restricted from a client site as a result of your answers to the COVID-19 health screening form, or because you have chosen not to complete the form, Arcadis will attempt to find you alternative work that does not involve access to the client's site or facility; although, Arcadis cannot guarantee that other work will be available.

If your Project Manager is not already aware of the client COVID-19 health screening form, please alert them when you receive one from a client.

2.3 U.S. Vaccine Policy

Arcadis strongly encourages all employees to receive a COVID-19 vaccination. COVID-19 vaccines are effective at helping protect against severe disease and death from variants of the virus that causes COVID-19. In accordance with the [Arcadis U.S. Vaccine Policy](#), all U.S. employees are encouraged to upload the vaccination details into WorkCare's WorkMatters portal.

Clients may require employees working at their sites be fully vaccinated or if unvaccinated, to complete surveillance testing. If the client requires Arcadis verification, Project Managers or Account Managers will reach out to HR Operations (HROperations.ANA@arcadis.com) with a list of names to be checked. If testing is required, contact Corporate Health & Safety.

2.4 Practice Good Hygiene

The best way to prevent illness is to avoid exposure to the virus. CDC and Health Canada recommend common flu and cold season preventative measures, including:

- Wash hands often with soap and water for at least 20 seconds. If soap and water are not readily available, use a hand sanitizer with at least 60% alcohol.
 - If hand sanitizer or soap & water are not available on site, bring your own source of water and hand soap to accommodate hand washing.
- Avoid touching your eyes, nose, and mouth.
- Cover your nose and mouth with a tissue when sneezing or coughing.
- Monitor your health daily by completing a self-assessment.
- Stay 6 feet (2 metres) away from others.
- Avoid crowds and poorly ventilated spaces.
- Do not share Personal Protective Equipment (PPE).
- Maintain and thoroughly clean PPE in accordance with manufacturer's instructions.
- Avoid sharing phones, offices, tools, and equipment. If sharing is necessary, clean and disinfect prior to use.
- Clean high touch surfaces daily.
- Get a vaccine (flu to reduce the risk of flu illness and COVID-19).

2.4.1 Hand Hygiene

Hand hygiene for infection prevention is an important part of the U.S. and Canada response to COVID-19. Washing hands with soap and water has been and will continue to be our primary method for good hand hygiene. Both CDC and HC recommend that you wash hands often with soap and water for at least 20 seconds especially after you have been in a public place, or after blowing your nose, coughing, or sneezing. Hand washing mechanically removes pathogens.

Alcohol based hand sanitizer is a flammable liquid and vapor. However, there is no evidence to suggest hand sanitizer poses a fire hazard when used according to package directions and warnings. To use hand sanitizer:

- Follow manufacturer instructions for use.
- Rub your hands together, covering all surfaces of both hands, including between your fingers and up around your fingertips and nails.
- Rub hands together for 30 seconds to allow your hands to completely absorb the product.
- Allow the hand sanitizer to completely dry.
- Do not touch food or anything until your hands are dry.
- Refer to the Safety Data Sheet (SDS) for hazards information.

If hand sanitizer is not available, Arcadis requires that project teams assess and address the need for hand washing (e.g., access to water and soap) while working on site. This can be achieved by having access to a functioning restroom, a portable hand washing station or as simple as having hand soap, bottled water and paper towels to clean hands as necessary. A handwashing sign that may be posted near handwashing stations is provided in Appendix D.

2.5 Clean Frequently Touched Surfaces

Arcadis recommends that project teams identify who is responsible for cleaning frequently touched surfaces in our workplaces (field trailers, client facilities, etc.). CDC and HC recommend that these surfaces are disinfected daily. This includes tables, doorknobs, light switches, countertops, handles, desks, phones, keyboards, toilets, faucets, and sinks. Before using a disinfectant product, understand the appropriate uses and limitations of the disinfectant, and refer to equipment/tool manufacturer care instructions to determine whether the disinfectant is compatible (e.g., using isopropyl alcohol to disinfect an [iPhone](#)).

CDC cleaning and disinfecting facilities: <https://www.cdc.gov/coronavirus/2019-ncov/community/disinfecting-building-facility.html>

Health Canada cleaning and disinfecting public spaces: <https://www.canada.ca/en/public-health/services/publications/diseases-conditions/cleaning-disinfecting-public-spaces.html>

Health Canada hard surface disinfectants: <https://www.canada.ca/en/health-canada/services/drugs-health-products/disinfectants/covid-19.html>

If surfaces are dirty, clean them using detergent or soap and water prior to disinfection. To disinfect, most common [EPA-registered](#) or [HC-approved](#) household disinfectants will work. Use disinfectants appropriate for the surface.

If the sourcing of disinfectant products is limited, CDC and HC have outlined an option to use a diluted household bleach solution (at least 1,000 ppm sodium hypochlorite) as a disinfectant.

Standard household bleach is typically 5.25% sodium hypochlorite (52,500 ppm), whereas ultra-strength household bleach is typically 6% sodium hypochlorite (60,000 ppm). In accordance with Hazard Communication requirements, always refer to and have a copy of the Safety Data Sheet (SDS) available and on site with you. To **make a daily bleach solution** for use as a disinfectant:

- Mix 5 tablespoons (1/3rd cup) of standard bleach per gallon of water or for a smaller spray bottle size dilution, mix 4 teaspoons bleach per quart of water.

OR

- 1 teaspoon (5 mL) per cup (250 mL) OR 4 teaspoons (20 mL) per litre (1000mL).

Note: Solution must be mixed daily, because the solution will lose effectiveness as a disinfectant after 24-hours.

Follow manufacturer's instructions (e.g., [Clorox](#)) for application and proper ventilation, ensuring a contact time of at least 1 minute (for specific products and contact time information, refer to the CDC and HC links above). Check to ensure the product is not past its expiration date. Never mix household bleach with ammonia or any other cleanser. According to the HC, CDC and U.S. EPA, unexpired household bleach will be effective against coronaviruses when properly diluted.

A second alternative is to use an alcohol solution. The solution must have at least 70% isopropanol.

If supplies cannot be sourced locally, email PPerequests@arcadis.com.

2.6 Practice Social (Physical) Distancing

The CDC definition of **social distancing, also called “physical distancing,”** means keeping a safe space (approximately 6 feet, 2 metres or about two arm lengths) between yourself and other people who are not from your household in both indoor and outdoor spaces. Situations where social/physical distancing should be practiced include but are not limited to tailgate and safety briefing meetings, breaks in field trailers, entering stores and workstations. Plan work activities to maximize social (physical) distancing and minimize close contact with others. Social (physical) distancing is mandatory for unvaccinated individuals and highly recommended for vaccinated individuals. If there are instances where social distancing is not being practiced where it should, Stop Work and remove yourself from the situation. Contact the Project Manager or your Supervisor and document in the H&S App as an “Close Call” or “Unsafe Behavior.”

Additional information when working in teams is required is discussed in the “work specific situations” section below.

Note: The CDC defines **close contact** as: a person who was within 6 feet of an infected person for a cumulative total of 15 minutes or more over a 24-hour period starting from 2 days before illness onset (or, for asymptomatic patients, 2 days prior to test specimen collection) until the time the patient is isolated.¹

¹ Individual exposures added together over a 24-hour period (e.g., three 5-minute exposures for a total of 15 minutes). Data are limited, making it difficult to precisely define “close contact;” however, 15 cumulative minutes of exposure at a distance of 6 feet or less can be used as an operational definition for contact investigation. Factors to consider when defining close contact include proximity (closer distance likely increases exposure risk), the duration of exposure (longer exposure time likely increases exposure risk), whether the infected individual has symptoms (the period around onset of symptoms is associated with the highest levels of viral shedding), if the infected person was likely to generate respiratory aerosols (e.g., was coughing, singing, shouting), and other environmental factors (crowding, adequacy of ventilation, whether exposure was indoors or outdoors). Because the general public has not received training on proper selection and use of respiratory PPE, such as an N95, the determination of close contact should generally be made irrespective of whether the contact was wearing respiratory PPE. At this time, differential determination of close contact for those using fabric face coverings is not recommended.

2.7 Face Coverings

[Health Canada](#) and [CDC](#) recommends wearing face coverings in public settings, like on public and mass transportation, at events and anywhere you will be around other people. In the U.S., face coverings are required on planes, buses, trains, and other forms of public transportation traveling into, within, or out of the United States and in U.S. transportation hubs such as airports and stations. When visiting Arcadis offices and project sites, face coverings will be worn when moving about the space, in common areas and during meetings. If social/physical distancing can be maintained, face coverings may be removed when sitting at individual workstations or actively eating in cafés. Some jurisdictions require face coverings to be worn at all times indoors regardless of vaccination status.

In Canada, non-surgical face coverings are mandatory when flying and travelling through airports. The wearing of face coverings is either required or recommended in all other public settings across Canada (indoors and outdoors).

Studies show that face coverings reduce the spray of droplets when worn over the nose and mouth. Studies also show face coverings can reduce wearers' exposure to infectious droplets through filtration. How well the face covering protects the wearer depends on the fabrics used and how it is made (e.g., the type of fabric, the number of layers of fabric, how well the mask fits). Health Canada and CDC still recommends that you stay at least 6 feet away from other people (social distancing), frequent hand cleaning, avoid contact with people who are sick and other everyday preventive actions. Face coverings are not a substitute for social/physical distancing. Face coverings with exhalation valves or vents should NOT be worn to help prevent the person wearing the mask from spreading COVID-19 to others. Face shields and goggles are not a substitute for face coverings.

Face coverings offering various features appropriate for different work environments, including moisture wicking and FR, are now in stock at [Airgas](#) (U.S.). The [Face Covering Guide](#) outlines several options to facilitate selection of the face covering that is appropriate for your work.

Some jurisdictional entities and clients require the use of face coverings based on Health Canada and CDC guidance. CDC guidance on selection of face coverings is included in Appendix C.

2.8 Personal Protective Equipment

Be prudent with PPE use (PPE with a purpose). Continue to work with our vendors on your PPE ordering needs and consider alternatives (e.g., N95 dust masks may not be available, but half face elastomeric respirators with P100 cartridges are available in limited supplies). If PPE and supplies cannot be sourced locally, email PPErequests@arcadis.com.

Select the appropriate glove for the task and include in the HASP, JSA and/or COVID-19 Preparedness, Response and Continuity Plan. Before using nitrile gloves as personal protective equipment (PPE), make sure to:

- Wash and dry your hands before and immediately after using gloves.
- Understand how to put nitrile gloves on and take them off ([Ansell Donning & Doffing Technical Release](#)).
- Nitrile gloves offer protection against common consumer cleaning supplies, chlorinated solvents, and offer good dexterity and sensitivity.
- Change gloves between tasks or wash gloved hands with soap and water between tasks.
- Do not touch your face.

- Inspect gloves frequently for rips, tears, etc. and replace as necessary.
- Understand limitations of nitrile gloves.

2.9 Reporting a COVID-19 Exposure

Contact WorkCare (888-449-7787, press 9) to initiate the [COVID-19 Screening and Return to Work Process](#) if you have tested positive for COVID-19, have been asked to be tested for COVID-19 by a medical professional or have received a red “Stop” screen during the COVID-19 self-assessment instructing you to call WorkCare.

If you learn you have been in **close contact** with a worker, client or member of the public who is COVID-19 positive:

- Stop work.
- Notify your Supervisor and Project Manager.
- Self-quarantine in accordance with country-specific requirements ([Canada](#) and [U.S.](#)) and contact your personal physician for additional direction.
 - If working in the U.S., the following people are exempt from self-quarantine due to close contact and are asymptomatic
 - Fully vaccinated and up-to-date on COVID-19 vaccines²
 - Had COVID-19 in the past 3 months

If you've been tested or asked to be tested for COVID-19 by a medical professional, please contact WorkCare (888-449-7787, press 9) to initiate the return to work process.

2.9.1 WorkCare COVID-19 Screening & Return to Work Process

Contact WorkCare (888-449-7787, press 9) for access to doctors and nurses who will discuss your symptoms, complete a risk stratification process, and advise on return-to-work process. If you complete the Daily Screen Process through the WorkMatters App and receive a red screen, you will be prompted to complete the risk stratification process electronically and depending on the outcome, you may receive a call from a WorkCare nurse or physician. If prompted to complete the risk stratification process, you can expect to:

- Be placed into a low, moderate or high-risk category
 - Low Risk – you may be cleared to return to work at an office or project site
 - Moderate and High Risk – you will not be cleared to return to work at an office or project site and instructed to remain at home
 - An email will be sent to you, Corporate H&S, HR, and your Supervisor indicating whether you can proceed to an office or project site (cleared) or whether you must work remotely (not cleared). If you are not cleared, this will initiate Arcadis' internal contact tracing process.
- Moderate and High-Risk individuals will be required to complete the “Daily Symptom Tracker” during their self-isolation period.
- At the end of your self-isolation period, you will complete a Return-to-Work Survey in the WorkMatters Portal. The survey and daily symptom tracker will be reviewed by a WorkCare physician.

² People are considered fully vaccinated and up-to-date when they have received all recommended COVID-19 vaccines, including any booster dose(s) when eligible. “Fully vaccinated” two weeks after second dose in a two-dose series, such as Pfizer/Moderna vaccines, or two weeks after a single-dose vaccine, such as Johnson & Johnson's Janssen vaccine.

- You will receive a written notice from WorkCare indicating whether you are cleared or not cleared to return to work at an office or project site.

If you are not cleared, you will receive additional instruction, which may include continuing daily assessments and completing another return-to-work survey at a later date.

2.10 Interim Guidelines for Cardiopulmonary Resuscitation

The American Heart Association and Heart & Stroke Foundation of Canada have issued interim Hands-only cardiopulmonary resuscitation (CPR) guidelines to reduce the risk when helping victims of cardiac arrest with suspected or confirmed COVID-19.

CPR and the use of automated external defibrillators (AED) significantly improve the chance of survival of patients experiencing cardiac arrest. During the COVID-19 pandemic, first aid trained folks and bystanders may feel uncomfortable performing lifesaving CPR and increasing their own risk of contracting the virus.

Hands-only CPR involves performing chest compressions only at a rate of 100 to 120 compressions per minute until an ambulance arrives.

When administering CPR, consider:

- Wearing a face covering
- Laying a cloth, towel, or clothing over the person's mouth and nose
- Perform hands-only CPR
- Use an AED, if available

2.11 Other Considerations

When planning field work, consider the following:

- Plan your journey to and from the site to manage social distancing and hand hygiene when you need to stop for gas or at a store for supplies
- Reevaluate the current field work situation as it relates to lone worker protocols
- A [COVID-19 Preparation, Response and Continuity Plan template](#) is required for all projects.

3 Travel Guidance

3.1 Traveling Between States, Provinces or Territories

Some states, provinces and territories have issued executive orders requiring self-quarantine, travel health screening questionnaires and/or COVID-19 testing for people traveling into or from certain locations. While some jurisdictions exempt essential workers, self-quarantine requirements may apply during off-work hours, confining the employee to their lodging location. Check local requirements before you travel to determine whether you can travel or if there is a need to self-quarantine at the destination. Prior to travel, it is important to have a destination plan in place and understand the steps you will take to remain safe and healthy throughout your trip. Whenever possible, use local project teams within a 4-hour drive radius.

3.2 Field Vehicles and Transportation

When using shared vehicles (fleet, rental, ride sharing services) follow the cleaning guidance above for frequently touched surfaces. Check with your rental agency before vehicle pick-up to understand their cleaning procedures, and supplement with your own cleaning, as necessary. Note: if using wipes, make sure the wipe is compatible with the surface being cleaned.

Canada: A limit of two vaccinated employees may share a vehicle. Unvaccinated individuals are not permitted to share vehicles.

U.S.: There is no limit to the number of vaccinated employees that may share a vehicle. Face coverings must be worn at all times when multiple people are in the vehicle. Unvaccinated employees are not allowed to share vehicles.

When traveling by air for business-critical travel, check with the airline to obtain their latest COVID-19 requirements. A summary of current airline COVID-19 policies can be found [here](#).

3.3 Lodging Considerations

Most hotel chains have implemented additional cleaning, disinfection and face covering in common area procedures. Check with your hotel before check-in to understand their procedures. Consider bringing a surface cleaner or disinfecting wipes to clean frequently touched surfaces such as doorknobs, tv remote, etc.

In instances where AirBnB has been authorized and approved in writing by the Project Manager and Supervisor, consider the following:

- The entire team should not stay at the same residential facility.
- In the U.S., only vaccinated individuals may share lodging provided the configuration allows each individual to have their own dedicated living space (e.g., own bedroom). Face coverings are required in common spaces.
- Understand the AirBnB may need additional cleaning and disinfection of commonly touched surfaces upon arrival.

Lodging together is not permitted for unvaccinated employees.

Always maintain good personal hygiene and avoid crowded places such as restaurants or bars. Consider using take out or outdoor seating. If self-quarantine is required by the jurisdiction during off-work hours, plan ahead and evaluate local food and/or grocery delivery options.

Canada: Dining together outdoors and indoors without face coverings is permitted if everyone is fully vaccinated. Outdoor dining is preferable. Indoor dining should be limited, and groups kept small. Dining together is not permitted if anyone is not vaccinated.

U.S.: Dining together outdoors without face coverings is permitted if everyone is fully vaccinated. Indoor dining is permitted if everyone is fully vaccinated and face coverings are worn in public spaces. Dining together is not permitted if anyone is not vaccinated.

3.4 Rental Equipment and Sample Cooler Handling

Clean the exterior of rental equipment and sample coolers upon arrival at the job site using a cleaning product that will not impact data quality. Wear gloves and safety glasses when handling sample coolers to prevent contact with acid preservation of the bottles in coolers. Where possible, order separate sets of equipment and “assign” equipment to individuals for use through the duration of the event.

4 Work-Specific Situations

4.1 Working with Little or No Contact with Others

Follow procedures listed in Section 2.0 and Section 3.0.

4.2 Working in Project Teams

When working in project teams (paired Arcadians, embedded staff, contractors, clients, etc.):

- If feasible, prior to visiting the site, have a H&S check in to confirm all attendees are complying with CDC or Health Canada guidelines, including:
 - Confirm understanding that workers or clients should not go to the job site if they have personally tested positive for COVID-19, have been in close contact to anyone else who has tested positive for COVID-19 or are exhibiting symptoms. If a worker discloses close contact with someone COVID-19 positive and the worker is asymptomatic, instruct the employee to complete the WorkCare Daily Screen and follow the instructions provided following the survey.
- Out of respect for all, ask everyone to self-disclose if they are not feeling well (exhibiting flu-like symptoms), and request that they should go home.
- Observe person(s) for symptoms, and use Stop Work, as necessary, and contact Project Manager.
- Set visual or physical barriers to keep the public away (caution tape and cones).
- Consider if “split shifts” can be used to limit contact, or if work can be scheduled during hours of low to no facility operations.
- Arcadis staff plan work activities, continuously use TRACK and re-plan work activities to maximize social distancing and minimize “close contact”
 - Practice good hygiene and clean commonly touched surfaces
 - Clean clipboard and pen prior to use
 - Bring your own pen
 - Disinfect shared equipment (water level meters, pumps, etc.)
 - Coordinate with sanitation vendor for portable hand wash station (soap & water or hand sanitizer)
 - Use work practices and tools to minimize close contact when feasible, such as:
 - Single person operating a winch instead of a two-person manual lift
 - Tools to maximize distance
 - Use PPE in accordance with the Job Safety Analysis (face shield, safety glasses, gloves, etc.)
 - Plan for breaks to allow for hydration, nutrition and rest/prevention of heat related illness
 - Select locations where social distancing can be maintained
 - Allow time for safe doffing/donning of personal safety items
 - Communicate individual needs for breaks before beginning work.

- If social distancing or other controls are not feasible discuss this with your supervisor and PM, discuss “Is the work necessary?” or “Can the work be rescheduled for a later date?”
 - Refer to Section 2.6 for the definition of close contact. CDC has indicated short periods of time in close contact may not increase risk of exposure.
- Wear face coverings in accordance with Section 2.7 and jurisdictional requirements.
- Subcontractors need to develop and implement their own procedures to protect their workers.

4.3 Embedded Employee Working at a Client Facility

Embedded employee at a client facility should:

- Inquire whether working remotely is an option.
- If not, and Arcadis must work at the client facility:
 - Ask if arrangements can be made to practice social distancing (e.g., split shift, separate workstation, etc.)
 - Practice good hygiene, and if you do not feel the situation is safe, you can execute your stop work authority by having discussions with your Supervisor and Project Manager.
- Wear face coverings when social/physical distancing cannot be maintained or in accordance with client or jurisdictional requirements.
- If client facility cleanliness is a concern discuss concerns with Project Manager. The Project Manager will discuss with the client. If the client will not increase cleaning, Arcadis employees will be provided with the supplies to clean and disinfect frequently touched surfaces as well as supplies to clean hands.
- Discuss and document Arcadis, client and jurisdictional protocol for reporting a COVID-19 case using the template in the Arcadis COVID-19 Preparedness, Response and Continuity Plan or similar form.

4.4 Working in Contact with the Public

When working in contact with the public (mall areas, parks, outdoor residential settings):

- Set visual or physical barriers (caution tape and cones) to keep the public away and maintain social distancing.
- Wear face coverings when working indoors or in enclosed spaces. Refer to Appendix C for guidance on the appropriate face covering.
- Consider posting signs reminding the public of social distancing guidance (example in Appendix B).

4.5 Working at Indoor Residential Settings

When working at indoor residential settings, consider the following guidelines:

- It is recommended that employees entering residential settings are fully vaccinated.
- A N95 is recommended when entering residential settings.
- Call ahead to ask if the resident(s) is experiencing flu-like symptoms or if anyone in the house is in mandatory or precautionary self-quarantine. Reschedule the work if the resident is experiencing symptoms or under quarantine. Also share Arcadis work procedures and explain that Arcadis will be practicing social distancing during the work.
- Upon arrival, assess the residents for signs of flu-like symptoms. If observed, use Stop Work, exercise social distancing and contact the Project Manager.

- Where feasible, wear gloves, wipe down surfaces prior to touching them and thoroughly wash hands after completing the work (do not touch face).
- Ask if arrangements can be made to practice social distancing (meaning stay 6 feet [2 metres] away).
- Schedule your work when resident is not home, if your work area allows for access (e.g., a basement crawl space the doesn't require entry to the main living area of the home).

4.6 Projects Involving Drinking Water Systems, Recreational Water and/or Wastewater

According to the CDC, at this time, the risk of transmission of the virus that causes COVID-19 through sewerage systems is thought to be low. Although transmission of the virus that causes COVID-19 through sewage may be possible, there is no evidence to date that this has occurred.

Wastewater and sewage workers should use standard practices, practice basic hygiene precautions, and wear personal protective equipment ([PPE](#)) as prescribed for current work tasks.

When working on projects involving drinking water systems, recreational water and/or wastewater:

- The COVID-19 virus has not been detected in drinking water.
- Conventional [water treatment methods](#) that use filtration and disinfection, such as those in most municipal drinking water systems, should remove or inactivate the virus that causes COVID-19.
- [Standard practices](#) associated with wastewater treatment plant operations should be sufficient to protect wastewater workers from the virus that causes COVID-19.
- Review the project Health & Safety Plan and task-specific Job Safety Analysis for required personal protective equipment and other controls.
- Wear face coverings when working indoors. Refer to Appendix C for guidance on the appropriate face covering.

4.7 Construction Management/Construction

4.7.1 Field Trailers

Field trailers may present unique challenges for social distancing. Consider the following:

- Restrict access by posting site signage (Appendix D) requesting all visitors, including site workers. All who enter the field trailer should knock and don a face covering before entering.
 - The project team will determine the maximum occupancy based on the ability to maintain social distancing.
- Local jurisdictions may require face coverings in all indoor spaces regardless of vaccination status. In areas without jurisdictional mandates, all workers will wear face coverings in common spaces and when social/physical distancing cannot be maintained. Refer to Appendix C for guidance on the appropriate face covering.
- Maintain a log of visitors entering the trailer use the "Arcadis Contact Tracing Log" in Appendix E. Assign a person responsible for signing visitors in and out.
- Clean surfaces regularly. In the absence of professional cleaning services, occupants will develop a schedule for site personnel to complete cleaning of commonly touched surfaces.

- When using common surfaces, each individual is responsible for wiping down the shared surface before and after use.
- Assess and address the need for the availability of hand washing (e.g., access to water and soap) while working on site. This can be achieved by:
 - Having access to a functioning restroom
 - Portable hand washing station
 - Hand soap and bottled water to clean hands as necessary.
- Plan seating arrangement so that personnel inside the trailer maintain social distancing, at least 6-feet (2 m) of separation.
- Meetings in the trailer will not exceed the maximum occupancy as determined based on the ability to maintain social distancing. Unvaccinated individuals must wear face coverings and maintain 6 feet (2 m) of physical distance.
- Consider the use of physical barriers to separate the field trailer from the public and/or site activities.

4.7.2 Other Construction Guidance

Additional guidance related to construction and construction management activities include:

- Consider use of technology (e.g., digital sign in using QR codes, virtual tailgate, or construction meetings, video camera systems to minimize the number of people on site).
- For tailgate or other meetings that are not virtual:
 - Unvaccinated individuals must wear face coverings at all times, when meeting indoors. Refer to Appendix C for guidance on the appropriate face covering.
 - Maintain 6 feet (2 m) of physical distance at all times between attendees (both seated and standing).
 - Have the person leading the meeting sign everyone in.
 - If signature is required, everyone should have their own pen.
 - Hold meetings in outdoor spaces whenever feasible.
- For work outdoors:
 - Masks are optional when working outside more than 6 feet (2 m) apart (socially distanced).
 - Determine comfort level and vaccination status of field team when deciding whether to wear face covering for work tasks that need to be completed within 6 feet (2 m) and physical distancing cannot be maintained. Unvaccinated staff must wear face coverings when physical distancing cannot be maintained.
 - Refer to Appendix C for guidance on the appropriate face covering.
- Simultaneous operations coordination to separate contractors:
 - Coordinate movements around the site
 - Set up work zones with visual barriers for specific activities with transition areas in common spaces
 - Post social distancing signage (refer to Section 4.4)
 - Maintain social distancing with at least 6-feet (2 m) of separation whenever feasible
 - Consider the following administrative controls:
 - Activity rotation - schedule work when the fewest number of people are present
 - “Split shifts” can be used to limit contact, or if work can be scheduled during hours of low to no facility operations.

- Work in teams/pairs:
 - Plan work activities, continuously use TRACK and re-plan work activities to maximize social distancing and minimize “close contact”
 - Use equipment or tools to increase distance between personnel to greater than 6-feet (2m) or eliminate the need for a second person.
- Coordinate with contractors to make sure they are following the same social distancing, hand hygiene and cleaning guidance to reduce the risk to other project personnel.

5 Post Shift Considerations

At the end of the work shift, clean the vehicle, if used throughout the day. Wash hands prior to leaving the site and after the commute.

Upon arriving home or at lodging, shower and launder clothing.

Appendix A

Site Signage – Self-Assessment Required

Arcadis Employees

Have you done your “Daily Screen” today?

Before each day, you must complete
the online **“Daily Screen”**.



QR Code for daily
self-assessment.

SAFE Return

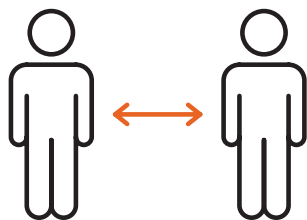
Appendix B

Site Signage – Social Distancing

Project Sites

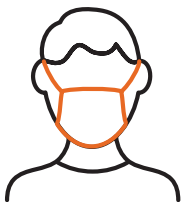
Keep Yourself and Others Working Safely

100% compliance is required by you and our subcontractors.



Maintain physical (social) distance of six feet, about two arms' length.

Need to talk? Shut equipment down if noise is interfering, use hand signals, radios, or move to another area of the site where distance can be maintained.



Face coverings must be worn when six feet of physical distance cannot be maintained.

Stop Work if procedures are not followed. It's mandatory!

SAFE Return

Appendix C

Guidance for the Use of Face Coverings

COVID-19 Face Covering Recommendations

Scenario	Mask Type			Respirators	
	Cloth Masks	Procedure Masks	Masks that Meet a Standard	Respirators that Meet International Standards ³	NIOSH-Approved Respirators ³
Working Indoors					
Entering a resident, school, or hospital	Not Recommended	Recommended	Preferred	CDC Recommended	CDC Preferred
Working indoors with coworkers ¹ and physically distanced	Not Recommended	Recommended	Preferred	--	--
Working indoors in close proximity to coworkers, no physical distancing	Not Recommended	Recommended	Preferred	CDC Recommended	CDC Preferred
Working indoors with the general public and physically distanced	Not Recommended	Recommended	Preferred	CDC Recommended	CDC Preferred
Working indoors in close proximity to the general public (no physical distancing)	Not Recommended	Not Recommended	Not Recommended	CDC Recommended	CDC Preferred
Working in an Arcadis Office ²	Not Recommended	Recommended	Preferred	CDC Recommended	CDC Preferred
Working Outdoors					
Working outdoors with coworker and physically distanced	--	--	--	--	--
Working outdoors with a coworker and not physical distancing	Not Recommended	Recommended	Preferred	--	--
Working outdoors with the general public and physically distanced	Not Recommended	Recommended	Preferred	CDC Recommended	CDC Preferred
Working outdoors with the general public and not physical distancing	Not Recommended	Not Recommended	Not Recommended	CDC Recommended	CDC Preferred
Travel					
Travel on public transportation	Not Recommended	Recommended	Preferred	CDC Recommended	CDC Preferred
Ridesharing with coworker (Fully Vaccinated Only)	Not Recommended	Recommended	Preferred	CDC Recommended	CDC Preferred
Ridesharing	Not Recommended	Recommended	Preferred	CDC Recommended	CDC Preferred
Communal lodging	Not Recommended	Recommended	Preferred	CDC Recommended	CDC Preferred

Notes:

¹Coworkers includes Arcadis employees, Arcadis or client subcontractors, and Arcadis clients

²Masks must be worn when entering an office or job trailer, moving about the space and in common areas. Masks may be removed when seated at a individual workstation and physically distanced from others or alone in a enclosed space with floor to ceiling walls and door closed. Additional jurisdiction requirements may apply.

³[Required use of a respirator meeting an international standard or NIOSH-approved respirator will need to follow the Arcadis Respiratory Protection H&S Standard.](#)

References:

[CDC Types of Masks and Respirators](#)

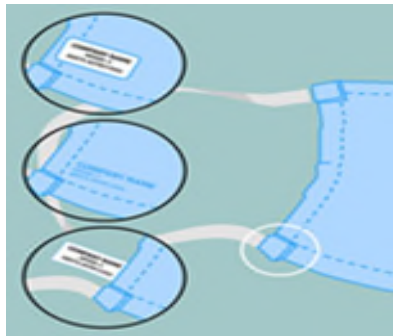


Cloth masks:

- Multiple layers of tightly woven, breathable fabric
- Nose wire
- Fabric that blocks light when held up to bright light source
- Do not wear mask with exhalation valve

Procedure masks:

- Multiple layers of non-woven material
- Nose wire
- Protects others from the wearer's respiratory emissions



Mask that meets a standard:

- Designed and tested to ensure they perform at a consistent level
- Must be labeled with the standard the mask meets
- Multiple layers of non-woven material

Respirators that meet international standards:

- Designed and tested to meet international standards
- Filters varying levels of particles in the air depending on the standard they are designed to meet
- Seals tightly to the face when fitted properly
- Medical surveillance and fit testing required if using when required under Arcadis' Respiratory H&S Standard



NIOSH-approved respirators:

- Respirators listed on the NIOSH-Approved Particulate Filtering Facepiece Respirators [webpage](#)
- Evaluated against a specific US standard that includes a quality requirement
- Filters at least 95% of particles in the air with proper fit
- Seals tightly on the face
- Medical surveillance and fit testing required if using when required under [Arcadis' Respiratory H&S Standard](#)

The following graphics are from the [U.S. CDC](https://www.cdc.gov/media/releases/2020/s1119-maskguidance.html):

DO choose masks that



Have two or more layers of washable, breathable fabric



Completely cover your nose, mouth, and chin.



Fit snugly against the sides of your face and don't have gaps

DO NOT choose masks that



Are made of fabric that makes it hard to breathe, for example, vinyl



Have exhalation valves or vents which allow virus particles to escape



Not recommended: Evaluation of face shields is ongoing, but effectiveness is unknown at this time.

Cold weather gear



Wear your scarf, ski mask or balaclava over your mask



Scarves, ski masks and balaclavas are not substitutes for masks

Note: Some jurisdictions may not consider gaiters or bandanas acceptable face coverings.

How to Wear a Mask

Wear a well-fitting mask **correctly** and **consistently** for the best protection.

- Be sure to [wash your hands or use hand sanitizer](#) before putting on a mask.
- Do **NOT** touch the mask when wearing it. If you have to touch/adjust your mask often, it doesn't fit you properly, and you may need to find a different mask or make adjustments.

Do wear a mask that



- Covers your nose and mouth and can be secured under your chin.
- Fits snugly against the sides of your face.

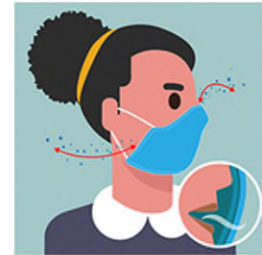
Two important ways to make sure your mask works the best it can

1

Make sure your mask fits snugly against your face. Gaps can let air with respiratory droplets leak in and out around the edges of the mask

2

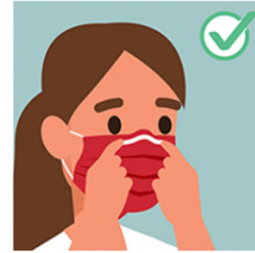
Pick a mask with layers to keep your respiratory droplets in and others' out. A mask with layers will stop more respiratory droplets getting inside your mask or escaping from your mask if you are sick.



Do

Choose a mask with a nose wire

- A nose wire is a metal strip along the top of the mask
- Nose wires prevent air from leaking out of the top of the mask.
- Bend the nose wire over your nose to fit close to your face.



Use a mask fitter or brace

- Use a mask fitter or brace over a disposable mask or a cloth mask to prevent air from leaking around the edges of the mask.



Check that it fits snugly over your nose, mouth, and chin

- Check for gaps by cupping your hands around the outside edges of the mask.
- Make sure no air is flowing from the area near your eyes or from the sides of the mask.
- If the mask has a good fit, you will feel warm air come through the front of the mask and may be able to see the mask material move in and out with each breath.



Add layers of material


2 ways to layer

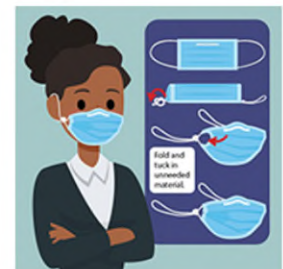
- Use a cloth mask that has multiple layers of fabric.
- Wear a disposable mask underneath a cloth mask.
 - The cloth mask should push the edges of the disposable mask against your face.



Make sure you can see and breathe easily

Knot and tuck ear loops of a 3-ply mask

- Knot the ear loops of a 3-ply face mask where they join the edge of the mask
- Fold and tuck the unneeded material under the edges
- For instructions, see the following <https://youtu.be/GzTAZDsNBe0> .



Other things to consider

Certain types of facial hair, like beards, can make mask fitting difficult. People with beards can do one or more of the following:

- Shave their beards.
- Trim their beards close to the face.
- Use a mask fitter or brace.
- Wear one disposable mask underneath a cloth mask that has multiple layers of fabric. The second mask should push the edges of the inner mask snugly against the face and beard.

Masks designed for people with beards are being evaluated, and information will be provided when it becomes available.



Do NOT

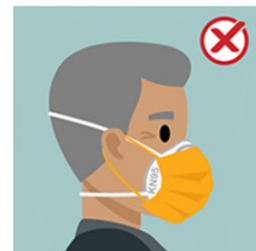
Combine two disposable masks

- Disposable masks are not designed to fit tightly and wearing more than one will not improve fit.



Combine a N95 or KN95 mask with any other mask.

- Only use one N95 or KN95 mask at a time.



How NOT to Wear a Mask

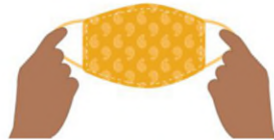


How to take off a mask



①

Carefully, untie the strings behind your head or stretch the ear loops



②

Handle only by the ear loops or ties



③

Fold the outside corners together



④

Be careful not to touch your eyes, nose, and mouth when removing and wash hands immediately after removing

Appendix D

Additional Signage

Best Practices

Wash your hands.

Wash in hot water for 40 seconds: 20 seconds with soap, 20 seconds to rinse.

Wipe surfaces with disinfectant wipes after you are finished.

Maintain proper social distancing.

Stand back 6 feet from others who may be washing their hands, or waiting in line to wash.

SAFE Return

Best Practices

**You touch it,
you clean it.**

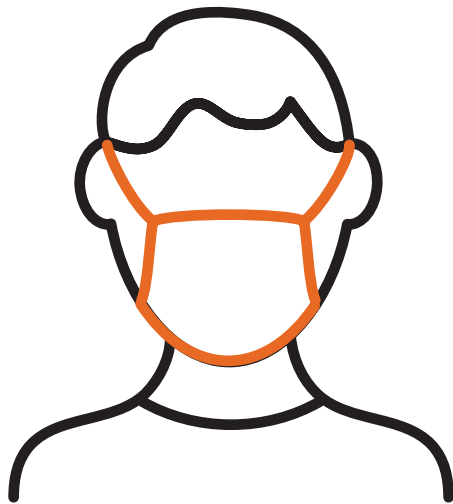


Remember to clean any surface
you touch with the provided
disinfectant spray.

SAFE Return

Arcadis Staff, Visitors & Deliveries

Wear face cover.

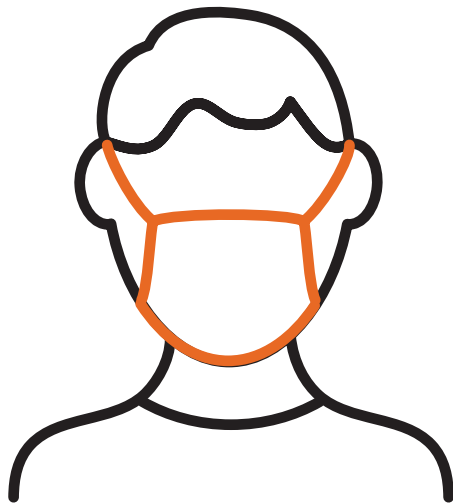


Face covering must be worn at
all times.

SAFE Return

Arcadis Staff, Visitors & Deliveries

Wear face cover.



Please wear face covering when moving about the space. Face coverings can be removed while seated at workstation.

SAFE Return

Visitors & Deliveries

**All staff, visitors or
deliveries must use
the main entrance.**

Located: (Third floor, main reception desk)

Firstname Lastname (#### #### #####)

SAFE Return

Restricted

Authorized Staff Only

In order to maintain proper social distancing,
this area is restricted to authorized staff.

Need something?

Contact: Firstname Lastname (#### #### #####)

SAFE Return

Restricted

Maximum Occupancy

##

In order to maintain proper social distancing, the number of people allowed in this area is limited.

SAFE Return

Closure

Room Closed

In order to maintain proper social distancing guidelines, this room is temporarily closed.

SAFE Return

Off limits

Do not use

Restricted

Appendix E

Arcadis Contact Tracing Log



Arcadis Contact Tracing Log

[illegible]

Arcadis COVID-19 Health Screening Self-Assessment Questionnaire

For Arcadis Staff, Contractors, Scheduled/Anticipated Visitors and Guests

Arcadis remains deeply focused on the health and well-being of our employees, clients, vendors, guests and the communities where we live and work. To help protect against the spread of the novel coronavirus SARS-CoV-2, which causes COVID-19, before visiting our offices, we ask all employees and guests to self-evaluate whether they pose an undue risk to the health and safety of others. To that end, we ask our employees and guests to review and consider the following:

1. In the past 14 days, have you been diagnosed (either as a presumptive or laboratory-confirmed diagnosis) with COVID-19?
2. Have you been advised by a doctor, healthcare provider, or any public health authority to stay home or otherwise avoid contact with others?
3. In the last 14 days have you had close contact within six (6) feet of an individual with confirmed COVID-19?¹
4. In the last 48 hours have you had close contact within six (6) feet of an individual showing symptoms of COVID-19?¹
5. Are you either experiencing or have you experienced coughing, shortness of breath, or other symptoms associated with COVID-19 during the last 24 hours?
6. Are you either experiencing or have you experienced a fever (defined as a temperature of 100.4°F/38°C or greater) within the last 24 hours? *Note: temperature should be measured without the use of fever-reducing medicines that contains ibuprofen or acetaminophen.*
7. In the past 14 days, have you traveled to any countries with Level 3 or higher Travel Health Notice as designated by the Centers for Disease Control? For information regarding Travel Health Notices, please see: <https://www.cdc.gov/coronavirus/2019-ncov/travelers/after-travel-precautions.html>

If your answer to any of these questions is yes, we respectfully ask that you do not visit our offices or worksites as scheduled. If you appear in our offices or worksites, we will assume that your answer to each of these questions was no. Thank you in advance for your attention and assistance with this matter.

¹ FOR ARCADIS STAFF ONLY: If answer is yes to questions 3 or 4 only AND you are a U.S. Critical Infrastructure/Essential worker, notify Supervisor and Project Manager and proceed to "[H&S App Yellow Caution Status Guidance](#)" flow chart.

Arcadis U.S., Inc.
1 Executive Drive, Suite 303
Chelmsford
Massachusetts 01824
Phone: 978 937 9999
Fax:
www.arcadis.com

Attachment B

JSAs

Job Safety Analysis

General

JSA ID	16136	Status	(3) Completed
Job Name	Environment-Other	Created Date	4/17/2018
Task Description	Unmanned Aircraft (drone) Operations	Completed Date	05/15/2018
Template	False	Auto Closed	False

Client / Project

Client	Arcadis AGMI
Project Number	000000100000
Project Name	GENERAL OVERHEAD
PIC	
Project Manager	

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Diamond, Jason J.	5/24/2018	5/10/2018	Welty, Nicklaus R.	<input checked="" type="checkbox"/>
Developer	Gerdeman, David R	5/24/2018	5/10/2018	Walowsky, Scott	<input checked="" type="checkbox"/>
Developer	Stiteler, William M	5/24/2018	5/10/2018	Rigg, David K	<input checked="" type="checkbox"/>
HASP Reviewer	Williams, Anthony C.	5/24/2018	5/11/2018	Strout, Gordon S	<input checked="" type="checkbox"/>
Quality Reviewer	Stirm, Paul H.	5/15/2018	5/15/2018	Guichard, Rodolfo D	<input checked="" type="checkbox"/>
Reviewer	Sinsabaugh, Kate E	5/24/2018	5/15/2018	Nesta, Matthew E	<input checked="" type="checkbox"/>

Job Steps

Job Step No.	Job Step Description	Potential Hazard	Critical Action	H&S Reference
1	All Unmanned Aircraft (Drone) operations must be completed in accordance with the regulations of 14 CFR Part 107 and the Arcadis H&S standards and SOP.	1 Operation of Drones outside regulations could result in penalties and fines to the pilot and Arcadis.	Ensure compliance with all Federal, State, and Local regulations prior to conducting Drone operations.	ARC DOT-501 and Standard Operating Procedures for Unmanned Aircraft Systems
2	Pre-Mission Planning prior to drone operations.	1 Interference with manned aircraft potentially causing a collision/crash	Verify project location and boundaries of operations are restricted to Class G airspace or the appropriate waiver/airspace authorization has been obtained from the FAA..	Table 1 - Pre-Mission Planning Checklist (SOP for UAS)
		2 Injury to by-standers/non operating persons	Verify location and boundary of flight operations to ensure safe operations and limited public/spectator interference to flights that would require additional precautions/waivers.	
		3 Weather and Meteorological conditions adversely affecting drone leading to malfunctions or potential crash.	Verify weather forecasts for the mission dates and plan for contingency based on forecasts.	
		4 Operating outside the required Visual Line of Sight (VLOS) causing lose of Drone, or collision with object.	1. Verify ground control/operating location is in an area that allows constant VLOS with the Drone. 2. Use a visual observer to aid in VLOS. 3. Adjust flight pattern of Drone in cloudy/adverse conditions to maintain VLOS.	
		5 Loss of communication with aircraft	Research project area to determine if strong magnetic interference such as large metal objects or power lines are in the vicinity.	

3	Flight Operations	1	Slips/Trips/Falls	Wear proper footwear and inspect the work area for any hazards. Mark hazards with spray paint or cones to prevent trip hazards.	Table 2 - Pre-Flight Checklist and manufactures operation manual
		2	Crash or collision with obstruction during flight	<ol style="list-style-type: none"> 1. Conduct pre-flight check of aircraft and all associated equipment to ensure it is in good condition. 2. Conduct site inspection prior to operations to establish take off and landing zones, obstruction clearance, environmental hazards, and visual line of site with Drone during flight. 3. Communication with flight crew to determine flight plan and establish emergency procedures. 	
		3	Injury from aircraft or debris.	<ol style="list-style-type: none"> 1. Only attach rotors to aircraft immediately prior to use. Be sure aircraft take-off location is in a safe area that is flat and free of debris. 2. Mark perimeter off take-off/landing zone with orange cones. 3. Keep all non-essential personnel outside the take-off/landing zone. 4. Maintain a safe distance from aircraft during take-off and landing. Upon landing, verify rotors have fully stopped prior to approaching to safe aircraft. 	
		4	Fire	<ol style="list-style-type: none"> 1. Be sure to inspect all batteries prior to and after each use. 2. Always charge batteries outside of a vehicle. 3. Charge batteries in an area free from fire hazards. 4. Always charge batteries in an approved Lipo safe charging bag. 5. Fire Extinguisher - Type ABC 6. Use sand to cover battery in case of fire. 	
		5	Personal Injury	Never operate aircraft directly over people unless an FAA approved waiver has been obtained for such work. If operating aircraft in the vicinity of people, be sure to have a proper job briefing and establish the minimum PPE (safety glasses/hard hat) for people working in the vicinity of flight operations.	

PPE Personal Protective Equipment			
Type	Personal Protective Equipment	Description	Required
Dermal Protection	long sleeve shirt/pants		Recommended
Eye Protection	safety glasses		Required
Foot Protection	boots		Required
Head Protection	hard hat		Required
Miscellaneous PPE	traffic vest--Class II or III		Required

Supplies			
Type	Supply	Description	Required
Communication Devices	mobile phone		Required
	walkie talkie	If operating in other than Class G airspace	Required
Miscellaneous	fire extinguisher		Required
	first aid kit		Required

	Other	Lipo Charging Bags	Required
Personal	insect repellent		Recommended
	sunscreen		Recommended
	water/fluid replacement		Required
Traffic Control	traffic cones	Or similar warning device for landing zone	Required

Review Comments		
Reviewer		Comments
Employee: Role Review Type Completed Date	Williams, Anthony C. HASP Reviewer Approve 5/11/2018	As UAV technology advances, the use and services offered increases. While the UAV eliminates field staff in hazardous areas, the UAV as well has it's own set of hazards to be addressed for the safety of operating staff and others in the vicinity of the flight area. As this is a new technology, there are sure to be other hazards that will need to be added to the JSA fro update. Please have all Pilots be aware of hazards that may not be contained in the current JSA and update accordingly. A very good JSA detailing the early known hazards of UAV application from Pre-Mission Planning to Flight.
Employee: Role Review Type Completed Date	Sinsabaugh, Kate E Reviewer Revise 5/9/2018	Pre-mission planning should include observation of surrounding properties not included in project's site boundaries and planning for mission planning around those properties. Pilots should avoid flying over non-approved properties whenever possible. Otherwise looks like a brief, yet through JSA for UA operations.
Employee: Role Review Type Completed Date	Sinsabaugh, Kate E Reviewer Approve 5/15/2018	
Employee: Role Review Type Completed Date	Stirm, Paul H. Quality Reviewer NA 5/15/2018	This is a comprehensive and thorough JSA for drone operations. It is an excellent template that should be supplemented with job and site-specific hazard identification and mitigation. Very well done.

Job Safety Analysis

General

JSA ID		Status	(3) Completed
Job Name	General Industry-Site inspection/walkover - abandoned building	Created Date	8/4/2022
Task Description	General site inspection for Phase I ESA	Completed Date	8/4/2022
Template	False	Auto Closed	False

Client / Project

Client	National Grid
Project Number	30124290
Project Name	NG Hudson Falls - Powerhouse Deconstruction
PIC	YOUNG, TERRY
Project Manager	BRUSSEL, JOHN

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Howe, Tyker	8/4/2022	8/4/2022	Brien, Jason	<input checked="" type="checkbox"/>
HASP Reviewer	Hover, Elizabeth	8/4/2022	8/4/2022	Hill, Sarah	<input checked="" type="checkbox"/>

Job Steps

Job Step No.	Job Step Description	Potential Hazard	Critical Action	H&S Reference
1	Site Evaluation for Personal Safety and Security Prior to Entry	1 Structural issues creating potential slip/trip/fall and falling debris hazards.	Assess building, and make sure that hazards were similar as what was scoped in the project or reported by the client. Additional hazards that could impact safety of personnel should be called into the project manager. An engineer should perform an assessment on any building that appears structurally unsafe.	
		2 Uneven exterior building conditions	Inspect building exterior and surrounding topography for uneven surfaces that may result in slip/trip/fall hazards while entering and exiting building.	
		3 Personal security	Assess potential personal security issues prior to starting work. Verify cell phone reception; Notify PM/TM or supervisor of time of entry and anticipated time of exit; Ensure that all personnel participating in site inspection are aware of exit routes from building and location of muster point	
2	Site Inspection	1 Slip/trip/fall hazards due to limited lighting and visibility	Visually inspect areas prior to entry; Use temporary lighting and/or flashlight/headlamp; Properly cover and/or demarcate hazards	
		2 Unstable or slippery walking and work surfaces	Use caution and proper footwear with traction for potential slippery surfaces. Walk around these areas when possible	
		3 Exposure to potentially harmful chemicals/materials	Avoid all dermal contact with equipment/chemicals/etc located within the building; Wear nitrile gloves when touching or picking up objects; Review available information describing site history and potential constituents present	
		4 Potential asbestos containing material could be encountered, especially in buildings constructed prior to 1987.	Avoid disturbing material that could potentially contain asbestos. This includes pipe and boiler insulation, transite board, ceiling tiles, and floor tiles. If damaged material is observed, avoid the area and disturbing the material.	

2	Site Inspection	5	Potential lead containing paint could be encountered, especially in buildings and equipment painted prior to 1978.	Avoid disturbing material that could potentially contain lead paint. If damaged/chipped paint is observed, avoid the area and disturbing the material.	
		6	Limited access and egress to the building	Confirm that everyone entering the building is aware of the exit route and periodically discuss where the point of exit is in relation to current location as you move throughout the building.	
		7	Stray animals and insects	Use flashlights and make noise while traveling through the building and carry repellent spray in the event of encountering stray animals. If a dangerous or aggravated animal is spotted, leave the building immediately and contact animal control. Wear long pants/sleeves and use insect repellent, as necessary.	

PPE Personal Protective Equipment			
Type	Personal Protective Equipment	Description	Required
Dermal Protection	long sleeve shirt/pants		Recommended
Eye Protection	safety glasses		Required
Foot Protection	boots		Required
	steel-toe boots		Required
Head Protection	hard hat		Required
Miscellaneous PPE	traffic vest--Class II or III		Required

Supplies			
Type	Supply	Description	Required
Communication Devices	mobile phone		Required
Miscellaneous	auxiliary lighting		Recommended
	first aid kit		Recommended
	flashlight		Required
Personal	insect repellent		Recommended
	water/fluid replacement		Recommended

Review Comments		
Reviewer	Comments	
Employee: Role Review Type Completed Date		

Job Safety Analysis

General

JSA ID		Status	(2) Review
Job Name	Environment-Other	Created Date	8/4/2022
Task Description	Decontamination of equipment	Completed Date	
Template	False	Auto Closed	False

Client / Project

Client	National Grid
Project Number	30124290
Project Name	NG Hudson Falls - Powerhouse Demolition
PIC	YOUNG, TERRY
Project Manager	BRUSSEL, JOHN

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Howe, Tyler	8/4/2022	8/4/2022	Brien, Jason	<input checked="" type="checkbox"/>
HASP Reviewer	Hover, Elizabeth	8/4/2022	8/4/2022	Hill, Sarah	<input checked="" type="checkbox"/>

Job Steps

Job Step No.	Job Step Description	Potential Hazard	Critical Action	H&S Reference
1	Prepare Decontamination Area/ Setup Decon	1 Slips/Trips/Falls, Lifting/Back Strain	Remove trip hazards when possible. Create Awareness of hazard during safety meeting. Check the decon area for uneven surfaces. Use proper lifting techniques. Keep back straight and bend with your knees. Use buddy system for heavy objects.	
2	Decontamination of field equipment	1 Slips/Trips/Falls	Ensure decon area is on a level surface to prevent decon fluids from running over ground. Use caution when walking on wet, plastic sheeting.	
		2 Spills/leakage of decontamination fluids, Exposure to decontamination fluids	Wear appropriate PPE such as chemical resistant gloves and safety glasses with side shield to prevent contact with eyes and skin. Keep unauthorized personnel away from work area.	
		3 Pinch points, Burns/bruises/abrasions	Use caution while working with high pressure washing equipment. Avoid surfaces of steam cleaners and water jet blast of sprayers. Maintain hand awareness. Use gloves (nitrile and work gloves) when handling equipment with pinch points.	
3	Collection of Decontamination Fluids	1 Exposure to decontamination fluids	Wear appropriate PPE such as chemical resistant gloves and safety glasses with side shield to prevent contact with eyes and skin. Keep unauthorized personnel away from work area	
4	Site Cleanup	1 Lifting/back strain	Use proper lifting techniques. Keep back straight and bend with your knees. Use buddy system for objects weighing greater than 50 lbs. Collect all trash for appropriate disposal.	

PPE

Personal Protective Equipment

Type	Personal Protective Equipment	Description	Required
Dermal Protection	long sleeve shirt/pants		Required
Eye Protection	safety glasses		Required
Foot Protection	rubber boots		Required

Job Safety Analysis

General

JSA ID		Status	(3) Completed
Job Name	Environment-Air Monitoring	Created Date	8/4/2022
Task Description	Community Air Monitoring	Completed Date	8/4/2022
Template	False	Auto Closed	False

Client / Project

Client	National Grid
Project Number	30124290
Project Name	NG Hudson Falls - Powerhouse Deconstruction
PIC	YOUNG, TERRY
Project Manager	BRUSSEL, JOHN

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Healy, Lawrence C	8/4/2022	8/4/2022	Brien, Jason D	<input checked="" type="checkbox"/>
HASP Reviewer	Hover, Elizabeth A	8/4/2022	8/4/2022	Hill, Sarah A	<input checked="" type="checkbox"/>

Job Steps

Job Step No.	Job Step Description	Potential Hazard	Critical Action	H&S Reference
1	Mobilization/Demobilization	1 Heavy lifting	Utilize appropriate lifting techniques. Team lift object heavier than 50 lbs. Utilize material handling equipment whenever possible.	EFHSHB section 3, subsection R, EE, and LL.
		2 Abrasions	Use work gloves when handling equipment and supplies.	
		3 Motor vehicle accident	Use Smith System defensive driving techniques.	
2	Tailgate Safety Meeting	1 Unaware of job site hazards, conditions and critical safety actions.	Conduct a tailgate safety briefing each day prior to the start of work and if job site and/or conditions change during the day. Review appropriate sections of the Field Safety & Health Handbook. Ensure that all employees are fully aware of all hazards and are wearing all necessary PPE. Ensure all employees are aware of the locations of emergency equipment and contacts.	ARCHSGE001. EFHSHB section 3, subsection A.
3	General Environmental Conditions	1 Heat Stress	a. Dress appropriately for the weather. b. Take frequent breaks as necessary to cool off. c. Stay hydrated by drinking plenty of water. d. Stay out of direct sunlight when possible.	EFHSHB section 3, subsections A, I, M, N, P, R, and EE.
		2 Severe weather	a. Monitor the weather forecast for each day's activities. b. Take immediate shelter in a protected structure or field vehicle in the event of lightning, hail, high winds, or flooding.	
		3 Bites/Stings - Insects/Spiders/Snakes	a. Wear insect repellant during outdoor activities. b. Avoid disturbing area that may be a habitat for insects, spiders, or snakes. Use caution when moving rocks, equipment, or other items that may be providing shelter for these animals. c. Wear sturdy boots to protect from snake bites.	
		4 Heavy equipment operation in vicinity	a. Establish clearly marked work areas using barrier tape, cones, or other highly visible material. b. Wear safety vests when working in areas within 200 ft of heavy equipment operation. c. Notify the site contact of the work area.	
		5 Uneven terrain	a. Survey the working area prior to set up. Mark any holes, pits, or other hazardous terrain. b. Wear sturdy safety shoes.	

4	Calibrate air monitoring equipment	1	Injury due to gas under pressure	Ensure that tubing and connections between gas cylinders, regulators instrument and tubing are secure and damage/leak free. If damaged remove and replace. Install and remove regulator valves away from face, body and other workers. Never leave the regulator installed in the cylinder when not in use.	ARC HSGE017
		2	Exposure to calibration gases (isobutylene, mixture five gases, benzene)	Conduct calibration in a well-ventilated area.	
		3	Malfunctioning meters or skipped steps resulting in inadequate personnel protection	Make sure equipment is in proper working order and meets standards set by manufacturer. Replace equipment when needed. Follow operators manual.	
		4	Poor or inadequate record keeping	Document all calibration data and note any deficiencies in the calibration or equipment readings. Have second person verify results.	
5	Equipment/Site Set Up	1	Materials handling/heavy lifting	Utilize appropriate lifting techniques. Team lift objects over 50 lbs. Utilize materials handling equipment whenever possible.	
		2	Falls from height	Utilize personal fall arrest equipment when exposed to unprotected falls greater than 4 feet in height.	
		3	Electricity- shock or electrocution	a. Inspect all extension cords prior to use. Mark all damaged cords and take them out of service. b. Protect cords in use from traffic or other damage. c. Ensure cords are appropriate for the load.	
6	Monitoring/Data Collection	1	Heat stress/Sunburn	Utilize a canopy over the monitoring area. Work in shaded areas when possible. Use sunscreen. Drink plenty of water and take breaks as necessary.	EFHSHB section 3, subsection A, M, R, M, and EE.
7	Decontamination	1	Contact with COC	Wipe down and clean monitoring equipment. Dispose properly of all protective clothing and spent decontamination supplies before leaving the exclusion zone. Remove any soil from boots before leaving the exclusion zone.	EFHSHB section 3, subsections A, I, M, N, P, R, and EE.
8	Care and storage of air monitoring equipment	1	Equipment breakage / malfunction - including batteries and power supply	Maintain integrity of dedicated systems. Properly store all equipment. Charge equipment nightly and as needed during the day. Have extra batteries / power supply onsite. Keep equipment clean. Inspect equipment to verify it is operational. Report any equipment issues to rental company for timely repair/replacement. Replace the saturated filters and clean the bulb with the cleaning kit periodically.	EFHSHB section 3, subsection A, I, M, N, P, and R.

PPE Personal Protective Equipment			
Type	Personal Protective Equipment	Description	Required
Dermal Protection	long sleeve shirt/pants		Recommended
Eye Protection	safety glasses		Required
Foot Protection	steel-toe boots		Required
Hand Protection	work gloves (specify type)	leather or cotton	Required
Head Protection	hard hat		Required
Miscellaneous PPE	traffic vest--Class II or III		Required
Respiratory Protection	dust mask		Recommended

Supplies			
Type	Supply	Description	Required
Communication Devices	mobile phone		Required
Miscellaneous	first aid kit		Required
	Other	Cones/Traffic control	Required
Personal	insect repellent		Recommended
	sunscreen		Recommended
	water/fluid replacement		Required
Traffic Control	barricades		Recommended
	traffic cones		Required

Review Comments		
Reviewer	Comments	
Employee: Role Review Type Completed Date		

Job Safety Analysis

General

JSA ID		Status	(3) Completed
Job Name	Environment-Other	Created Date	8/4/2022
Task Description	Mobilization/Demobilization	Completed Date	8/4/2022
Template	False	Auto Closed	False

Client / Project

Client	National Grid
Project Number	30124290
Project Name	NG Hudson Falls - Powerhouse Deconstructon
PIC	YOUNG, TERRY
Project Manager	BRUSSEL, JOHN

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Howe, Tyler	8/4/2022	8/4/2022	Brien, Jason	<input checked="" type="checkbox"/>
HASP Reviewer	Hover, Elizabeth	8/4/2022	8/4/2022	Hill, Sarah	<input checked="" type="checkbox"/>

Job Steps

Job Step No.	Job Step Description	Potential Hazard	Critical Action	H&S Reference
1	Verify all permits, forms, and trainings have been completed.	1 Administrative function - no hazards anticipated. Action is to ensure health and safety/regulatory compliance	Employees must have the following required training: OSHA 40-Hour HAZWOPER and refresher; First aid/CPR; medical clearance. Ensure NJ One-call has been completed and remains valid. Confirm approved RAWP, SESC, and HASP are kept on site.	
2	Mobilization to the Site	1 Collision, injury or death to occupants or other parties; Property damage	1. Secure all equipment in the vehicle prior to driving. 2. Obey all traffic laws and abide by posted speed limits. 3. Be aware of your surroundings and maintain a distance of 4 seconds behind the vehicle ahead. Add distance for adverse weather conditions. 4. Verify that all employees have accurate and understandable directions to the site. Use preprinted map or GPS. 5. Avoid driving when tired. Use cell phones for emergency contact. Do not use cell phones while driving. 6. Complete vehicle inspection checklist.	
		2 Weather Hazards/Road Conditions	Check local and destination forecasts and Road conditions for dates of travel	
3	Loading and unloading materials and equipment	1 Slips, trips, and falls; Lifting hazards and back strain.	Staff should use proper lifting techniques and to request assistance when lifting heavy equipment. Use dolly to transport equipment,	
		2 Pinch points/lacerations during equipment loading	Identify/avoid pinch points and sharp edges. Wear leather gloves to protect hands/fingers	
		3 Working near delivery Vehicles	Be mindful of traffic at all times. Use cones, barricades and signs as appropriate. Wear reflective traffic vests at all times.	
4	Working outdoors	1 Temperature-related illnesses (heat stress, cold-stress); Weather hazards.	Ensure all field staff drinks plenty of fluids; take breaks as needed to avoid overheating, frostbite, etc., dress appropriately for weather conditions. Check local weather forecasts daily, use sunscreen as appropriate, monitor changes in weather, shutdown operations if extreme weather conditions occur; postpone work if lightning is observed or expected.	
		2 Biological hazards (insects and plants)	1. Inspect area for hazardous plants and insects. 2. Apply insect repellent containing DEET during insect season. 3. Check for ticks throughout the day.	

5	Demobilization	1	Slips, trips, and falls; Loss of equipment/supplies from moving vehicle; lifting hazards	Keep all walkways clear of equipment and materials. Follow safe driving procedures (following distances, speed, headlights, safety belts, etc.). Do not use cell phone when driving. Properly secure all equipment and supplies before operating vehicle. Use proper lifting technique.	
---	----------------	---	--	---	--

PPE Personal Protective Equipment				
Type	Personal Protective Equipment	Description	Required	
Dermal Protection	chemical protective suit (specify type)	Long sleeve shirt	Recommended	
Eye Protection	safety glasses	Clear glasses when working inside	Required	
Foot Protection	steel-toe boots		Required	
Hand Protection	chemical resistant gloves (specify type)	Nitrile	Required	
	work gloves (specify type)	Leather or cut resistant material	Required	
Head Protection	hard hat	If working in area with low overhead	Required	
Miscellaneous PPE	traffic vest--Class II or III	If working in traffic area	Required	

Supplies			
Type	Supply	Description	Required
Communication Devices	mobile phone		Required
Miscellaneous	first aid kit		Required
Personal	eye wash (specify type)	Bottle	Required
	insect repellent		Required
	sunscreen		Required
	water/fluid replacement		Required
Traffic Control	barricades		Required
	traffic cones	> or = 8 inch	Required

Review Comments		
Reviewer	Comments	
Employee: Role Review Type Completed Date		

Job Safety Analysis

General

JSA ID	11795	Status	(3) Completed
Job Name	Environment-Other	Created Date	8/4/2022
Task Description	Contractor oversight	Completed Date	8/4/2022
Template	False	Auto Closed	False

Client / Project

Client	National Grid
Project Number	30124290
Project Name	NG Hudson Falls - Powerhouse Deconstruction
PIC	YOUNG, TERRY
Project Manager	BRUSSEL, JOHN

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Howe, Tyler	8/4/2022	8/4/2022	Brien, Jason	
HASP Reviewer	Hover, Elizabeth	8/4/2022	8/4/2022	Hill, Sarah	

Job Steps

Job Step No.	Job Step Description	Potential Hazard	Critical Action	H&S Reference
1	Working outdoors	1 Weather (extreme weather, lightning, cold temperatures, rain, wind)	Check local weather forecasts daily prior to commencement of work. Use Stop Work Authority if conditions become unsafe.	
		2 Biological hazards (ticks, snakes, bees/wasps, poison ivy and other hazardous plants and animals)	Inspect area for hazardous plants and insects; apply insect repellent containing DEET during insect season. Check for ticks throughout day. Never place hands into areas where insects or animals could be present.	
		3 Environmental hazards from weather extremes (storms, sun, heat, cold)	Wear appropriate clothes for the area and weather. Dress in or bring layers to account for changes in weather throughout the day. If temperatures are extreme, take frequent breaks to cool down or warm up in a safe area. Wear a hat and apply sunscreen to help prevent sunburn. Use Stop Work Authority if weather conditions become unsafe. On days where forecast has the potential for storms, check radar on phone or radio, or assign a staff member in a local office to inform field staff if storms are on the radar.	
2	Accessing/egressing work location	1 slips, trips and falls	Do not hurry through task, plan routes and focus on walking task. Keep hands free.	
		2 Impacts to head, arms, legs and body from construction equipment	Plan route and select routes with sufficient clearance away from the construction equipment. Do not shortcut over or under equipment. Always maintain awareness of equipment locations. Wear hard hat at all times. Maintain clear communication with equipment operator.	
		3 Lack of safety briefing may result in injury	Participate in contractor safety briefings to ensure H&S requirements are met during inspection activities and awareness of planned work activities. Use TRACK for all inspection activities. Notify all personnel that they have Stop Work Authority.	
3	Oversight of contractor - equipment operation	1 Impacts to head, arms, leg and body from construction equipment	Plan route and select route away from equipment. Do not take short cuts over or under equipment. Wear a hard hat at all times.	

3	Oversight of contractor - equipment operation	2	Struck by construction equipment	Plan route and maintain clear communication with the equipment operator. Use spotters if necessary to maintain proper communication. Maintain awareness of the equipment and avoid distractions such as talking on cell phones	
		3	Lack of safety briefing may result in injury	Participate in contractor safety briefings to ensure H&S requirements are met during inspections activities and awareness of planned work activities. Use TRACK for all inspection activities. Notify all personnel that they have Stop Work Authority.	
4	Proper decontamination when leaving work area/moving between work areas	1	Exposure to contamination	Wash hands and face prior to consuming food, drink or tobacco	
		2	Potential for cross contamination between work areas	Change nitrile gloves and wash equipment (e.g. water level meter) with alconcox and DI water when moving between work areas.	

PPE Personal Protective Equipment			
Type	Personal Protective Equipment	Description	Required
Eye Protection	safety glasses		Required
Foot Protection	steel-toe boots		Required
Hand Protection	chemical resistant gloves (specify type)	Nitrile	Required
Head Protection	hard hat		Required
Hearing Protection	ear plugs	If drill rig is in use, use hearing protection	Recommended
Miscellaneous PPE	traffic vest--Class II or III	Class II	Required

Supplies			
Type	Supply	Description	Required
Communication Devices	mobile phone		Required
Miscellaneous	first aid kit		Required
Personal	eye wash (specify type)	bottle	Required
	insect repellent		Recommended
	sunscreen		Recommended

Review Comments		
Reviewer	Comments	
Employee: Role Review Type Completed Date		
Employee: Role Review Type Completed Date		

Job Safety Analysis			
General			
JSA ID		Status	(3) Completed
Job Name	Environment-Other	Created Date	8/4/2022
Task Description	Office Work - Field Trailer	Completed Date	08/04/2022
Template	FALSE	Auto Closed	FALSE

Client / Project	
Client	Arcadis AGMI
Project Number	30124290
Project Name	NG Hudson Falls - Powerhouse Deconstruction
PIC	YOUNG, TERRY
Project Manager	BRUSSEL, JOHN

User Roles					
Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Howe, Tyler	8/4/2022	8/4/2022	Brien, Jason	<input type="checkbox"/>
HASP Reviewer	Hover, Elizabeth	8/4/2022	8/4/2022	Hill, Sarah	<input type="checkbox"/>

Job Steps					
Job Step No.	Job Step Description	Potential Hazard	Critical Action	H&S Reference	
1	Office/Desk Work	1 Poor ergonomics due to improper desk setup and computer/computer monitor positioning.	Review proper ergonomics and computer/desk station setup to ensure proper posture while sitting at desk.		
		2 Fatigue	Take breaks away from desk/screen to stretch, walk around, rest eyes from looking at screens. Wear blue light blocking glasses when looking at screens.		
		3 Back/muscle soreness	Take breaks and get up from chair to stretch and walk around. Ensure proper chair setup/positioning.		

PPE Personal Protective Equipment			
Type	Personal Protective Equipment	Description	Required
Foot Protection	Other	Shoes that provide solid footing	Required

Review Comments		
Reviewer	Comments	
Employee: Role Review Type Completed Date		

Job Safety Analysis



General

JSA ID	HASP 1	Status	Complete
Job Name	General Industry-Driving - passenger vehicles	Created Date	8/8/2022
Task Description	Driving a car, van, or truck on public roadways.	Completed Date	08/08/2022

Client / Project

Client	National Grid
Project Number	30124290
Project Name	National Grid
Project Manager	John C. Brussel, PE

User Roles

Role	Employee	Due Date	Completed Date
Developer	Tyler Howe	8/8/2022	8/8/2022
HASP Reviewer	Hover, Elizabeth	8/8/2022	8/8/2022
Quality Reviewer			

Job Steps

Job Step No.	Job Step Description		Potential Hazard	Critical Action	H&S Reference
1	Pre-Trip Inspection	1	Failing to perform pre-trip inspections may cause mechanical failure, accident or injury.	Perform walk around of vehicle with particular attention to tire inflation and condition. Check lights, wipers, seatbelts for proper operating condition. Properly adjust seat and mirrors prior to vehicle operation. Use or review vehicle inspection checklist as required under the MVSP.	ARC HSGE024 Motor Vehicle Safety Standard (MVSP)
		2	Scrapes, cuts, burns to hand if inspecting engine fluids and/or tires. Eye splash hazard if inspecting engine fluids. Pinch or crush hazards when opening or closing hood, trunk, or tailgate.	Wear protective gloves and safety glasses as described below when checking under hood or tires. Use TRACK and keep hands clear when opening/closing hood, trunk, or tailgate to avoid crush or pinch hazard.	
		3	Struck by other vehicles while walking around vehicle performing inspections.	Wear high visibility vest, shirt, or coat while performing inspections in parking lots or other areas with a traffic hazard. Remain vigilant of moving vehicles or equipment in area, face oncoming vehicles to extent practical.	
		4	Improperly secured cargo may dislodge creating injury, property damage, or road hazard.	Ensure all cargo is properly secured to prevent movement while the vehicle is in operation. This includes cargo in the cab of the vehicle.	
2	Driving a motor vehicle on public streets	1	Failing to observe traffic flow ahead increases risk of hard braking resulting in potential impact of vehicle ahead, being struck by another vehicle from behind, and decreases decision making time.	Use Smith System Key #1, "Aim High in Steering". Look ahead (15 seconds if possible) to observe traffic flow and traffic signals. Adjust speed accordingly to keep vehicle moving and avoid frequent braking. Select lane of least traffic and adjust speed based on observed signal timing when possible. Avoid following directly behind large vehicles that obscure view ahead.	Smith System "5-Keys" is a registered trademark of Smith System Driver Improvement Institute, Inc.

		2	Failing to observe vehicles, pedestrians, bicyclists, and other relevant objects in vicinity of your vehicle increases risk of side swipes, rear ending, and third party injury.	Use Smith System Key #2, "Get the Big Picture". Maintain 360 degrees of awareness around vehicle. Check a mirror every 6-8 seconds, maintain space around the vehicle, choose a lane that avoids being boxed in. Look for pedestrian activity ahead in crosswalks or sidewalks. Watch for construction zone approach signs and act early by executing lane changes and reducing speed.	
		3	Failing to keep your eyes moving increases risk of not seeing relevant vehicles, pedestrians, and objects in your vicinity that may impair your ability to make timely and appropriate driving decisions and also increases risk of accident.	Use Smith System Key #3, "Keep Your Eyes Moving". Move your eyes every 2 seconds and avoid staring while evaluating relevant objects. Scan major and minor intersections prior to entering them. Check mirrors.	
		4	Failing to maintain space around and in front of your vehicle increases risk of striking another vehicle or being struck by another vehicle. Insufficient space shortens time for effective driving decision making resulting in increased accident risk.	Use Smith System #4, "Leave Yourself an Out". Use 4 second rule when following a vehicle. Avoid driving in vehicle clusters by adjusting speed and using lanes that permit maximum space and visibility. When stopped, keep one car length space in front of vehicle ahead or white line.	
		5	Failing to communicate with other drivers and pedestrians increases risk of striking vehicles, pedestrians, or being struck by other vehicles, especially from the rear.	Use Smith System Key #5, "Make Sure They See You". Brake early and gradually when stopping to reduce potential of being rear ended. Keep foot on brake while stopped. Use turn signals and horn effectively. Establish eye contact with other drivers and pedestrians to extent practical. Use vehicle positioning that promotes being seen.	
		6	Distractions within the vehicle takes focus off driving, increases risk of accident decreases time for making effective driving decisions.	Cell phone use (any type or configuration) is prohibited while the vehicle is in motion. Familiarize yourself with vehicle layout and controls (radio, temperature controls, etc.) prior to operating unfamiliar vehicles. Set controls prior to operating vehicle. Use GPS in unfamiliar areas to avoid use of paper maps/directions while driving. Set GPS prior to vehicle operation. Pull over and stop to modify GPS functions. Avoid consuming food or drink while driving.	
3	Parking	1	Parking vehicle in areas of clustered parked vehicles or near facility entrance may impair visibility to oncoming traffic in lot and increase exposure to pedestrian traffic.	Use pull through parking or back into parking space when permitted or practical. When practical and safe to do so, park away from other vehicles and avoid parking near the facility entrance or loading docks. If available, use a spotter to aid in backing activity. Back no further than necessary and back slowly. Get out and look (GOAL) if uncertain of immediate surroundings. Tap horn prior to backing.	

PPE Personal Protective Equipment

Type	Personal Protective Equipment	Description	Required
Eye Protection	safety glasses	While checking engine or tires	Required
Hand Protection	work gloves (specify type)	Leather or equivalent checking engine or	Required

Supplies

Type	Supply	Description	Required
Communication Devices	mobile phone		Required
	other	Vehicle kit (applies to company trucks)	Required
Miscellaneous	fire extinguisher	Applies to company trucks	Required
	first aid kit	Applies to company trucks	Required

Attachment C

Silica Plan



Silica Exposure Control Plan

Project Name: National GridFormer Powerhouse and Allen Mill DemolitionHudson Falls, New York

Project Number: 30124290

Date:

Task Description:

Demolition of existing structures (former Powerhouse and Allen Mill) using mechanical methods.

- 1) *Arcadis Silica Competent Person:* Tom Carey Phone: 716-523-9634

The above individual will ensure requirements stipulated in this plan are implemented and has the authority to take corrective measures and/or revise this plan to ensure employee, contractor and/or public exposure to silica dust remains below the respirable inhalation time weighted average action level of 25 µg/m³ over an 8-hour period.

- 2) *What material will the team be working with on this project?*

Brick

- 3) *The following work activity will be performed on this project which have a potential for silica dust exposure:*

Demolishing/disturbing

The following controls will be utilized to mitigate exposure to silica dust hazards:

Based on the activity entered above, the following OSHA/Arcadis activity category is:

Heavy equipment and utility vehicles used to abrade or fracture silica-containing materials (e.g., hoe-ramming, rock ripping) or used during demolition activities involving silica-containing materials

- 4) *The controls to be utilized include:*

Operate equipment from within an enclosed cab.

When employees outside of the cab are engaged in the task, apply water and/or dust suppressants as necessary to minimize dust emissions.

- 4a) *Respiratory Protection:*

Indoors or Enclosed Area:

≤4 HRS	>4HRS
None	None

Outdoors:

≤4 HRS	>4HRS
None	None

Additional Housekeeping Requirements:

Arcadis prohibits dry sweeping or dry brushing where such activity could contribute to employee exposure to respirable crystalline silica unless wet sweeping, HEPA-filtered vacuuming or other methods that minimize the likelihood of exposure are not feasible.

Arcadis prohibits use of compressed air to clean clothing or surfaces where such activity could contribute to employee exposure to respirable crystalline silica unless:

The compressed air is used in conjunction with a ventilation system that effectively captures the dust cloud created by the compressed air; or

No alternative method is feasible (requires concurrence with a CIH).

5) *Air Monitoring Requirements for Activities with an Assigned Respirator APF Listed in Section 4a.*

☒ Real-time air monitoring for silica is not required for this project.

☐ Real-time air monitoring will be conducted during work activities where employees or contractors are exposed to or have the reasonable probability to be exposed to silica dust hazards. Silica air monitoring will include use of an aerosol monitor equipped with a Dorr-Oliver cyclone kit for respirable dust evaluation. Although not permitted to be the sole method of determining employee exposure, real-time air monitoring for silica will be performed in the employee breathing zone (personal air monitoring) and also performed at the perimeter of the work area (exclusion zone boundary). The results will be documented and submitted to Corporate H&S upon completion of the project. Air samples for laboratory analysis will also be required unless excepted from collection by a CIH.

Aerosol monitor selected for use on this project: _____

Frequency of air sample collection for laboratory analysis: _____

Air samples will be submitted to the following laboratory: _____

6) *Medical Surveillance*

Employees performing work activities where exposure to silica dust is known to be or has a reasonable probability to be above the OSHA 8-Hr TWA action level of 25 µg/m³ will participate in silica medical surveillance in conjunction with their annual HAZWOPER physical. New entrants into the silica medical surveillance program at times when the HAZWOPER physical is not due will coordinate the required surveillance with WorkCare and then maintain the surveillance with their HAZWOPER physical going forward.

7) *Additional Instructions*

Signatures:

Tyler Howe

Preparer Name Printed

8/4/2022

Date

Tyler A. Howe

Preparer Signature

Filter/Cassette # _____

Page 1 of 2

Project Number		Date	Project Name	
Employee Name		Employee Number		
Employee Business Line				
Job Description				
Type of Work Being Performed				
Task	% Time Performing	Task	% Time Performing	
<input type="checkbox"/> Abrasive Blasting	<input type="checkbox"/> <25% <input type="checkbox"/> 25-50% <input type="checkbox"/> 50-75%, <input type="checkbox"/> >75%	<input type="checkbox"/> Mixing Concrete	<input type="checkbox"/> <25% <input type="checkbox"/> 25-50% <input type="checkbox"/> 50-75%, <input type="checkbox"/> >75%	
<input type="checkbox"/> Cutting	<input type="checkbox"/> <25% <input type="checkbox"/> 25-50% <input type="checkbox"/> 50-75%, <input type="checkbox"/> >75%	<input type="checkbox"/> Mixing Mortar	<input type="checkbox"/> <25% <input type="checkbox"/> 25-50% <input type="checkbox"/> 50-75%, <input type="checkbox"/> >75%	
<input type="checkbox"/> Chipping	<input type="checkbox"/> <25% <input type="checkbox"/> 25-50% <input type="checkbox"/> 50-75%, <input type="checkbox"/> >75%	<input type="checkbox"/> Patching	<input type="checkbox"/> <25% <input type="checkbox"/> 25-50% <input type="checkbox"/> 50-75%, <input type="checkbox"/> >75%	
<input type="checkbox"/> Drilling	<input type="checkbox"/> <25% <input type="checkbox"/> 25-50% <input type="checkbox"/> 50-75%, <input type="checkbox"/> >75%	<input type="checkbox"/> Polishing	<input type="checkbox"/> <25% <input type="checkbox"/> 25-50% <input type="checkbox"/> 50-75%, <input type="checkbox"/> >75%	
<input type="checkbox"/> Excavating	<input type="checkbox"/> <25% <input type="checkbox"/> 25-50% <input type="checkbox"/> 50-75%, <input type="checkbox"/> >75%	<input type="checkbox"/> Scabbing/ Scappling	<input type="checkbox"/> <25% <input type="checkbox"/> 25-50% <input type="checkbox"/> 50-75%, <input type="checkbox"/> >75%	
<input type="checkbox"/> Formwork Cleaning	<input type="checkbox"/> <25% <input type="checkbox"/> 25-50% <input type="checkbox"/> 50-75%, <input type="checkbox"/> >75%	<input type="checkbox"/> Scarifying	<input type="checkbox"/> <25% <input type="checkbox"/> 25-50% <input type="checkbox"/> 50-75%, <input type="checkbox"/> >75%	
<input type="checkbox"/> Grading	<input type="checkbox"/> <25% <input type="checkbox"/> 25-50% <input type="checkbox"/> 50-75%, <input type="checkbox"/> >75%	<input type="checkbox"/> Scraping	<input type="checkbox"/> <25% <input type="checkbox"/> 25-50% <input type="checkbox"/> 50-75%, <input type="checkbox"/> >75%	
<input type="checkbox"/> Grinding	<input type="checkbox"/> <25% <input type="checkbox"/> 25-50% <input type="checkbox"/> 50-75%, <input type="checkbox"/> >75%	<input type="checkbox"/> Terrazzo Work	<input type="checkbox"/> <25% <input type="checkbox"/> 25-50% <input type="checkbox"/> 50-75%, <input type="checkbox"/> >75%	
<input type="checkbox"/> Hand Sweeping	<input type="checkbox"/> <25% <input type="checkbox"/> 25-50% <input type="checkbox"/> 50-75%, <input type="checkbox"/> >75%	<input type="checkbox"/> Tile Work	<input type="checkbox"/> <25% <input type="checkbox"/> 25-50% <input type="checkbox"/> 50-75%, <input type="checkbox"/> >75%	
<input type="checkbox"/> Milling	<input type="checkbox"/> <25% <input type="checkbox"/> 25-50% <input type="checkbox"/> 50-75%, <input type="checkbox"/> >75%			
<input type="checkbox"/> Other:			<input type="checkbox"/> <25% <input type="checkbox"/> 25-50% <input type="checkbox"/> 50-75%, <input type="checkbox"/> >75%	
Base Material Spec.		Silica Contained in Base Material		
<input type="checkbox"/> Asphalt <input type="checkbox"/> Block <input type="checkbox"/> Brick <input type="checkbox"/> Concrete <input type="checkbox"/> Cement <input type="checkbox"/> Grout <input type="checkbox"/> Gunite <input type="checkbox"/> Mortar <input type="checkbox"/> Soil <input type="checkbox"/> Terrazo <input type="checkbox"/> Tile <input type="checkbox"/> Other Material: _____		<input type="checkbox"/> From bulk sample _____ <input type="checkbox"/> From estimate (SDS or list) _____		
Tool Being Used <u>Attach Photo</u>		PPE Utilized		
Make: _____ Model: _____		<input type="checkbox"/> Dust Mask (DM) <input type="checkbox"/> Half Face (HF) <input type="checkbox"/> Full Face (FF) <input type="checkbox"/> Protective Clothing (PC) <input type="checkbox"/> Gloves (G)		
Control Methods				
<input type="checkbox"/> None (N) <input type="checkbox"/> Dry (D) <input type="checkbox"/> Natural Ventilation (NV) <input type="checkbox"/> Employee Downwind <input type="checkbox"/> Employee Upwind <input type="checkbox"/> Employee Crosswind <input type="checkbox"/> General Mechanical (GM) <input type="checkbox"/> Local Exhaust Ventilation - with HEPA vacuum (LE-HEPA) <input type="checkbox"/> Local Exhaust Ventilation - with shop vac or other vacuum (LE-OTHER) <input type="checkbox"/> Wet Method - Continuous Drip (WM-CD) <input type="checkbox"/> Wet Method - Continuous Spray (WM-CS) <input type="checkbox"/> Wet Method - Non-continuous Drip (WM-NCD) Frequency: _____ <input type="checkbox"/> Wet Method - Non-continuous Spray (WM-NCS) Frequency: _____				

Project Number		Date	Project Name	
Silica controls maintenance plan in effect?		<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Controls checked during sampling period?		<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Employee trained and familiar with operation of controls?		<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Weather Conditions				
<input type="checkbox"/> Sunny <input type="checkbox"/> Overcast <input type="checkbox"/> Rain <input type="checkbox"/> Snow				
Environment	Air/Wind Currents	Temperature		
<input type="checkbox"/> Outdoors <input type="checkbox"/> Open Sided(Free Flow) <input type="checkbox"/> Enclosed 1Side (Limited Flow) <input type="checkbox"/> Enclosed All Sides (No Flow)	<input type="checkbox"/> None <input type="checkbox"/> < 5mph <input type="checkbox"/> 5-10 mph <input type="checkbox"/> > 10 mph	<input type="checkbox"/> < 40°F (<40) <input type="checkbox"/> 40°F < x < 90°F (40-90) <input type="checkbox"/> > 90°F (>90)		
Nearby Visible Dust Sources		Humidity		
<input type="checkbox"/> None <input type="checkbox"/> Other workers doing same task <input type="checkbox"/> Partial from Other tasks and sources <input type="checkbox"/> Continuous from Other tasks and sources		<input type="checkbox"/> < 20% (<20) <input type="checkbox"/> 20% < x < 40% (20-40) <input type="checkbox"/> 40% < x < 60% (40-60) <input type="checkbox"/> 60% < x < 80% (60-80) <input type="checkbox"/> < 80% (<80)		
Sampling Intent				
<input type="checkbox"/> Respirable Silica (RS)				
Sampling Type				
<input type="checkbox"/> Personal (P) <input type="checkbox"/> Area (A - Distance to Activity) <input type="checkbox"/> Bulk (B)				
Pump Identification		Analytical Method		
Make/Model:		NIOSH 7500; OSHA ID-142		
Filter / Cassette #	Pre-Calibration	Post- Calibration	Flow Rates	
	Date	Date	Pre Rate	
Cyclone Type				
	Sampling Times		Post Rate	
Agent	Start	Stop	Time	
Respirable Silica				
	Start	Stop	Time	Average Flow rate
Average Flow Rate	X	Total Sampling Time	Total Volume	
Laboratory Results (ug/m3)				
Quartz	Cristobalite	Trydymite	RCS	
Notations				

Samplers Name (Print)

Samplers Signature

Attachment D

Heat Illness and Prevention Plan

Arcadis Heat Illness Prevention Plan (HIPP)
HASP Supplement

Purpose and Scope

Date Completed

The purpose of this document is to serve as a planning tool and implementation guide to assist the project team, onsite personnel, and the Site Safety Officer (SSO) or other designated responsible party to comply with the requirements set forth by **Cal/OSHA Title 8 CCR 3395 Heat Illness Prevention Standard** and the **Washington State Outdoor Heat Exposure Regulations 296-62-09510 thru 09560**.

NOTE: This HASP Supplement is required to be used in California and Washington states. The Arcadis Health and Safety Standards ARC HSIH013 Heat Stress Prevention, and ARC HSGE008 Injury and Illness Prevention Program (IIPP) must accompany this HASP Supplement. To completely address the regulatory requirements for work in CA and WA states these standards are required to be used in association with the project-specific HASP and this supplement.

The scope of this HIPP applies to Arcadis projects which include, but are not limited to: outdoor operations such as contractor oversight, construction, refining, oil and gas extraction, asbestos removal, and hazardous waste site activities and interior work particularly tasks which require employees to wear PPE which can increase the risk for heat stress for the wearer. This HIPP provides guidance to prevent or reduce the risk of work-related heat illness. This HASP Supplement provides site specific instructions for actions to be completed at the project site.

Project sites in other states and provinces are expected to use this HASP Supplement as a Best Management Practice to prevent heat related illness injuries.

Project Site Name

Authority and Implementation

The following designated individuals have authority and responsibility for implementing the provisions of this program at the project work site indicated above.

Project Manager

Site Safety Officer (SSO)

SSO Designated Alternate

Acclimatization of Personnel for Heat Stress Prevention

The degree to which personnel have been able to physiologically adjust or acclimatize to working under hot conditions affects ability to safely do work. Acclimatized individuals generally have lower heart rates and body temperatures than unacclimated individuals, and sweat sooner and more profusely. This enables them to maintain lower skin and body temperatures at a given level of environmental heat and work loads than unacclimated workers. Acclimatization can occur after a few days of exposure to the hot work environment. OSHA/NIOSH suggests an acclimatization period of 2-3 days for fit personnel. On the 1st day personnel should spend 50% of the day exposed to / working in the hot environment and increasing the amount of work 10-20% based on personnel response to the hot environment and work load.

Arcadis Heat Illness Prevention Plan (HIPPP)
HASp Supplement

Procedures for Provisions for Potable Water

The SSO or designee will be responsible for implementing the following when conditions at the site are anticipated to exceed 80 degrees (°) Fahrenheit (F) / 26.6° Celsius (C)

1. Proper hydration is critical to preventing heat related illness and injury. Project sites will maintain an adequate supply of suitably cool, fresh and pure potable water on site/readily accessible to allow each employee to consume 1 quart (1 L) of water per hour, ideally at a rate of four 8-oz (250 mL) cups per hour.

NOTE: Fresh and pure water is defined as being "odor free and suitably cool". Where suitably cool means water being cooler than the ambient temperature but not so cold as to cause discomfort or prevent drinking.

NOTE: Electrolyte replacement drinks or "Sports Drinks" should be used to replace essential minerals lost during sweating. Sports drinks should supplement water intake e.g. one "sport drink" to every three bottles of water (3 waters : 1 sport drink)

2. During the Tailgate Safety Meeting and site briefings identify and communicate the type and location of the water source. The water source must provide suitably cool, fresh, and pure water in sufficient quantity for all employees at the site. Water shall be provided free of charge or expenses will be reimbursed for employees. If the source is potable plumbed water do not complete Item 6 of this Section.

3. Communicate to staff whether all water for the day will be provided at the start of the shift (e.g., 2 gallons / 8 L per employee for an 8-hour shift), or how and when water will be replenished.

NOTE: A sufficient quantity of water must always be present and readily accessible to allow every employee to consume at least 1 quart (1L) of water per hour. It is suggested to have a minimum of three hours supply of water per employee on hand.

4. Water supplies must be positioned as close as reasonable possible to site workers. Placing water only in shaded areas or by toilet facilities is not sufficient, particularly at large work sites or at multi-story construction sites. Drinking water sources need to be close enough to workers to allow for routine consumption per the rate noted above.

5. Inspect the coolers / water dispensers for cleanliness and replenishment of water and cooling ice routinely based on temperatures and staff size. Cooling ice will be stored in clean coolers if added directly to water dispensers.

NOTE: If the site temperature exceeds 90° F / 32° C the frequency of the cooler inspection will increase to verify water remains cool and the water supply is maintained.

6. Oversee the daily inspection and maintenance of coolers to ensure they are kept clean and in good condition.

Potable Water Source & Location

<input type="checkbox"/> Potable plumbed source	Location:	
<input type="checkbox"/> Bottled water in chilled cooler	Location:	
<input type="checkbox"/> Drinking water dispenser & cups	Location:	

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Procedures for Provisions for Potable Water Continued

Check which applies. Must check at least one box, or provide additional detail.

<input type="checkbox"/>	Ice will be purchased at the start of each day.
<input type="checkbox"/>	Ice will be provided by an onsite source or vendor service. Ice to be potable
<input type="checkbox"/>	Alternative potable ice source: _____
<input type="checkbox"/>	Food safe cleaning product for water cooler.
<input type="checkbox"/>	Sufficient amount of drinking water cups for each employee per dispenser.
<input type="checkbox"/>	Other items needed: _____

Access to Shade

The SSO or designee is responsible for implementing the following for how shade will be coordinated and provided **when temperatures exceed 80° F / 26° C**.

1. Access to shade must be allowed at all times. Before the start of work, the location of the shade areas, the importance of taking shade breaks, recognizing the signs and symptoms of heat illness, the schedule of shade breaks, and the location of shade break locations (if not portable) will be addressed during each Tailgate Safety Meeting and site briefing.

NOTE: Where required by regulation, shade breaks will be taken at a minimum rate of 10 minutes of shade for every two hour work period. As temperature increases shade breaks will increase in frequency. See the Heat Index table below for Heat Index specific Action Levels defining shade break frequency and duration.

2. The amount of shaded area must be able to accommodate all employees taking a recovery or rest break including employees on meal breaks. The shaded area(s) don't need to provide shade to accommodate **all employees** on a site or working a shift at the same time. An example includes rotating routine breaks among employees. Also, additional portable shade structures can be erected on an "as-needed" basis.

Employees must have enough shaded space so they can sit in a normal posture fully in the shade with enough space to allow for sitting without being in physical contact with each other. Employees who desire access to shade must not be deprived of it due to lack of space.

3. Employees who take a preventative cool-down rest;

(1) shall be monitored and asked if they are experiencing symptoms of heat related illness. (2) shall be encouraged to remain in the shade. (3) shall not be ordered back to work until signs or symptoms of heat illness have abated, but in no event less than 5 minutes in addition to the time needed to access the shade.

If an employee exhibits signs or symptoms of heat illness while taking a preventative cool-down rest the SSO will provide appropriate support (e.g. additional hydration and/or call to WorkCare) or emergency response support as needed based on symptoms.

4. Shade structures will be relocated to follow the crew for moving tasks. Shade structures will be placed within 50 feet of the work area, if practical. Shade structures must be no further than a short walk away (e.g. 2-3 minutes) from the work area. This consideration becomes more critical as the temperature rises above 80° F (26 C).

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Access to Shade Continued

5. In situations where it is not safe or feasible to provide shade, the SSO will document in the HASP Supplement the unsafe or unfeasible conditions, and include the steps taken to provide alternative cooling measures equivalent to shade.

Unsafe/unfeasible conditions: _____

Alternative Cooling Measures Implemented:

<input type="checkbox"/>	Provide vehicles with working air conditioner to all employees for rest breaks / recovery breaks / meal breaks.
<input type="checkbox"/>	Provide temporary or mobile shade structure(s) that are either ventilated or open to air movement (Secure against wind.)
<input type="checkbox"/>	Provide a building / permanent structure(s) in close proximity to the work area with a cooling environment via mechanical ventilation or open to air movement which will be used for shade. (Job trailer, pavilion, manufacturing building, etc.)
<input type="checkbox"/>	Other: _____

Monitoring of Weather and Heat Index Table

1. The SSO or designee must check the extended weather forecast in advance of the upcoming work on a weekly basis. Work schedules will be adjusted in advance, taking into consideration whether high temperatures or a heat wave is expected.

Accepted weather forecasting resources include webpages "NOAA.gov" or "weather.com" or see the NIOSH Heat Tool (formerly the OSHA Heat Tool app)

<https://www.cdc.gov/niosh/topics/heatstress/heatapp.html>

2. Before work starts for the day or shift, the SSO will review the forecasted temperature and humidity for the (exterior) work site and compare conditions against the National Weather Service Heat Index (below) to evaluate the risk level for heat illness. Determination will be made of whether or not workers will be exposed to a combination of temperature and humidity characterized as "Caution", "Extreme Caution", "Danger" or "Extreme Danger" for heat illnesses.

NOTE: It is important to know the temperature at which these warnings occur. When working outdoors see the Heat Index Table in this supplement for Action Level specific instructions for hazard controls.



3. Where state regulations indicate a thermometer or similar on-site monitoring device will be used at the job site to monitor for sudden increases in temperature. The SSO will be responsible for obtaining a thermometer/weather station prior to the start of work and make it readily visible / accessible where it can easily be monitored throughout the course of the day.

NOTE: If the temperature is > 80°F (26 C) shade structures will be opened and made available to workers. If temperature is ≥ 95° F (35 C) additional preventive measures will be implemented.

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Monitoring of Weather and Heat Index Table Continued

		Relative Humidity (%)																			
		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Temperature (°F)	80	77	78	78	79	79	79	80	80	80	81	81	82	82	83	84	84	85	86	86	87
	81	78	79	79	79	79	80	80	81	81	82	82	83	84	85	86	86	87	88	90	91
	82	79	79	80	80	80	80	81	81	82	83	84	84	85	86	88	89	90	91	93	95
	83	79	80	80	81	81	81	82	82	83	84	85	86	87	88	90	91	93	95	97	99
	84	80	81	81	81	82	82	83	83	84	85	86	88	89	90	92	94	96	98	100	103
	85	81	81	82	82	82	83	84	84	85	86	88	89	91	93	95	97	99	102	104	107
	86	81	82	83	83	83	84	85	85	87	88	89	91	93	95	97	100	102	105	108	112
	87	82	83	83	84	84	85	86	87	88	89	91	93	95	98	100	103	106	109	113	116
	88	83	84	84	85	85	86	87	88	89	91	93	95	98	100	103	106	110	113	117	121
	89	84	84	85	85	86	87	88	89	91	93	95	97	100	103	106	109	113	117	122	
	90	84	85	86	86	87	88	89	91	92	95	97	100	103	106	109	113	117	122	127	
	91	85	86	87	87	88	89	90	92	94	97	99	102	105	109	113	117	122	126	132	
	92	86	87	88	88	89	90	92	94	96	99	101	105	108	112	116	121	126	131		
	93	87	88	89	89	90	92	93	95	98	101	104	107	111	116	120	125	130	136		
	94	87	89	90	90	91	93	95	97	100	103	106	110	114	119	124	129	135	141		
	95	88	89	91	91	93	94	96	99	102	105	109	113	118	123	128	134	140			
	96	89	90	92	93	94	96	98	101	104	108	112	116	121	126	132	138	145			
	97	90	91	93	94	95	97	100	103	106	110	114	119	125	130	136	143	150			
	98	91	92	94	95	97	99	102	105	109	113	117	123	128	134	141	148				
	99	92	93	95	96	98	101	104	107	111	115	120	126	132	138	145	153				
	100	93	94	96	97	100	102	106	109	114	118	124	129	136	143	150	158				
	101	93	95	97	99	101	104	108	112	116	121	127	133	140	147	155					
	102	94	96	98	100	103	106	110	114	119	124	130	137	144	152	160					
	103	95	97	99	101	104	108	112	116	122	127	134	141	148	157	165					
	104	96	98	100	103	106	110	114	119	124	131	137	145	153	161						
105	97	99	102	104	108	112	116	121	127	134	141	149	157	166							
106	98	100	103	106	109	114	119	124	130	137	145	153	162	172							
107	99	101	104	107	111	116	121	127	134	141	149	157	167								
108	100	102	105	109	113	118	123	130	137	144	153	162	172								
109	100	103	107	110	115	120	126	133	140	148	157	167	177								
110	101	104	108	112	117	122	129	136	143	152	161	171									
111	102	106	109	114	119	125	131	139	147	156	166	176									
112	104	107	111	115	121	127	134	142	150	160	170	181									
113	104	108	112	117	123	129	137	145	154	164	175										
114	105	109	113	119	125	132	140	148	158	168	179										
115	106	110	115	121	127	134	143	152	162	173	184										
116	107	111	116	122	129	137	146	155	166	177											
117	108	112	118	124	132	140	149	159	170	181											
118	108	113	119	126	134	142	152	162	174	186											
119	109	114	121	128	136	145	155	166	178												
120	110	116	122	130	138	148	158	170	182												
121	111	117	124	132	141	151	162	174	187												
122	111	118	125	134	143	154	165	178													
123	112	119	127	136	146	157	169	182													
124	113	120	129	138	148	160	172														
125	114	121	130	140	151	163	176														



Heat Index

Extreme Danger	Heat stroke likely.
Danger	Sunstroke, muscle cramps, and/or heat exhaustion likely. Heatstroke possible with prolonged exposure and/or physical activity.
Extreme Caution	Sunstroke, muscle cramps, and/or heat exhaustion possible with prolonged exposure and/or physical activity.
Caution	Fatigue possible with prolonged exposure and/or physical activity.

Note: The Heat Index table was developed with an expectation of partial shade & light wind conditions present. Work conducted in direct / full sunlight (e.g. no partial shade) and no wind adds up to 15° F (8° C) to the Heat Index evaluation.

Monitoring of Weather and Heat Index Table Continued

Heat Index Action Levels. Below are recommended additional controls. Each level of additional controls is additive as the temperature increases.

	CAUTION 80° - 90° F (26° - 32° C). Implement one or more of the following measures: Provide and direct hydration, schedule breaks, ensure lightweight clothing is worn, provide break areas with shade / ventilation / air conditioning.
	EXTREME CAUTION 90° - 105° F (32° - 40.5° C). Implement all the previous and add one or more of the following: Provide light duty PPE, cooled break areas, shaded work areas. NOTE: "Light Duty PPE" includes hard hat sun shades, sun hats, dry or wet evaporative cooling vests, microfiber cooling towels / scarves / headbands / hard hat suspension inserts or sweatbands, hard hat neck shades.
	DANGER 105° - 130° F (40.5° - 54.4° C). Implement all the previous and add one or more of the following: cooled work areas, modified work schedule, heavy duty PPE, and personnel physiological monitoring. NOTE: "Heavy Duty PPE" phase-change cooling vests, gel pack or ice pack equipped cooling vests. Consider engineering controls such as forced ventilation.
	EXTREME DANGER ≥ 130° F (≥ 54.4° C). If working at this temperature or greater Stop Work until conditions change or hazards are effectively controlled via the items listed above. At this range of temperatures it is critical to implement personnel vital sign monitoring for determining the appropriate frequency and duration of Work / Rest cycles.

Work / Rest Cycle Duration and Frequency Process

All workers, regardless if they are wearing permeable or impermeable clothing, should be monitored when conditions warrant e.g., when temperatures exceed 80°F / 26.6°C. If impermeable clothing is worn (e.g., not standard cotton/synthetic work clothes), it is a best practice to begin monitoring workers when temps are > 70°F in the work area. Prioritize workers completing strenuous tasks. Prioritization should also apply to work conducted indoors, for strenuous tasks, and/or if additional PPE is worn (such as Level C respiratory protection or CPC). If impermeable clothing, Level C, or CPC is not worn, follow the Heat Index table instructions and evaluate personnel monitoring as part of the high heat measures. Details provided below for appropriate work/rest cycle development with the default rest cycle being a 15-minute interval for every hour when temperatures exceed 90°F.

NOTE: Warning signs include: When a person's sustained (e.g., several minutes) heart rate exceeds 180 beats per minute (bpm) minus their age (e.g., 180 - age = X) for individuals with normal cardiac performance per their physician; or a body core temperature exceeds 101.3°F / 38.5°C for acclimatized workers or 100°F / 38°C for unacclimated workers; a recovery heart rate at 1 minute after a peak work effort is greater than 120 bpm; or there are symptoms of sudden and severe fatigue, nausea, dizziness, or lightheadedness.

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Suggested Frequency and Duration of Work / Rest Cycles Applying Physiological Monitoring of Acclimatized Personnel

Adjusted Temp. (1)	Permeable PPE (2)	Impermeable PPE (3)
> 90° F / 32° C	After ea. 45 mins. of work	After ea. 15 mins. working
87.5-90° F / 30.8-32.2° C	After ea. 60 mins. of work	After ea. 30 mins. Working
82.5-87.5° F / 28.1-30.8° C	After ea. 90 mins. of work	After ea. 60 mins. Working
77.5-82.5° F / 25.3-28.1° C	After ea. 120 mins. of work	After ea. 90 mins. Working
72.5-77.5° F / 22.5-25.3° C	After ea. 150 mins. of work	After ea. 120 mins. Working

NOTES:

(1) Adjusted air temp (ta adj) calculation: $ta\ adj\ F = ta\ F + (13 \times \% \text{ sunshine})$. Measure the air temperature (ta) with a thermometer (shielded from radiant heat). Estimate the percent sunshine by judging what percent time the sun is not covered by clouds that are thick enough to produce a shadow. (100 percent sunshine = no cloud cover and a sharp, distinct shadow; 0 percent sunshine = no shadows.)

(2) Permeable PPE consists of cotton clothing with long sleeves and pants or breathable coveralls.

(3) Add 1.8 °F for Tyvek coveralls; add 5.4 °F for heavy clothing; add 19.8 °F for impermeable/semi-impermeable PPE - Level A/B suits)

Heart Rate Monitoring

When conducting heart rate monitoring, first record a resting heart rate to establish the individuals daily baseline heart rate. Count the radial pulse (located on the inside of the wrist below the thumb) during a 30 second interval before the start of work to establish a baseline heart rate. During rest cycles count the heart rate as early as possible at the beginning of the rest cycle and again 3-5 minutes later. The heart rate should fall and soon approach the individuals baseline heart rate.

- If the heart rate exceeds 110 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third and keep the rest period the same.
- If the heart rate still exceeds 110 beats per minute at the next rest period, shorten the following work cycle by one-third.

Body Temperature Monitoring

Use an oral, inner ear, or an infrared type thermometer to measure the body temperature at the end of the work period (If using an oral thermometer record temperature before drinking liquids).

- If oral temperature exceeds 99.6°F (37.6°C), shorten the next work cycle by one-third without changing the rest period.
- If oral temperature still exceeds 99.6°F (37.6°C) at the beginning of the next rest period, shorten the following work cycle by one-third.
- Do not permit a worker to wear a semi-permeable or impermeable garment when his/her oral temperature exceeds 100.6 °F (38.1 °C).

Arcadis Heat Illness Prevention Plan (HIPPP)
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Procedures for High Heat Conditions and Heat Waves

These procedures are additional preventative measures to be implemented when the temperature is > 95° F (35° C). The SSO or designee is responsible for ensuring effective observation and monitoring of employees during periods of high heat by implementing one or more of the following procedures:

1. SSO or designee will supervise 20 or fewer employees.
2. The “Buddy System” is mandatory. Conduct routine checks for early signs of Heat Illness. Set and verify routine consumption of water & sports drinks in a 3:1 ratio.
3. Maintain regular communication between Project Manager or SSO / designee and field staff (e.g. via mobile phone, radio or another effective means) for observation of early signs of heat illness.
4. Designate one or more employees as authorized to contact emergency medical services and communicating that if no designate is identified and the SSO is unavailable that any employee can call for emergency medical assistance.
5. Modify work schedule to avoid hottest parts of the day (e.g. start work earlier in the AM, stop work for the hottest hours of the day, conduct work during the evening).

Additionally, tailgate Safety Meetings will include a review the high heat procedures, encourage employees to drink plenty of water, and remind employees of the importance to take a preventative or recovery cool-down rest when necessary.

Employees will be observed for alertness and signs and symptoms of heat illness at regular intervals to be documented in the field book or field log.

The “Buddy System” must be implemented. Particular attention needs to be paid to new employees or employees who have yet to acclimate to high heat conditions. Additionally, frequent communication will be maintained with employees working by themselves (via cell phone or two-way radio), to evaluate early warning signs and symptoms of heat illness.

When the SSO is not available, an alternate responsible person must be assigned to look for signs and symptoms of heat illness. Such a designated observer will be trained and know what steps to take if heat illness occurs.

"Heat Wave" Procedures

A "heat wave" as defined by NOAA, is a period of abnormally and uncomfortably hot and unusually humid weather." Typically, a heat wave lasts 2 or more days. A "Heat Wave" as defined for the purposes of this Standard is when temperatures are sustained above 80° F / 26° C. During a heat wave or if site conditions indicate the potential for "Extreme Caution", "Danger" or "Extreme Danger" per the NOAA Heat Index Table the following steps will be taken:

Work schedules will be modified to protect workers from heat illnesses. The SSO or designee in coordination with the project team, will use their Stop Work Authority and evaluate the following actions and document the action in the daily field log

1. Modify work hours to exclude the hottest parts of the day.
2. Reschedule work or specific tasks that require strenuous exertion or Stop Work.

If schedule modifications are not possible, the Heat Illness Prevention Plan will be reviewed before work resumes. At a minimum, procedures for heat illness prevention, the provisions of the high heat procedures, the weather forecast and emergency response protocols will be reviewed.

Employees will be provided with additional water and rest breaks and will be observed more frequently. During work activities and rest breaks, employees will be observed for signs and symptoms of heat illness.

All employees will maintain frequent communication with the SSO or designee, who will be monitoring workers for possible symptoms of heat illness. In the event of large project sites where the SSO may be unable to be near the workers (to directly observe or communicate with them), then communication via a cell phone or radio may be used for this purpose provided reception in the area is reliable.

Procedure for Emergency Response

Emergency procedures include recognizing the symptoms of heat related illness. A critical step also involves ensuring that effective communication is established either through voice, direct observation or electronic means such as via mobile phones or 2-way radios. In an emergency situation it is critical that employees understand the process and contact information for requesting emergency medical support. The reception coverage for the site must be evaluated and understood to ensure adequate communication is in place across the project site. During a heat wave or hot temperatures, workers will be reminded and encouraged to immediately report to the SSO any signs or symptoms of the onset of heat stress they are experiencing.

Procedure for Emergency Response Continued

The SSO or designee is responsible for implementing the following procedures for emergency response. These procedures include, but are not limited to, the following:

1. Prior to assigning staff to a particular work site, during the Tailgate H&S Safety Meeting all site workers will review the HASP along with the identified Hospital precise directions (such as streets or road names, distinguishing features, and distances to major roads), to avoid a delay of emergency medical services.
2. Prior to work, efforts will be made to ensure that a qualified, appropriately trained and equipped personnel are consistently available to render first aid.
3. Prior to the morning Tailgate Safety Meeting, an evaluation of whether or not a language barrier is present at the site for understanding the necessary preventative measures and emergency notifications procedures can be completed. Necessary steps will be taken (such as assigning the responsibility to call emergency medical services to the SSO or an English speaking worker) to ensure that emergency medical services can be immediately called in the event of an emergency.
4. All SSOs and supervisors will carry cell phones or other means of communication to ensure that emergency medical services can be called. Routine checks will be made to ensure the devices are allowed on site, have adequate reception across the site, and are functional prior to each shift.
5. When an employee reports symptoms, or displaying symptoms of possible heat illness, steps will be taken immediately to keep the affected employee cool and comfortable. Evaluate whether 1st aid is to be administered or emergency services are to be contacted or the employee is to be taken to an emergency facility for care.

Procedure for Handling a Sick Employee

Signs of Heat Stress: Excessive fatigue, heavy sweating, headaches, abdominal and/or upper thigh cramps, mild dizziness, elevated pulse.

Signs of Heat Exhaustion: Cool, moist, pale or flushed skin, nausea or vomiting, disorientation or confusion.

Signs of Heat Stroke: Hot, red skin which can feel dry to the touch, or moist from overexertion, changes in consciousness, rapid or weak pulse, shallow rapid breathing.

The SSO or designee is responsible for implementing the following procedures for evaluating and providing care for a sick employee:

1. When an employee displays signs or symptoms consistent with the heat related illness, the SSO or designee will check the sick employee and determine whether resting in the shade and drinking cool water will suffice or if emergency service providers will need to be called.

Arcadis Heat Illness Prevention Plan (HIPP)
HASP Supplement

Procedure for Handling a Sick Employee Continued

If determined to be a **non-emergency** (e.g. heat cramps or heat stress) the SSO will contact **WorkCare Injury Assistance Hotline 1-888-449-7787** for 1st aid medical assistance. In the event of the injury being an emergency, or potentially (e.g. Heat Exhaustion or Heat Stroke) contact emergency support services.

2. When an employee displays possible signs or symptoms of heat illness and no trained first aid worker or supervisor is available at the site, emergency service providers will be called.

3. Emergency service providers will be called immediately if an employee displays signs or symptoms of advanced stage heat related illness like Heat Exhaustion or Heat Stroke (loss of consciousness, incoherent speech, convulsions, red and hot face) or does not get better after drinking cool water in intervals of 8 ounces every 15 minutes and resting in the shade. While the ambulance is in route, assign a person to care for the injured, first aid will be administered (cool the worker by placing them in the shade, remove excess layers of clothing, place ice pack in the armpits and groin area and fan the person). A worker determined to be suffering an advanced stage of heat related illness will not be allowed to leave the site except under medical care, or as directed by a medical professional.

4. If an employee displays signs or symptoms of advanced stage heat related illness (loss of consciousness, incoherent speech, convulsions, red and hot face), and the work site is located more than 20 minutes away from a hospital, call emergency service providers, communicate the signs and symptoms of the victim, and request an Air Ambulance if necessary.

Revisions, notes, amendments, and clarifications specific to this plan will be detailed in the space below:

Attachment E

Safety Data Sheets (SDSs)




SAFETY DATA SHEET

1. Identification

Product identifier	UNLEADED GASOLINE
Other means of identification	
SDS number	002-GHS
Synonyms	Regular/Premium/Midgrade - Unleaded Gasoline, RFG - Reformulated Unleaded Gasoline, Conventional Unleaded Gasoline, Oxygenated Unleaded Gasoline, Non-Oxygenated Unleaded Gasoline, CARB (California Air Resource Board) Unleaded Gasoline, RBOB - Reformulated Blendstock for Oxygenate Blending, CBOB - Conventional Blendstock for Oxygenate Blending, Petrol, Motor Fuel. See section 16 for complete information.
Recommended use	Motor Fuel Motor fuels.
Recommended restrictions	None known.
Manufacturer/Importer/Supplier/Distributor information	
Manufacturer/Supplier	Valero Marketing & Supply Company and Affiliates One Valero Way San Antonio, TX 78269-6000
General Assistance	210-345-4593
E-Mail	CorpHSE@valero.com
Contact Person	Industrial Hygienist
Emergency Telephone	24 Hour Emergency 866-565-5220 1-800-424-9300 (CHEMTREC USA)

2. Hazard(s) identification

Physical hazards	Flammable liquids	Category 1
Health hazards	Skin corrosion/irritation	Category 2
	Germ cell mutagenicity	Category 1B
	Carcinogenicity	Category 1B
	Reproductive toxicity	Category 2
	Specific target organ toxicity, single exposure	Category 3 narcotic effects
	Specific target organ toxicity, repeated exposure	Category 2
	Aspiration hazard	Category 1
Environmental hazards	Hazardous to the aquatic environment, long-term hazard	Category 2
OSHA defined hazards	Not classified.	
Label elements		

Signal word

Danger

Hazard statement

Extremely flammable liquid and vapor. Causes skin irritation. May cause genetic defects. May cause cancer. Suspected of damaging fertility or the unborn child. May cause drowsiness or dizziness. May cause damage to organs (blood, liver, kidney) through prolonged or repeated exposure. May be fatal if swallowed and enters airways. Toxic to aquatic life with long lasting effects.

Precautionary statement**Prevention**

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting// equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Do not breathe gas/mist/vapors/spray. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. Use only outdoors or in a well-ventilated area. Avoid release to the environment.

Response

If exposed or concerned: Get medical advice/attention. If inhaled: Remove person to fresh air and keep comfortable for breathing. If swallowed: Immediately call a poison center/doctor. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention. In case of fire: Use alcohol-resistant foam, carbon dioxide, dry powder or water fog for extinction. Collect spillage.

Storage

Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool.

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC)

None known.

3. Composition/information on ingredients**Mixtures**

Chemical name	CAS number	%
Gasoline	86290-81-5	80-100
Toluene	108-88-3	0-30
Hexane (Other Isomers)	96-14-0	5-25
Xylene (o, m, p isomers)	1330-20-7	0-25
Octane (All isomers)	111-65-9	0-18.5
Ethanol	64-17-5	0-10
1,2,4, Trimethylbenzene	95-63-6	0-6
n-Heptane	142-82-5	1-5
Pentane	109-66-0	1-5
Cumene	98-82-8	0-5
Ethylbenzene	100-41-4	0-5
Benzene	71-43-2	0-4.9
n-Hexane	110-54-3	0-3
Cyclohexane	110-82-7	0-3

4. First-aid measures**Inhalation**

Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.

Skin contact

Remove contaminated clothing and shoes. Wash off immediately with soap and plenty of water. Get medical attention if irritation develops or persists. Wash clothing separately before reuse. Destroy or thoroughly clean contaminated shoes. If high pressure injection under the skin occurs, always seek medical attention.

Eye contact

Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention.

Ingestion

Rinse mouth thoroughly. Do not induce vomiting without advice from poison control center. Do not give mouth-to-mouth resuscitation. If vomiting occurs, keep head low so that stomach content does not get into the lungs. Never give anything by mouth to a victim who is unconscious or is having convulsions. Get medical attention immediately.

Most important symptoms/effects, acute and delayed

Irritation of nose and throat. Irritation of eyes and mucous membranes. Skin irritation. Unconsciousness. Corneal damage. Narcosis. Cyanosis (blue tissue condition, nails, lips, and/or skin). Decrease in motor functions. Behavioral changes. Edema. Liver enlargement. Jaundice. Conjunctivitis. Proteinuria. Defatting of the skin. Rash.

UNLEADED GASOLINE

913457 Version #: 03 Revision date: 23-May-2014 Print date: 23-May-2014

Prepared by 3E Company

Indication of immediate medical attention and special treatment needed

In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

General information

If exposed or concerned: get medical attention/advice. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before re-use.

5. Fire-fighting measures

Suitable extinguishing media

Water spray. Water fog. Foam. Dry chemical powder. Carbon dioxide (CO₂).

Unsuitable extinguishing media

Do not use a solid water stream as it may scatter and spread fire.

Specific hazards arising from the chemical

Vapor may cause flash fire. Vapors can flow along surfaces to distant ignition source and flash back. Sensitive to static discharge.

Special protective equipment and precautions for firefighters

Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

Fire-fighting equipment/instructions

Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Withdraw immediately in case of rising sound from venting safety devices or any discoloration of tanks due to fire. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Move containers from fire area if you can do it without risk. In the event of fire, cool tanks with water spray. Cool containers exposed to flames with water until well after the fire is out. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Vapors may form explosive air mixtures even at room temperature. Prevent buildup of vapors or gases to explosive concentrations. Some of these materials, if spilled, may evaporate leaving a flammable residue. Water runoff can cause environmental damage. Use compatible foam to minimize vapor generation as needed.

Specific methods

Use water spray to cool unopened containers.

General fire hazards

Extremely flammable liquid and vapor. Containers may explode when heated.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Keep unnecessary personnel away. Local authorities should be advised if significant spills cannot be contained. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. See Section 8 of the SDS for Personal Protective Equipment.

Methods and materials for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop leak if you can do so without risk. This material is a water pollutant and should be prevented from contaminating soil or from entering sewage and drainage systems and bodies of water. Dike the spilled material, where this is possible. Prevent entry into waterways, sewers, basements or confined areas.

Use non-sparking tools and explosion-proof equipment.

Small Spills: Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. This material and its container must be disposed of as hazardous waste.

Large Spills: Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Prevent product from entering drains. Do not allow material to contaminate ground water system. Should not be released into the environment.

Environmental precautions

Gasoline may contain oxygenated blend products (Ethanol, etc.) that are soluble in water and therefore precautions should be taken to protect surface and groundwater sources from contamination. If facility or operation has an "oil or hazardous substance contingency plan", activate its procedures. Stay upwind and away from spill. Wear appropriate protective equipment including respiratory protection as conditions warrant. Do not enter or stay in area unless monitoring indicates that it is safe to do so. Isolate hazard area and restrict entry to emergency crew. Extremely flammable. Review Firefighting Measures, Section 5, before proceeding with clean up. Keep all sources of ignition (flames, smoking, flares, etc.) and hot surfaces away from release. Contain spill in smallest possible area. Recover as much product as possible (e.g. by vacuuming). Stop leak if it can be done without risk. Use water spray to disperse vapors. Use compatible foam to minimize vapor generation as needed. Spilled material may be absorbed by an appropriate absorbent, and then handled in accordance with environmental regulations. Prevent spilled material from entering sewers, storm drains, other unauthorized treatment or drainage systems and natural waterways. Contact fire authorities and appropriate federal, state and local agencies. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, contact the National Response Center at 1-800-424-8802.

7. Handling and storage

Precautions for safe handling

Eliminate sources of ignition. Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity. Wear personal protective equipment. Do not breathe dust/fume/gas/mist/vapors/spray. Avoid contact with eyes, skin, and clothing. Do not taste or swallow. Avoid prolonged exposure. Use only with adequate ventilation. Wash thoroughly after handling. The product is extremely flammable, and explosive vapor/air mixtures may be formed even at normal room temperatures. DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. When using, do not eat, drink or smoke. Avoid release to the environment.

Conditions for safe storage, including any incompatibilities

Flammable liquid storage. Do not handle or store near an open flame, heat or other sources of ignition. This material can accumulate static charge which may cause spark and become an ignition source. The pressure in sealed containers can increase under the influence of heat. Keep container tightly closed in a cool, well-ventilated place. Keep away from food, drink and animal feedings. Keep out of the reach of children.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Components	Type	Value
Benzene (CAS 71-43-2)	STEL	5 ppm
	TWA	1 ppm

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Cumene (CAS 98-82-8)	PEL	245 mg/m3 50 ppm
Cyclohexane (CAS 110-82-7)	PEL	1050 mg/m3 300 ppm
Ethanol (CAS 64-17-5)	PEL	1900 mg/m3 1000 ppm
Ethylbenzene (CAS 100-41-4)	PEL	435 mg/m3 100 ppm
n-Heptane (CAS 142-82-5)	PEL	2000 mg/m3 500 ppm
n-Hexane (CAS 110-54-3)	PEL	1800 mg/m3 500 ppm
Octane (All isomers) (CAS 111-65-9)	PEL	2350 mg/m3 500 ppm
Pentane (CAS 109-66-0)	PEL	2950 mg/m3 1000 ppm
Xylene (o, m, p isomers) (CAS 1330-20-7)	PEL	435 mg/m3 100 ppm

US. OSHA Table Z-2 (29 CFR 1910.1000)

Components	Type	Value
Benzene (CAS 71-43-2)	Ceiling	25 ppm
	TWA	10 ppm
Toluene (CAS 108-88-3)	Ceiling	300 ppm
	TWA	200 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value
1,2,4, Trimethylbenzene (CAS 95-63-6)	TWA	25 ppm
Benzene (CAS 71-43-2)	STEL	2.5 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value
	TWA	0.5 ppm
Cumene (CAS 98-82-8)	TWA	50 ppm
Cyclohexane (CAS 110-82-7)	TWA	100 ppm
Ethanol (CAS 64-17-5)	STEL	1000 ppm
Ethylbenzene (CAS 100-41-4)	TWA	20 ppm
Gasoline (CAS 86290-81-5)	STEL	500 ppm
	TWA	300 ppm
Hexane (Other Isomers) (CAS 96-14-0)	STEL	1000 ppm
	TWA	500 ppm
n-Heptane (CAS 142-82-5)	STEL	500 ppm
	TWA	400 ppm
n-Hexane (CAS 110-54-3)	TWA	50 ppm
Octane (All isomers) (CAS 111-65-9)	TWA	300 ppm
Pentane (CAS 109-66-0)	TWA	600 ppm
Toluene (CAS 108-88-3)	TWA	20 ppm
Xylene (o, m, p isomers) (CAS 1330-20-7)	STEL	150 ppm
	TWA	100 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
1,2,4, Trimethylbenzene (CAS 95-63-6)	TWA	125 mg/m3
		25 ppm
Benzene (CAS 71-43-2)	STEL	1 ppm
	TWA	0.1 ppm
Cumene (CAS 98-82-8)	TWA	245 mg/m3
		50 ppm
Cyclohexane (CAS 110-82-7)	TWA	1050 mg/m3
		300 ppm
Ethanol (CAS 64-17-5)	TWA	1900 mg/m3
		1000 ppm
Ethylbenzene (CAS 100-41-4)	STEL	545 mg/m3
		125 ppm
	TWA	435 mg/m3
		100 ppm
Hexane (Other Isomers) (CAS 96-14-0)	Ceiling	1800 mg/m3
		510 ppm
	TWA	350 mg/m3
		100 ppm
n-Heptane (CAS 142-82-5)	Ceiling	1800 mg/m3
		440 ppm
	TWA	350 mg/m3
		85 ppm
n-Hexane (CAS 110-54-3)	TWA	180 mg/m3
		50 ppm
Octane (All isomers) (CAS 111-65-9)	Ceiling	1800 mg/m3
		385 ppm
	TWA	350 mg/m3
		75 ppm
Pentane (CAS 109-66-0)	Ceiling	1800 mg/m3

UNLEADED GASOLINE

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Prepared by 3E Company

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Toluene (CAS 108-88-3)	TWA	610 ppm
		350 mg/m3
	STEL	120 ppm
		560 mg/m3
Xylene (o, m, p isomers) (CAS 1330-20-7)	TWA	150 ppm
		375 mg/m3
	STEL	100 ppm
		655 mg/m3
	TWA	150 ppm
		435 mg/m3
		100 ppm

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Determinant	Specimen	Sampling Time
Benzene (CAS 71-43-2)	25 µg/g	S-Phenylmercapturic acid	Creatinine in urine	*
Ethylbenzene (CAS 100-41-4)	0.7 g/g	Sum of mandelic acid and phenylglyoxylic acid	Creatinine in urine	*
n-Hexane (CAS 110-54-3)	0.4 mg/l	2,5-Hexanedione, without hydrolysis		*
	0.4 mg/l	2,5-Hexanedione, without hydrolysis	Urine	*
Toluene (CAS 108-88-3)	0.3 mg/g	o-Cresol, with hydrolysis	Creatinine in urine	*
	0.03 mg/l	Toluene	Urine	*
	0.02 mg/l	Toluene	Blood	*
Xylene (o, m, p isomers) (CAS 1330-20-7)	1.5 g/g	Methylhippuric acids	Creatinine in urine	*

* - For sampling details, please see the source document.

Exposure guidelines

US - California OELs: Skin designation

Benzene (CAS 71-43-2)	Can be absorbed through the skin.
Cumene (CAS 98-82-8)	Can be absorbed through the skin.
n-Hexane (CAS 110-54-3)	Can be absorbed through the skin.
Toluene (CAS 108-88-3)	Can be absorbed through the skin.

US - Minnesota Haz Subs: Skin designation applies

Cumene (CAS 98-82-8)	Skin designation applies.
Toluene (CAS 108-88-3)	Skin designation applies.

US - Tennessee OELs: Skin designation

Cumene (CAS 98-82-8)	Can be absorbed through the skin.
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US ACGIH Threshold Limit Values: Skin designation

Benzene (CAS 71-43-2)	Can be absorbed through the skin.
n-Hexane (CAS 110-54-3)	Can be absorbed through the skin.

US. NIOSH: Pocket Guide to Chemical Hazards

Cumene (CAS 98-82-8)	Can be absorbed through the skin.
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US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Cumene (CAS 98-82-8)	Can be absorbed through the skin.
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Appropriate engineering controls

Provide adequate general and local exhaust ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof equipment.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear safety glasses. If splash potential exists, wear full face shield or chemical goggles.
Skin protection	
Hand protection	Avoid exposure - obtain special instructions before use. Wear protective gloves. Be aware that the liquid may penetrate the gloves. Frequent change is advisable. Suitable gloves can be recommended by the glove supplier.
Other	Wear chemical-resistant, impervious gloves. Full body suit and boots are recommended when handling large volumes or in emergency situations. Flame retardant protective clothing is recommended.
Respiratory protection	Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. If workplace exposure limits for product or components are exceeded, NIOSH approved equipment should be worn. Proper respirator selection should be determined by adequately trained personnel, based on the contaminants, the degree of potential exposure and published respiratory protection factors. This equipment should be available for nonroutine and emergency use.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Consult supervisor for special handling instructions. Avoid contact with eyes. Avoid contact with skin. Keep away from food and drink. Wash hands before breaks and immediately after handling the product. Provide eyewash station and safety shower. Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Appearance	Light straw to red clear liquid with characteristic strong odor of gasoline.
Physical state	Liquid.
Form	Liquid.
Color	Light straw to red clear.
Odor	Characteristic Gasoline Odor (Strong).
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	44.01 °F (6.67 °C) May start to solidify at this temperature. This is based on data for the following ingredient: Cyclohexane. Weighted average: -91.9 deg C (-133.4 deg F)
Initial boiling point and boiling range	80.06 - 440.06 °F (26.7 - 226.7 °C)
Flash point	-40.0 °F (-40.0 °C) (closed cup)
Evaporation rate	10 - 11 BuAc
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	1.3 %
Flammability limit - upper (%)	7.1 %
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	60.8 - 101.3 kPa (20°C)
Vapor density	3 - 4 (Air=1)
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Very slightly soluble.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	> 500 °F (> 260 °C)
Decomposition temperature	Not available.
Viscosity	Not available.

Other information

Flash point class	Flammable IA
VOC (Weight %)	100 %

10. Stability and reactivity

Reactivity	None known.
Chemical stability	Stable under normal temperature conditions and recommended use.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Heat, flames and sparks. Ignition sources. Contact with incompatible materials. Do not pressurize, cut, weld, braze, solder, drill, grind or expose empty containers to heat, flame, sparks, static electricity, or other sources of ignition; they may explode and cause injury or death.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information**Information on likely routes of exposure**

Ingestion	Swallowing or vomiting of the liquid may result in aspiration into the lungs.
Inhalation	In high concentrations, mists/vapors may irritate throat and respiratory system and cause coughing. May cause drowsiness or dizziness.
Skin contact	Causes skin irritation. Prolonged contact may cause dryness of the skin.
Eye contact	May cause eye irritation.

Symptoms related to the physical, chemical and toxicological characteristics	Irritation of nose and throat. Irritation of eyes and mucous membranes. Skin irritation. Unconsciousness. Corneal damage. Narcosis. Cyanosis (blue tissue condition, nails, lips, and/or skin). Decrease in motor functions. Behavioral changes. Edema. Liver enlargement. Jaundice. Conjunctivitis. Proteinuria. Defatting of the skin. Rash.
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Information on toxicological effects

Acute toxicity	Based on available data, the classification criteria are not met.
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Components	Species	Test Results
1,2,4, Trimethylbenzene (CAS 95-63-6)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	> 3160 mg/kg
<i>Inhalation</i>		
LC50	Rat	> 2000 mg/l, 48 Hours
<i>Oral</i>		
LD50	Rat	6 g/kg
Benzene (CAS 71-43-2)		
Acute		
<i>Oral</i>		
LD50	Rat	3306 mg/kg
Cumene (CAS 98-82-8)		
Acute		
<i>Inhalation</i>		
LC50	Mouse	2000 mg/l, 7 Hours
	Rat	8000 mg/l, 4 Hours
<i>Oral</i>		
LD50	Rat	1400 mg/kg
Cyclohexane (CAS 110-82-7)		
Acute		
<i>Oral</i>		
LD50	Rat	12705 mg/kg

Components	Species	Test Results
Ethanol (CAS 64-17-5)		
Acute		
<i>Inhalation</i>		
LC50	Rat	30000 mg/m3
Ethylbenzene (CAS 100-41-4)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	> 5000 mg/kg
<i>Oral</i>		
LD50	Rat	5.46 g/kg
n-Heptane (CAS 142-82-5)		
Acute		
<i>Inhalation</i>		
LC50	Rat	103 mg/l, 4 Hours
n-Hexane (CAS 110-54-3)		
Acute		
<i>Oral</i>		
LD50	Rat	28710 mg/kg
Octane (All isomers) (CAS 111-65-9)		
Acute		
<i>Inhalation</i>		
LC50	Rat	118 mg/l, 4 Hours
Pentane (CAS 109-66-0)		
Acute		
<i>Inhalation</i>		
LC50	Rat	364 mg/l, 4 Hours
Toluene (CAS 108-88-3)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	14.1 ml/kg
<i>Inhalation</i>		
LC50	Rat	8000 mg/l, 4 Hours
<i>Oral</i>		
LD50	Rat	2.6 g/kg
Xylene (o, m, p isomers) (CAS 1330-20-7)		
Acute		
<i>Oral</i>		
LD50	Rat	4300 mg/kg
Skin corrosion/irritation	Causes skin irritation.	
Serious eye damage/eye irritation	Based on available data, the classification criteria are not met.	
Respiratory or skin sensitization		
Respiratory sensitization	Based on available data, the classification criteria are not met.	
Skin sensitization	Based on available data, the classification criteria are not met. This substance may have a potential for sensitization which may provoke an allergic reaction among sensitive individuals.	
Germ cell mutagenicity	May cause genetic defects. In in-vitro experiments, neither benzene, toluene nor xylene changed the number of sister-chromatid exchanges (SCEs) or the number of chromosomal aberrations in human lymphocytes. However, toluene and xylene caused a significant cell growth inhibition which was not observed with benzene in the same concentrations. In in-vivo experiments, toluene changed the number of sister-chromatid exchanges (SCEs) in human lymphocytes. Toluene may cause heritable genetic damage.	

Carcinogenicity May cause cancer.

IARC Monographs. Overall Evaluation of Carcinogenicity

Benzene (CAS 71-43-2)	1 Carcinogenic to humans.
Cumene (CAS 98-82-8)	2B Possibly carcinogenic to humans.
Ethylbenzene (CAS 100-41-4)	2B Possibly carcinogenic to humans.
Gasoline (CAS 86290-81-5)	2B Possibly carcinogenic to humans.
Toluene (CAS 108-88-3)	3 Not classifiable as to carcinogenicity to humans.
Xylene (o, m, p isomers) (CAS 1330-20-7)	3 Not classifiable as to carcinogenicity to humans.

NTP Report on Carcinogens

Benzene (CAS 71-43-2)	Known To Be Human Carcinogen.
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US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Benzene (CAS 71-43-2)	Cancer
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Reproductive toxicity	Suspected of damaging fertility or the unborn child. Benzene, xylene and toluene have demonstrated animal effects of reproductive toxicity. Animal studies of benzene have shown testicular effects, alterations in reproductive cycles, chromosomal aberrations and embryo/fetotoxicity. Ethanol has demonstrated human effects of reproductive toxicity. Can cause adverse reproductive effects - such as birth defects, miscarriages, or infertility. Avoid exposure to women during early pregnancy. Avoid contact during pregnancy/while nursing.
Specific target organ toxicity - single exposure	May cause drowsiness or dizziness.
Specific target organ toxicity - repeated exposure	May cause damage to the following organs through prolonged or repeated exposure: Blood. Kidneys. Liver.
Aspiration hazard	May be fatal if swallowed and enters airways.
Chronic effects	Repeated exposure of laboratory animals to high concentrations of gasoline vapors has caused kidney damage and cancer in rats and cancer in mice. Gasoline was evaluated for genetic activity in assays using microbial cells, cultured mammalian cells and rat bone marrow cells. The results were all negative so gasoline was considered nonmutagenic under these conditions. Overexposure to this product or its components has been suggested as a cause of liver abnormalities in laboratory animals and humans. Lifetime studies by the American Petroleum Institute have shown that kidney damage and kidney cancer can occur in male rats after prolonged inhalation exposures at elevated concentrations of total gasoline. Kidneys of mice and female rats were unaffected. The U.S. EPA Risk Assessment Forum has concluded that the male rat kidney tumor results are not relevant for humans. Total gasoline exposure also produced liver tumors in female mice only. The implication of these data for humans has not been determined.
Further information	Symptoms may be delayed.

12. Ecological information

Ecotoxicity Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Components		Species	Test Results
1,2,4, Trimethylbenzene (CAS 95-63-6)			
Aquatic			
Fish	LC50	Fathead minnow (Pimephales promelas)	7.19 - 8.28 mg/l, 96 hours
Benzene (CAS 71-43-2)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	8.76 - 15.6 mg/l, 48 hours
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	7.2 - 11.7 mg/l, 96 hours
Cumene (CAS 98-82-8)			
Aquatic			
Crustacea	EC50	Brine shrimp (Artemia sp.)	3.55 - 11.29 mg/l, 48 hours
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	2.7 mg/l, 96 hours
Cyclohexane (CAS 110-82-7)			
Aquatic			
Fish	LC50	Fathead minnow (Pimephales promelas)	3.961 - 5.181 mg/l, 96 hours
		Striped bass (Morone saxatilis)	8.3 mg/l, 96 hours

Components		Species	Test Results
Ethanol (CAS 64-17-5)			
Aquatic			
Algae	EC50	Freshwater algae	275 mg/l, 72 Hours
		Marine water algae	1970 mg/l
Fish	LC50	Fathead minnow (Pimephales promelas)	> 100 mg/l, 96 hours
		Freshwater fish	11200 mg/l, 96 Hours
Invertebrate	EC50	Freshwater invertebrate	5012 mg/l, 48 Hours
		Marine water invertebrate	857 mg/l, 48 Hours
Ethylbenzene (CAS 100-41-4)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	1 - 4 mg/l, 48 hours
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	4 mg/l, 96 hours
n-Heptane (CAS 142-82-5)			
Aquatic			
Fish	LC50	Western mosquitofish (Gambusia affinis)	4924 mg/l, 96 hours
n-Hexane (CAS 110-54-3)			
Aquatic			
Fish	LC50	Fathead minnow (Pimephales promelas)	2.101 - 2.981 mg/l, 96 hours
Toluene (CAS 108-88-3)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	5.46 - 9.83 mg/l, 48 hours
Fish	LC50	Pink salmon (Oncorhynchus gorbuscha)	6.86 - 8.48 mg/l, 96 hours
Xylene (o, m, p isomers) (CAS 1330-20-7)			
Aquatic			
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	8 mg/l, 96 Hours

Persistence and degradability Not available.

Bioaccumulative potential Not available.

Partition coefficient n-octanol / water (log Kow)

Benzene (CAS 71-43-2)	2.13
Cumene (CAS 98-82-8)	3.66
Cyclohexane (CAS 110-82-7)	3.44
Ethanol (CAS 64-17-5)	-0.31
Ethylbenzene (CAS 100-41-4)	3.15
Hexane (Other Isomers) (CAS 96-14-0)	3.6
Octane (All isomers) (CAS 111-65-9)	5.18
Pentane (CAS 109-66-0)	3.39
Toluene (CAS 108-88-3)	2.73
Xylene (o, m, p isomers) (CAS 1330-20-7)	3.2
n-Heptane (CAS 142-82-5)	4.66
n-Hexane (CAS 110-54-3)	3.9

Mobility in soil Not available.

Other adverse effects Not available.

13. Disposal considerations

Disposal instructions Dispose in accordance with all applicable regulations. This material and its container must be disposed of as hazardous waste. Dispose of this material and its container to hazardous or special waste collection point. Incinerate the material under controlled conditions in an approved incinerator. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container.

Hazardous waste code D001: Waste Flammable material with a flash point <140 °F
D018: Waste Benzene

US RCRA Hazardous Waste U List: Reference

Benzene (CAS 71-43-2)	U019
Cumene (CAS 98-82-8)	U055
Cyclohexane (CAS 110-82-7)	U056
Toluene (CAS 108-88-3)	U220
Xylene (o, m, p isomers) (CAS 1330-20-7)	U239

Waste from residues / unused products Dispose of in accordance with local regulations.

Contaminated packaging Offer rinsed packaging material to local recycling facilities.

14. Transport information

DOT

UN number	UN1203
UN proper shipping name	Gasoline
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Packing group	II
Environmental hazards	
Marine pollutant	Yes
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	139, B33, B101, T8
Packaging exceptions	150
Packaging non bulk	202
Packaging bulk	242

IATA

UN number	UN1203
UN proper shipping name	Gasoline
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Label(s)	3
Packing group	II
Environmental hazards	Yes
ERG Code	3H
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number	UN1203
UN proper shipping name	Gasoline
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Label(s)	3
Packing group	II
Environmental hazards	
Marine pollutant	Yes
EmS	F-E, S-E
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable. However, this product is a liquid and if transported in bulk covered under MARPOL 73/78, Annex I.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Benzene (CAS 71-43-2)	Cancer
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Central nervous system
Blood
Aspiration
Skin
Eye
Respiratory tract irritation
Flammability

CERCLA Hazardous Substance List (40 CFR 302.4)

Benzene (CAS 71-43-2)	LISTED
Cumene (CAS 98-82-8)	LISTED
Cyclohexane (CAS 110-82-7)	LISTED
Ethanol (CAS 64-17-5)	LISTED
Ethylbenzene (CAS 100-41-4)	LISTED
Gasoline (CAS 86290-81-5)	LISTED
Hexane (Other Isomers) (CAS 96-14-0)	LISTED
n-Heptane (CAS 142-82-5)	LISTED
n-Hexane (CAS 110-54-3)	LISTED
Octane (All isomers) (CAS 111-65-9)	LISTED
Pentane (CAS 109-66-0)	LISTED
Toluene (CAS 108-88-3)	LISTED
Xylene (o, m, p isomers) (CAS 1330-20-7)	LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - No
	Delayed Hazard - No
	Fire Hazard - No
	Pressure Hazard - No
	Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Toluene	108-88-3	0-30
Xylene (o, m, p isomers)	1330-20-7	0-25
1,2,4, Trimethylbenzene	95-63-6	0-6
Cumene	98-82-8	0-5
Ethylbenzene	100-41-4	0-5
Benzene	71-43-2	0-4.9
n-Hexane	110-54-3	0-3
Cyclohexane	110-82-7	0-3

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Benzene (CAS 71-43-2)
Cumene (CAS 98-82-8)
Ethylbenzene (CAS 100-41-4)
n-Hexane (CAS 110-54-3)
Toluene (CAS 108-88-3)
Xylene (o, m, p isomers) (CAS 1330-20-7)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Pentane (CAS 109-66-0)

Safe Drinking Water Act (SDWA) Not regulated.

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

Toluene (CAS 108-88-3) 6594

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Toluene (CAS 108-88-3) 35 % weight/volumn

DEA Exempt Chemical Mixtures Code Number

Toluene (CAS 108-88-3) 594

US. Massachusetts RTK - Substance List

1,2,4, Trimethylbenzene (CAS 95-63-6)
Benzene (CAS 71-43-2)
Cumene (CAS 98-82-8)
Cyclohexane (CAS 110-82-7)
Ethanol (CAS 64-17-5)
Ethylbenzene (CAS 100-41-4)
Hexane (Other Isomers) (CAS 96-14-0)
n-Heptane (CAS 142-82-5)
n-Hexane (CAS 110-54-3)
Octane (All isomers) (CAS 111-65-9)
Pentane (CAS 109-66-0)
Toluene (CAS 108-88-3)
Xylene (o, m, p isomers) (CAS 1330-20-7)

US. New Jersey Worker and Community Right-to-Know Act

1,2,4, Trimethylbenzene (CAS 95-63-6)
Benzene (CAS 71-43-2)
Cumene (CAS 98-82-8)
Cyclohexane (CAS 110-82-7)
Ethanol (CAS 64-17-5)
Ethylbenzene (CAS 100-41-4)
n-Heptane (CAS 142-82-5)
n-Hexane (CAS 110-54-3)
Octane (All isomers) (CAS 111-65-9)
Pentane (CAS 109-66-0)
Toluene (CAS 108-88-3)
Xylene (o, m, p isomers) (CAS 1330-20-7)

US. Pennsylvania Worker and Community Right-to-Know Law

1,2,4, Trimethylbenzene (CAS 95-63-6)
Benzene (CAS 71-43-2)
Cumene (CAS 98-82-8)
Cyclohexane (CAS 110-82-7)
Ethanol (CAS 64-17-5)
Ethylbenzene (CAS 100-41-4)
Gasoline (CAS 86290-81-5)
Hexane (Other Isomers) (CAS 96-14-0)
n-Heptane (CAS 142-82-5)
n-Hexane (CAS 110-54-3)
Octane (All isomers) (CAS 111-65-9)
Pentane (CAS 109-66-0)
Toluene (CAS 108-88-3)
Xylene (o, m, p isomers) (CAS 1330-20-7)

US. Rhode Island RTK

1,2,4, Trimethylbenzene (CAS 95-63-6)
Benzene (CAS 71-43-2)
Cumene (CAS 98-82-8)
Cyclohexane (CAS 110-82-7)
Ethylbenzene (CAS 100-41-4)
n-Hexane (CAS 110-54-3)
Pentane (CAS 109-66-0)
Toluene (CAS 108-88-3)
Xylene (o, m, p isomers) (CAS 1330-20-7)

US. California Proposition 65**US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance**

Benzene (CAS 71-43-2)
Cumene (CAS 98-82-8)
Ethylbenzene (CAS 100-41-4)
Toluene (CAS 108-88-3)

International Inventories

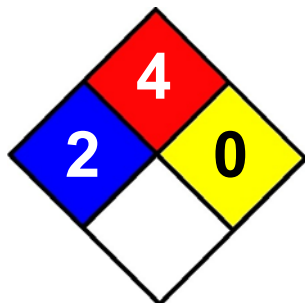
Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	13-May-2013
Revision date	23-May-2014
Version #	03
Further information	HMIS® is a registered trade and service mark of the NPCA.
NFPA Ratings	



References	ACGIH EPA: AQUIRE database NLM: Hazardous Substances Data Base US. IARC Monographs on Occupational Exposures to Chemical Agents HSDB® - Hazardous Substances Data Bank IARC Monographs. Overall Evaluation of Carcinogenicity National Toxicology Program (NTP) Report on Carcinogens ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices
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Disclaimer	This material Safety Data Sheet (SDS) was prepared in accordance with 29 CFR 1910.1200 by Valero Marketing & Supply Co., ("VALERO"). VALERO does not assume any liability arising out of product use by others. The information, recommendations, and suggestions presented in this SDS are based upon test results and data believed to be reliable. The end user of the product has the responsibility for evaluating the adequacy of the data under the conditions of use, determining the safety, toxicity and suitability of the product under these conditions, and obtaining additional or clarifying information where uncertainty exists. No guarantee expressed or implied is made as to the effects of such use, the results to be obtained, or the safety and toxicity of the product in any specific application. Furthermore, the information herein is not represented as absolutely complete, since it is not practicable to provide all the scientific and study information in the format of this document, plus additional information may be necessary under exceptional conditions of use, or because of applicable laws or government regulations.
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SAFETY DATA SHEET

Nonflammable Gas Mixture: Isobutylene / Nitrogen / Oxygen

Section 1. Identification

GHS product identifier	: Nonflammable Gas Mixture: Isobutylene / Nitrogen / Oxygen
Other means of identification	: Not available.
Product type	: Gas.
Product use	: Synthetic/Analytical chemistry.
SDS #	: 002103
Supplier's details	: Airgas USA, LLC and its affiliates 259 North Radnor-Chester Road Suite 100 Radnor, PA 19087-5283 1-610-687-5253
24-hour telephone	: 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture	: GASES UNDER PRESSURE - Compressed gas

GHS label elements

Hazard pictograms



Signal word	: Warning
Hazard statements	: Contains gas under pressure; may explode if heated.

Precautionary statements

General	: Read and follow all Safety Data Sheets (SDS'S) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction.
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Prevention	: Not applicable.
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Response	: Not applicable.
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Storage	: Protect from sunlight. Store in a well-ventilated place.
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Disposal	: Not applicable.
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Hazards not otherwise classified	: None known.
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Section 3. Composition/information on ingredients

Substance/mixture	: Mixture
Other means of identification	: Not available.
Product code	: 002103

Section 3. Composition/information on ingredients

Ingredient name	%	CAS number
Nitrogen	75 - 80.5	7727-37-9
oxygen	19.5 - 23.5	7782-44-7
Isobutylene	0.0000001 - 1.13	115-11-7

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : As this product is a gas, refer to the inhalation section.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Contact with rapidly expanding gas may cause burns or frostbite.
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : Contact with rapidly expanding gas may cause burns or frostbite.
- Frostbite** : Try to warm up the frozen tissues and seek medical attention.
- Ingestion** : As this product is a gas, refer to the inhalation section.

Over-exposure signs/symptoms

- Eye contact** : No specific data.
- Inhalation** : No specific data.
- Skin contact** : No specific data.
- Ingestion** : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : Contains gas under pressure. In a fire or if heated, a pressure increase will occur and the container may burst or explode.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
nitrogen oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Immediately contact emergency personnel. Stop leak if without risk.

Large spill : Immediately contact emergency personnel. Stop leak if without risk. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Avoid breathing gas. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.
Avoid contact with eyes, skin and clothing. Empty containers retain product residue and can be hazardous.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Section 7. Handling and storage

- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F). Keep container tightly closed and sealed until ready for use. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Nitrogen	ACGIH TLV (United States, 3/2019). Oxygen Depletion [Asphyxiant].
oxygen	None.
Isobutylene	ACGIH TLV (United States, 3/2019). TWA: 250 ppm 8 hours.

- Appropriate engineering controls** : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.
- Skin protection**
- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state	: Gas.
Color	: Not available.
Odor	: Not available.
Odor threshold	: Not available.
pH	: Not available.
Melting point	: -210.01°C (-346°F) This is based on data for the following ingredient: nitrogen. Weighted average: -211.83°C (-349.3°F)
Boiling point	: Not available.
Critical temperature	: Lowest known value: -146.95°C (-232.5°F) (nitrogen).
Flash point	: Not available.
Evaporation rate	: Not available.
Flammability (solid, gas)	: Not available.
Lower and upper explosive (flammable) limits	: Not available.
Vapor pressure	: Not available.
Vapor density	: Highest known value: 1.1 (Air = 1) (oxygen). Weighted average: 1 (Air = 1)
Gas Density (lb/ft ³)	: Weighted average: 0.07
Relative density	: Not applicable.
Solubility	: Not available.
Solubility in water	: Not available.
Partition coefficient: n-octanol/water	: Not available.
Auto-ignition temperature	: Not available.
Decomposition temperature	: Not available.
Viscosity	: Not applicable.
Flow time (ISO 2431)	: Not available.

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: No specific data.
Incompatible materials	: No specific data.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Hazardous polymerization	: Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Isobutylene	LC50 Inhalation Vapor	Rat	550000 mg/m ³	4 hours

Irritation/Corrosion

Not available.

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact	: Contact with rapidly expanding gas may cause burns or frostbite.
Inhalation	: No known significant effects or critical hazards.
Skin contact	: Contact with rapidly expanding gas may cause burns or frostbite.
Ingestion	: As this product is a gas, refer to the inhalation section.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact	: No specific data.
Inhalation	: No specific data.
Skin contact	: No specific data.
Ingestion	: No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects	: Not available.
Potential delayed effects	: Not available.

Long term exposure

Potential immediate effects	: Not available.
Potential delayed effects	: Not available.

Section 11. Toxicological information

Potential chronic health effects

Not available.

General	: No known significant effects or critical hazards.
Carcinogenicity	: No known significant effects or critical hazards.
Mutagenicity	: No known significant effects or critical hazards.
Teratogenicity	: No known significant effects or critical hazards.
Developmental effects	: No known significant effects or critical hazards.
Fertility effects	: No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
Nitrogen	0.67	-	low
oxygen	0.65	-	low
Isobutylene	2.34	-	low

Mobility in soil






Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Empty Airgas-owned pressure vessels should be returned to Airgas. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1956	UN1956	UN1956	UN1956	UN1956
UN proper shipping name	COMPRESSED GAS, N.O.S.(Air, Isobutylene)	COMPRESSED GAS, N.O.S.(Air, Isobutylene)	COMPRESSED GAS, N.O.S.(Air, Isobutylene)	COMPRESSED GAS, N.O.S.(Air, Isobutylene)	COMPRESSED GAS, N.O.S.(Air, Isobutylene)
Transport hazard class(es)	2.2 	2.2 	2.2 	2.2 	2.2 
Packing group	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.

“Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product.”

Additional information

TDG Classification

: Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2).

Explosive Limit and Limited Quantity Index 0.125

Passenger Carrying Road or Rail Index 75

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

U.S. Federal regulations : TSCA 8(a) CDR Exempt/Partial exemption: Not determined

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Refer to Section 2: Hazards Identification of this SDS for classification of substance.

Section 15. Regulatory information

State regulations

- Massachusetts** : The following components are listed: NITROGEN; NITROGEN (LIQUIFIED); OXYGEN (LIQUID)
- New York** : None of the components are listed.
- New Jersey** : The following components are listed: NITROGEN; OXYGEN
- Pennsylvania** : The following components are listed: NITROGEN; OXYGEN
- California Prop. 65**

This product does not require a Safe Harbor warning under California Prop. 65.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

- Australia** : All components are listed or exempted.
- Canada** : All components are listed or exempted.
- China** : All components are listed or exempted.
- Europe** : All components are listed or exempted.
- Japan** : **Japan inventory (ENCS)**: Not determined.
Japan inventory (ISHL): Not determined.
- New Zealand** : All components are listed or exempted.
- Philippines** : All components are listed or exempted.
- Republic of Korea** : All components are listed or exempted.
- Taiwan** : All components are listed or exempted.
- Thailand** : Not determined.
- Turkey** : Not determined.
- United States** : All components are active or exempted.
- Viet Nam** : All components are listed or exempted.

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health	/	1
Flammability		0
Physical hazards		3

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

Section 16. Other information

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)



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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
GASES UNDER PRESSURE - Compressed gas	On basis of test data

History

Date of printing : 11/17/2020

Date of issue/Date of revision : 11/17/2020

Date of previous issue : 1/10/2018

Version : 1.02

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

References : Not available.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Attachment F

Drone Operator Credentials

**U.S. DEPARTMENT OF TRANSPORTATION
Federal Aviation Administration
Airman Knowledge Test Report**

NAME: DONALD RALPH REED JR
FAA TRACKING NUMBER (FTN): C1169358 **EXAM ID:** 90031320205935538
EXAM: Unmanned General - Recurrent
EXAM DATE: 03/13/2020 **EXAM SITE:** LAS13401
SCORE: 88% **GRADE:** Pass **TAKE:** 1

The Airman Certification Standards (ACS) codes listed below represent incorrectly answered questions. These ACS codes and their associated Areas of Operation/Tasks/Elements may be found in the appropriate ACS document at http://www.faa.gov/training_testing/testing/acs.

A single code may represent more than one incorrect response.

UA.I.B.K1 UA.II.A.K2 UA.V.B.K3 UA.V.B.K6a

EXPIRATION DATE: 03/31/2022

DO NOT LOSE THIS REPORT

AUTHORIZED INSTRUCTOR'S STATEMENT: (if applicable)

On _____ (date) I gave the above named applicant _____ hours of additional instruction, covering each subject area shown to be deficient, and consider the applicant competent to pass the knowledge test.

Name _____

Cert. No. _____ (print clearly)

Type of instructor certificate _____

Signature _____

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Attachment G

National Grid Drone Operation Requirements

Incident Reporting

- **Contractors are required to report all work related incidents and injuries to National Grid through the UAS PM and the service Requestor**
- **Incidents Include:**
 - Work Related Injuries – incidents that result in an injury to a contractor employee or member of the public
 - Near Misses – incidents that had the potential, under different circumstances, to result in an injury
 - Good Catch - unsafe condition that requires others to take action to rectify and make safe

Incident Prevention – Job Brief

- **Items that could be covered include:**
 - Who is in charge of the work
 - Hazards and how to mitigate them
 - Work Procedures and applicable safety rules
 - Housekeeping of the work zone
 - Other risk, abnormal conditions and worst case scenarios
 - Presence of equipment movement in and around the work zone
 - Presence of other crews or 3rd party contractors
 - Required Work Zone protection and vehicle positioning to maximize protection of crew
 - Soft tissue injury potentials such as awkward positions, repetitive motions, etc.
 - Everyone's right and duty to call a Safety Stop if in doubt or the situation changes

Incident Prevention – Job Brief

- **Requirements**

- A documented job brief shall be conducted.
- When one or more departments are involved on the same job, a job brief shall be coordinated by all.
- All crew members are required to sign or initial the documented job brief and understand the hazards, mitigating controls and job/duties they are to perform.
- Comments and suggestions are encouraged.
- The person in charge shall be satisfied that each crew member knows the job he or she is to perform.
- Entire crew will be aware of emergency action plan and reporting requirements.
- All job site visitors must review and sign the job brief

Incident Prevention – Health and Safety Plan (HASP)

- **Address the safety issues unique to the project for high or medium risk-ranked services**
- **HASPs shall be used as a tool for completing daily job briefs for tasks, hazards and steps to mitigate those hazards**
- **As projects progress, lessons learned shall be used to improve the HASP**
- **The HASP must be reviewed by all members of the crew**
 - New members must review prior to start of work
 - Roster shall be included
- **HASP identifies communication requirements in case of emergency or incidents to include the reporting procedures**

Incident Prevention – Health and Safety Plan (HASP)

- **HASPs shall include:**
 - Emergency contact information
 - Roles and Responsibilities of project personnel including contact information
 - Scope of work
 - Tasks, Hazard Identification and Risk Assessment
 - Safety Hazard Checklist
 - Safety and Environmental Compliance
 - National Grid Technical Safety Requirements
 - Feeder Maps/Index Prints/Single Line Diagrams
 - Safety Bulletins pertinent to project
 - Any project permits
 - PHA requirements if needed

Incident Prevention – Process Hazard Analysis (PHA)

2.0 PROCESS HAZARD ANALYSIS

2.1 A Process Hazard Analysis (PHA) shall be developed for UAS activities: In conjunction with

2.1.1 This EOP

2.1.2 The National Grid Employee Safety Handbook

2.2 The Line of Business shall

2.2.1 Create the PHA for the specific type of UAS flight operation

2.2.2 Have PHA approved by the Process Safety Committee

2.3 The PHA shall include

2.3.1 Associated aerial and ground support

2.3.2 Provide a clear and consistent process for communications

2.4 The PHA shall

2.4.1 Be approved prior to the commencement of the work

2.4.2 Be reviewed by the entire crew(s) prior to commencement of the work

2.4.3 Be noted on the daily job brief

Note: Contact National Grid Process Safety for assistance in PHA development as needed.

Incident Prevention – Process Hazard Analysis (PHA)

- **Examples of when a PHA is required:**
 - Helicopter Construction
 - Working on deteriorated existing assets (Towers, Poles, etc.) when a significant risk of failure exists
 - Extra Deep Excavation or non-typical soil conditions
 - Overhead Crossings (Highway or Body of Water)
 - Construction Near Transmission Gas Pipe Lines
 - Multi-Lane Highways with 4 or more travel lanes and speeds greater than 45 mph
 - Implementing new technology like UAS (Initiated by the service requestor)

STATE SAFETY MONITOR/OFFICE RESPONSIBILITIES

Objective: All site safety monitors/officers should be versed in all material contained in the NG COVID-19 Rules to Stay Safe At Work eLearning and [Safe Work Guide](#)



New York

Site safety monitors are responsible for compliance with all aspects of the site safety plan

- Site/office capacity requirements
- 6ft Social distancing practices – including in small spaces – elevator, vehicles etc.
- Wearing of face coverings
- Symptom checks/contract tracing protocols
- Sick employee/visitor protocols
- Signage and posting material
- Personal Hygiene etiquette
- High touch cleaning protocols
- Decontamination cleaning protocols/practices
- PPE availability, include employee cleaning supplies
- Training and communication protocols for employees and visitors



Rhode Island

Same as NYS



Massachusetts

Construction Sites: “A site-specific COVID-19 Officer (who may also be the Health and Safety Officer) shall be designated for every site”

- Social distancing/ no congregating policy; max 2 ppl per vehicle)
- Symptom check certification
- Face covering and PPE (eye protection recommended)
- All construction workers must wear cut-resistant gloves
- Personal hygiene etiquette
- Decontamination procedures –send sick workers home
- Cleaning protocol - porta-potties; high touch and common areas; vehicles
- Crew cleaning of shared equipment duties
- Cleaning supplies – all onsite workers must help to maintain and keep stations clean
- Wash station and garbage receptacle availability
- Ability to suspend work for non-compliance

Attachment H

National Grid Contractor Safety Requirements

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FOREWORD

National Grid's vision is to be a world-class safety organization with zero injuries every day. This includes working to help ensure the safety of our employees, contractors and the community. National Grid is committed to delivering operational excellence, including excellent levels of safety internally and in cooperation with the external contractors we rely on.

The Executive Safety Committee provides review and input for Safety Policies and Procedures through the Safety Policies and Procedures Subcommittee.

The Safety department is the owner of this procedure and is responsible for maintaining and implementing this procedure, soliciting comments from stakeholders and revising as necessary.

This document, "Contractor Safety Requirements", represents the current contractor safety requirements that are unique to operations and various functional groups at National Grid. This document does not specifically reference actions that are required by OSHA, other laws, rules, or regulations. These are requirements that should be understood by the contractor and contractor compliance with all applicable federal, state and local laws, rules, and regulations is expected by National Grid as a contractual condition.

Questions regarding this procedure should be referred to the National Grid Safety Department.

This document will be updated as necessary to communicate all aspects of National Grid's contractor safety to bidders, current contractors and to reflect changes in National Grid's Safety Policies and Procedures.

Date of Review/Revision:

Revision	Date	Description
1	8/5/2004	Initial
2	3/2/2005	Additions
3	1/30/2007	Additions
4	8/1/2008	Additions
5	8/1/2010	Additions
6	2/1/2011	Audit recommendations included

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Date of Review/Revision Continued:		
Revision	Date	Description
7	9/11/2013	Additions included OH; technical changes; Compliance Monitoring; Ethics; Job Briefs
8	11/2/2015	Additions include Audit & IA recommendations; ISN alignment; technical changes, 1910. 269 updates
9	8/17/2016	Format update and technical changes
10	3/29/2017	Additions to sections 2.2.6 and 6.5
11	2/26/2018	Process Safety, PM&CC Electric and PM&CC Vegetation Additions
12	3/12/2019	Contaminated Site Work Additions
13	10/24/2019	Job brief, Hi-Vis clothing, ladder use, and air gap revisions
14	1/13/2020	Hi-Vis clothing and ladder use revisions; Fatigue Risk Addition in HASPs
15	3/10/2021	EH rated work boot and Dielectric (DI) footwear definitions and requirements; OSHA 1910.136(a) reference; requirement not to wear loose clothing; Hi-Vis vest or garment requirements
16	3/24/2021	One HASP form; HASP revisions; self-assessments; qualifications; and notice of subcontractors

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17	6/14/2021	Loose garments/items for heavy equipment operators revision; addition of heavy equipment definition
18	5/4/2022	Removed requirements to upload contractor orientation/pre-construction meeting documents to ISN; Removed requirement to upload forestry training qualifications to ISN; Clarified that medium/high risk contractors acknowledge N1402 requirements by signing the N1402 acknowledgment form in ISN; Added additional examples to the medium/high risk exposure category; Revised the pre-construction meeting/contractor orientation requirement from “may” to “shall”; Changed Corporate Safety team references to Safety Policies & Programs

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1.0 CONTRACTOR SAFETY AT NATIONAL GRID

1.1 Definitions

Adverse Public Impact

Incident that disrupts service to the public or results in adverse public reaction.

Bulk Commodity Transportation

Activities involved in the movement of bulk commodities via truck, rail, plane or water vessel onsite and offsite on behalf of National Grid that if released could have safety and / or environmental consequences. Examples include but are not limited to: gasoline, oil, boiler chemicals, LNG, Nitrogen.

Compliance Assessments (CAs)

An act of observing and engaging in discussion with employees at a job site or work area locations. Compliance Assessments are documented using the Compliance Assessment checklist for each segment of operation and are not considered anonymous. Compliance Assessments are utilized to comply with internal policy and external regulatory requirements.

Contracted Services

Contracted Services refers to any activity that is conducted by an organization or individual under the terms of a purchase order or through other financial arrangements (Procurement Card or credit card) between a National Grid representative and a contractor. Contracted services may include all types of construction and maintenance services, tree trimming, building maintenance and demolition, electrical structure dismantling, site restoration, engineering design, recycling and waste disposal, drilling, rigging, electrical, and utility pole/structure maintenance.

Contractor

An independent person or company that undertakes a contract to provide materials or labor to perform a service or do a job and are responsible for the safety of his/her employees and subcontractors.

Contractor Orientation

Contractor orientation is intended to serve as a resource in order to provide the contractor with the tools necessary to educate their employees and subcontractors. The session is not intended to train the contractor management, their employees or subcontractors. The extent and content of the orientation session shall be commensurate with the scope and type of the contractor's activities.

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Dielectric (DI) Footwear

This term describes either boots or overshoes that are labeled in accordance with ASTM F1117, marked clearly and permanently with the name of the manufacturer or supplier, the size and AC voltage rating. The footwear shall meet dielectric strength testing prescribed in ASTM F1116. Dielectric footwear shall have a minimum rating of 15kV.

Effective Safety Discussion (ESD)

A discussion with an individual or group about their safety programs, issues or concerns (safety plans, tools, equipment, procedures, etc.). They are safety discussions amongst employees that share similar work environments...office to office, field to field.

EH Rated Work Boot

ASTM F2413 EH rated work boots are the minimum foot protection standard. This boot protects against impact, compression, and low voltage exposure.

Health & Safety Plan (HASP)

Contractors who perform high or medium risk-ranked services shall submit a project-specific HASP prior to the start of the project. In this plan, the contractor shall identify all significant tasks, their anticipated hazards and mitigation steps.

Hazardous Conditions

A condition that can and is rectified immediately by the person who identified the hazard.

Heavy Equipment

Maintenance and construction equipment including excavators, compact (mini) excavators, backhoe loaders, towable compact backhoes, front end loaders, skid-steer loaders, compact loaders, digger derricks, boom trucks, cranes and bulldozers.

Incident

An unplanned event that has a human component and results in or could potentially result in harm to people, damage to property and/or adverse public impact.

Incident Management System (IMS)

National Grid's online incident management tool that allows the company to report safety, environmental and asset-related incidents, perform incident analysis, generate safety reports and monitor the organization's safety performance.

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ISNetworld, Inc. (ISN or ISN System)

Third party contractor that is a global resource for connecting Hiring Clients with safe and reliable contractors and is a contractor information management system currently contracted with National Grid.

Job Brief

A planned interactive discussion that covers, but is not limited to, potential hazards associated with the job including situational awareness (assets or other items which may impact the job at hand), work procedures involved, special precautions, and personal protective equipment requirements. The discussion should include all contractor employees, sub-contractors and team members working on a job that occurs just prior to a job, task or project. A new job brief shall be conducted for each of the following events: prior to a change in planned work specific to the job site, changes in weather conditions, extended breaks (i.e. lunch breaks) or when a new worker or company joins the crew. When possible and reasonably practical, a National Grid Representative should be present at contractor job briefings. Truck drivers for daily, non-hazardous material deliveries such as stone, gravel, concrete material or porta john cleaning are exempt from completing a job brief unless there are potential hazards associated to the driver or delivery. A National Grid representative shall talk to the driver to determine if a job brief is needed.

Major Hazard Asset (MHA)

A class of assets at National Grid, including Compressed Natural Gas (CNG), Gas Transmission (≥ 125 psig), Power Generation sites, Liquefied Natural Gas (LNG) plants, and LNG Trucking, in which any condition, or set of conditions, presents potential for a major accident to occur. Also referred to as process safety assets.

Major Accident

An event involving the release of potentially dangerous materials, the sudden and uncontrolled release of large amounts of energy (such as fires and explosions), or both. These can have catastrophic effects and can result in multiple injuries and fatalities, as well as substantial reputational, economic, property, and environmental damage

Operator Qualification (OQ)

As defined in the Code of Federal Regulations, Transportation, 49 Subpart 192.801 through 192.809 and/or DOT pipeline qualified for gas contractors doing work at National Grid. Additional state requirements pursuant to the state the contractor is working may be required.

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Process Safety Management

Method of focusing and mitigating concerns of major hazards impacting safety, environmental damage and business losses. It is an organized effort to identify and analyze the significance of hazardous situations associated with a process or activity to aid management in making critical safety decisions

Project Representative

National Grid Owner's Representative or designee who is assigned to certain contracted projects and communicates regularly with the contractor during the course of the contracted service. This person also ensures the work is being performed in accordance with the contract, including the safety requirements.

Purchase Order (P.O.)

An agreement/contract between National Grid and a contractor to provide services and/or materials. The P.O. is set up by Procurement. The term "Contract" and "P.O." are similar and may be used interchangeably. A "Blanket P.O." is set up for contractors whose work is on-going. A "one-time P.O." is set up for project work.

Qualified Electrical Worker

Those who are knowledgeable in the construction and operation of the electric power generation, transmission and/or distribution equipment involved, along with the associated hazards.

Qualified Gas Worker

Any contractor who performs covered tasks in accordance with National Grid's Operator Qualification Program and the Northeast Gas Association are required to be knowledgeable and meet all regulatory standards.

Risk Assessment

A risk assessment is the process of identifying hazards and calculating or ranking the associated risks according to: the likelihood of occurrence, the severity of the harm from the hazard, and the amount of time of exposure to the hazard.

Safety Observer

A person who is responsible for alerting the work team to any potential unsafe conditions or lack of compliance with approved work practices, procedures or guidelines.

Transportation Advisor

Third party agency specializing in federal and company mandated drug and alcohol testing programs.

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1.2 Introduction

Safety performance is a prime consideration in the selection of contractors. National Grid will stipulate safety performance requirements and responsibilities in our contracts, purchase orders (POs) and will hold the contractor accountable for meeting the contractual requirements.

National Grid's goal is to establish a long-term working relationship with contractors who share the same safety values and demonstrate those values through their work performance.

Contractor safety at National Grid involves three broad areas:

1. The Contractor Procurement (Selection) Process

Contractor safety begins with the selection of contractors who have demonstrated a strong safety record. National Grid will complete a review during the procurement process that involves determining a contractors' risk and the scope(s) of work involved. National Grid currently uses ISNetworld, Inc. as a third (3rd) party assessment process for assisting with contractor procurement. The 3rd party entity will vet and continually monitor individual contractors' compliance with applicable safety and/or risk and insurance program requirements.

2. Safety Communication

Safety communication covers all the avenues and forums in which National Grid and the contractor communicates safety. Communication begins early in the bidding phase and is on-going as an integral part of the contractor-customer relationship. The goal is to ensure clarity, transparency and to limit misunderstandings.

3. Safety Compliance

Safety compliance is the process of ensuring that the necessary technical provisions of the contract are being followed. National Grid will assign a project representative or other designee to provide guidance and oversight. The Contractor is responsible for their employees and subcontractors and shall be held accountable for ensuring compliance with all applicable safety rules while working on National Grid property, rights of way (ROWs) and our assets. Primary contractors are required to notify National Grid of any subcontractors and ensure that there is an appropriate contractual relationship in place in line with the terms and conditions of their contract.

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1.3 Risk Ranking of Work

1. National Grid characterizes and ranks risk by the scopes of work performed. The categories are classified as high, medium or low risk. Prior to being considered for work at National Grid, contractors who perform High or Medium Risk work must be pre-qualified in ISN. See Appendix A for more information regarding the National Grid Contractor Risk Matrix.
2. Activities that are designated as “high risk” means that catastrophic event can result if safety measures are not followed. Activities designated as “medium” risk present certain opportunities for moderate to significant injuries, property or reputational damage, and/or loss of service and/or possibly business continuity. Activities designated as “low” risk may still require safety compliance and control measures, although the contractor performing the work does not necessarily need to be enrolled in ISN, if that is the only classification of work that contractor performs for National Grid.
3. The designation High Risk, Medium Risk, or Low Risk, refers only to the inherent risk associated with the work activity and is not an opinion on the ability of a contractor to work safely.
4. If ,at any time, the risk changes from low to medium/high, per the risk matrix, then the medium/high risk process shall be followed. It’s the contractor’s responsibility to identify if the risk changed and to escalate to National Grid personnel.
5. The Procurement Agent will notify the bidder/contractor at the beginning of the procurement process if their contracted service has been ranked as high or medium risk.

1.4 Bidder Information Request – High and Medium Risk Work

1. Any contractor bidding on high or medium risk work shall be required to complete a questionnaire regarding the Contractor’s safety program, compliance and history of occupational illnesses and injuries (ISNetworkworld New Vendor Onboarding application form, located on the ISNetworkworld website). Contractors will also be required to demonstrate in ISN that all employees, including subcontractors, are qualified to perform the scope of services.
2. ISNetworkworld then thoroughly reviews contractors’ qualifications against a prerequisite list of National Grid criteria. National Grid has established that contractors performing high or medium risk work MUST HAVE and MAINTAIN a grade of “C” or better in the ISN system to perform work and services for National Grid. ISN will track and manage the National Grid pre-

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qualified contractor bidder lists. This bidder list is the first step for a contractor in establishing a working relationship with National Grid. For active ISN contractors, ISN will request updated information monthly. Contractors who do not have a current PO, contract, or authorized scope of work with National Grid will be considered as a Prospective bidder and will be asked to submit information quarterly. It is understood that insurance may not be maintained within National Grid standards, however, once a contractor is awarded a contract, proper and adequate insurance must be provided to ISNetworld to achieve a passing grade. Lack of insurance or inadequate insurance is an immediate "F" grade in the ISN system per National Grid criteria.

3. Project representatives may request an exemption or variance from requiring a contractor to be placed in ISNetworld for various reasons. A Supplier Exemption Request form (located in the safety policies and procedures section of Grid:home) shall be completed, documented and signed by the business unit VP and Safety Policies & Programs Director prior to contract award.
4. The information that the Bidder provides National Grid via ISN serves as the basis for assessing safety qualification. For this reason, it is important for contractors to maintain transparency throughout the process. National Grid and ISN will review all submitted information. Any effort in avoiding complete disclosure will disqualify the Bidder from bidding work at National Grid.

1.5 Safety Compliance

1. Medium/high risk contractors certify that they have been informed of National Grid safety requirements, that employees and subcontractors have the appropriate qualifications to perform the work, and agree to comply with all applicable safety requirements. This will be accomplished by the contractor signing the N-1402 Contractor Safety Requirements Acknowledgment Form in ISN annually and when there are revisions to N-1402.
2. National Grid representatives evaluate contractor compliance by conducting routine site visits, Compliance Assessments (CA's), Effective Safety Discussion (ESD) visits and attending periodic contractor safety meetings. Contractors should also perform and document safety self-assessments to ensure compliance to federal, state, local and National Grid regulations. This combined effort enhances, solidifies safety compliance and has the added benefit of quality control / quality assurance of the work performed.

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3. Contractors bidding on new work shall provide worker qualifications to the National Grid procurement representative via the "Bidder Information Request" form and/or ISN National Grid On-boarding form.
4. If a safety violation is observed by a National Grid representative, the violation will be discussed with the contractor at the time of discovery.
5. Contractor employees enrolled in ISNetworld that are involved in any accident, incident or significant near-miss event, will be required to lead an investigation and root cause determination process. In addition, the contractor must implement corrective actions and establish measures to prevent a recurrence through an incident investigation process and document the details within ISN.
6. Individual contractor personnel who habitually violate any safety rules should be identified, and the contractor should remove the individual(s) from the project. National Grid reserves the right to remove any contractor employee(s) who violate safety rules or procedures; pose a safety risk to themselves, other contractors; our employees; or the general public.
7. If a contractor is observed to be operating in a manner that creates an imminent danger to persons or property, it is the responsibility of all individuals observing the hazard to cease the hazardous operation impacted until the issue has been resolved to the satisfaction of National Grid, the Owners Representative or Safety Representative.
8. Contracts/POs shall require the contractor to immediately forward any citations, notices, or OSHA reportable cases per 29 CFR 1904.39 from a National Grid project, upon receipt to the appropriate project representative and/or ISN. The project representative shall distribute copies of the citation or notice to senior management, Safety, Procurement, and the Legal Department.
9. Willful and/or repeat violations of safety requirements by the contractor may be considered a breach of the contract and reason for contract termination.
10. If the contractor's overall safety performance is viewed as being unsatisfactory or noncompliant with contract provisions, and if the contractor is unwilling to demonstrate satisfactory program improvement, the result may be considered a breach of the contract and reason for contract termination.
11. National Grid project managers and/or construction supervisors shall document safety compliance by completing a "Contractor Performance Evaluation" for each project. This documents both positive and negative

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safety performance or behaviors and this feedback will be used in the decision process for awarding future contracts.

2.0 GENERAL SAFETY REQUIREMENTS

2.1 Introduction

1. All contractors are required, and expected to comply with all applicable requirements of the Occupational Safety and Health Administration (OSHA), and all other applicable federal, state and local laws, ordinances, regulations, and other project and site-specific permits unless superseded by identified National Grid procedures.
2. This document represents policies and safety-related work methods unique to National Grid and they may be more stringent than OSHA regulations. Contractors must follow these requirements as well as their own rules or regulations that meet or exceed OSHA and other regulatory requirements.
3. National Grid will provide more detailed information and guidance regarding specific procedures prior to commencement of work.
4. Per OSHA 1910.136(a) general requirements, the employer shall ensure that each affected employee uses protective footwear when working in areas where there is a danger of foot injuries due to falling or rolling objects, or objects piercing the sole, or when the use of protective footwear will protect the affected employee from an electrical hazard, such as a static-discharge or electric-shock hazard, that remains after the employer takes other necessary protective measures.

2.2 Applicability

Applies to: All contractors, as needed

1. In any contracted task, where a safety observer is required, it is the responsibility of the contractor to provide that person and ensure that he/she is qualified to perform the role when needed.
2. A 4:1 pitch shall be maintained when using an extension ladder or the ladder shall be tied off and/or secured and 3 points of contact shall be maintained by the climber. If both hands are needed to perform work, then fall protection is required.

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3. Although not preferred, if hard hats are worn backwards, the suspension adjuster must always face the rear. Class E hard hats are required for all electrical work.
4. ASTM F1117 Dielectric (DI) footwear is required when:
 - Workers on the ground are working within 50' of the master ground connection point to earth.
 - Operating a wire trailer and pulling/tensioning machine.
 - Operating a winch truck or reel trailer with its payout in an energized area that may result in inadvertent contact.
 - Hand digging in close proximity to energized cables within the tolerance zone.
 - Making repairs in a trench to a faulted primary cable without de-energizing any adjacent energized primary cables within close proximity.
 - Using approved live line tools to move energized primary cables in a trench.
 - If removing underground cable rubber covering or arc suppression blankets from an energized cable.
 - Working within minimum approach distance (MAD) of downed electrical wires or foot patrolling for such wires.
 - If setting poles in proximity to energized lines or equipment and using truck controls from the ground.
5. National Grid expects that all cargo will be secured in accordance with U.S. DOT requirements.
 - As of January 2004, the Federal Motor Carrier Safety Administration (FMCSA) within the U.S. DOT published Cargo Securement Rules 393.100-136 Subpart I – Protection Against Shifting and Falling Cargo.
6. Chaps are required to be worn by ANY person using a chainsaw to make a cut on the ground or assisting in that cut and within striking distance. Other situations where cut off machines are used, chaps designed for the purpose of providing durable protection from abrasion, spatter and sparks from cutting ferrous metals shall be required; however, a hazard assessment should be completed to determine the need. Always use proper cutting techniques and push blades away from the body when using tools that may slip or inadvertently make contact with the leg. Never leave any equipment running while not in use.
7. All applicable contractors must meet the requirements of drug and alcohol testing in accordance with FMCSA DOT 49 CFR Part 40 and Pipeline and

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Hazardous Materials Safety Administration (PHMSA) DOT 49 CFR Part 199. National Grid shall monitor contractor compliance to the drug and alcohol regulatory requirements through Transportation Advisor or ISNetworld as needed.

8. Contractors who drive regularly in delivery of service for National Grid shall:
 - a. Have a safe motor vehicle operations policy which must be communicated to their employees before they begin driving for company business. The contractor is expected to follow National Grid's *Safe Motor Vehicle Operations* policy to include the following:
 - Prior to moving any vehicle, the driver shall perform a "circle of safety" inspection. This is to confirm not any person, animal, equipment, or property will be injured or damaged when the vehicle is moved.
 - Drivers should back into or pull through a parking space so that when you re-enter the vehicle, the first move is forward.
 - No driver shall use a hand-held mobile telephone while driving a vehicle for National Grid business.
 - The driver shall eliminate or minimize sources of potential driving distractions to include, eating, smoking, reading, writing, grooming, use of any electronic devices, mirror or seat adjustment. These shall be done when the vehicle is not in motion.
 - b. Comply with all requirements of all federal, state and local regulations regarding safe motor vehicle operations.
 - c. Ensure that new and existing employees have a valid Driver's License in accordance with requirements of specific job duties and classification/type of the vehicle they are operating. Contractors must have an acceptable driving record. If their driving record is unacceptable, the driver shall not be permitted to operate a vehicle on behalf of National Grid.
 - d. Provide vehicles in safe operating condition, in accordance with federal state and local regulations. The vehicle should be equipped with proper safety equipment as appropriate for the vehicle type and its intended use.

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- e. Track and evaluate any vehicular accidents or incidents experienced by their employees. Corrective actions, such as driver coaching, corrective action driver training and medical/vision tests should be recommended and acted upon where appropriate. All accidents or near misses while performing work for National Grid shall be communicated to the National Grid project representative or designee and documented in the ISN system.
 - f. For more information, contact a National Grid representative for a copy of the National Grid Safety Policy *Safe Motor Vehicle Operations*
9. All contractors that require the use of heavy equipment shall ensure that competent, appropriately licensed, skilled and qualified personnel are in control of this equipment at all times. In addition, contractors shall ensure the following:
- Equipment is inspected for safety and use at the beginning of the work period of shift. All failing or defective equipment and components shall be removed from service.
 - Equipment is under the control of trained operators who are always aware of their location and the locations/presence of persons working near the equipment, its swing zones and blind spots.
 - While operating heavy equipment, operators shall ensure that loose fitting vests, jackets or other garments/items shall not be worn that could inadvertently get caught on equipment controls. Upon exiting the heavy equipment, the operator shall immediately put on their hi-vis vest/garment.
 - Equipment is kept free of debris, water, oil, grease, mud or anything that could create a slip/fall hazard inside the cab.
 - Keep hands, feet, and clothing away from power-driven and moving parts.
 - Equipment cab windows should be kept clean and free of mud, ice, snow and/or fog for maximum visibility.
 - Never carry passengers on heavy equipment or any equipment unless it is equipped to do so.
 - Ensure that stabilizers are extended prior to starting a task.

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- Before making a swing, operators shall always look out the windows and mirrors for confirmation that the area is clear. If visual confirmation is impaired or the operator is unsure due to weather, lighting or other interferences, the operator shall cease operation until an independent spotter can check the swing area and confirm it is clear.
- All excavations shall have signs posted, demarcation and controlled to prevent unauthorized persons from entering and falling inadvertently into the excavation. Excavations shall only be opened under the supervision of a competent person for excavation.
- All pot holing/test holing and exploratory excavations shall utilize vacuum excavation whenever near known or the possibility of unknown hazards such as live electrical or gas conveyances. When using vacuum excavation in combination with air blowing/air knife tools, all persons in the immediate area shall be wearing safety glasses in addition to a full face shield.
- No one is to work under a suspended load.
- Never use a bucket to lift personnel.
- Ensure stabilizers are in the upright and stored position before moving equipment.
- Operators shall not leave heavy equipment running unless the following requirements are met:
 - Parking break is engaged and wheels are chocked (if applicable)
 - Surroundings create no hazard of unqualified personnel entering unattended equipment
 - Vehicles and equipment idling limited to that designated state and local environmental regulations (generally, 3 to 5 minutes maximum). See table below for additional information

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Region	Vehicles	Idling Limit	Exemptions Include
New York	Diesel trucks	5 minutes	<ul style="list-style-type: none"> Traffic conditions Temperatures < 25°F and motionless for two hrs Hybrid electric engine charging battery vehicles To provide power to auxiliary sources
NYC	All Motor vehicles	3 minutes	<ul style="list-style-type: none"> Emergency vehicles Loading/unloading Temperatures <40°F
New Hampshire	Diesel/ Gas vehicles	5 minutes >32°F 15 minutes -10°F to 32°F No Limit <-10°F and no nuisance created	<ul style="list-style-type: none"> Traffic conditions Emergency vehicles takeoff power for auxiliary uses Vehicles being serviced or repaired Operated solely to defrost windshield
Massachusetts	All Motor Vehicles	5 minutes	<ul style="list-style-type: none"> Vehicles being serviced or repaired Vehicles in operation for which associated power is needed Delivery vehicle in which engine power is needed
Rhode Island	Diesel Motor Vehicles	5 minutes	<ul style="list-style-type: none"> Traffic conditions Operate defrosting, heating, or cooling equipment to ensure health and safety of the driver or passenger. Temperatures between 0 & 32°F - 15 minutes per hour. If < 0°F idling as needed for heat To provide power to auxiliary sources Vehicles being serviced or repaired
Vermont	All Motor Vehicles	5 minutes within any 60-minute period	<ul style="list-style-type: none"> Emergency/public safety vehicles while engaged in "official operations" Idling necessary to operate safety equipment Vehicles in operation for which associated power is needed Vehicles being serviced or repaired

- All lifts that occur on National Grid properties, ROWs or near critical assets require formal lifting plans developed by the contractor and reviewed with the National Grid project representative. Some lifts will also require formal critical lifting plans and this may include PE or geotechnical assessments to ensure a stable lifting base for the crane or other apparatus.

10. All temporary, metal fencing installed or located under transmission lines shall be grounded and have signage according to National Grid grounding standards. Contact a National Grid representative for a copy of the Engineering Documents ST 03.05.001 ST 03.06.001 and SP 08.00.001.

3.0 ADMINISTRATIVE SAFETY REQUIREMENTS

3.1 Worker Qualification Assurance

1. In order to meet National Grid safety requirements, the contractor must describe how workers, including subcontractors, are qualified. The contractor must supply information concerning the type of skills assessment performed, training programs and how they ensure that employees

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demonstrate competencies. National Grid reserves the right to review this information and request additional training requirements. All documents shall be uploaded and maintained in the ISN system for high/medium contractors. For work on process safety assets, the contractor shall ensure all workers and sub-contractors are trained and receive appropriate refresher training to maintain their appropriate level of certification and qualifications needed to perform work safely.

2. For low-risk contractors who perform activities that require PPE, which excludes office-based contractors and/or consultants, or other non-physical low-risk contractors, the contractor is required to watch an on-boarding video annually prior to any jobs starting for that year. The contractor employees and subcontractors are required to watch the video to be clear on safety expectations. Contractor to ensure that any new employees performing services for National Grid watch the on-boarding video if they hadn't watched it in the annual release. A link to the video can be obtained from the Project Representative.
3. Medium/high risk contractors shall complete an annual in-person on-boarding hosted by National Grid supervisor or project manager. The on-boarding shall emphasize required qualifications, HASP requirements, and requirements on revisions to HASPs when changes to the scope of work on the site or changes to risk occur. The National Grid supervisor or project manager are to conduct the on-boarding and determine the appropriate material to be used to communicate and emphasize the expectations.
4. Contractors shall conduct their own safety self-assessments.

Periodic field visits and/or verbal contact shall be conducted by the National Grid supervisor or project manager who are familiar with the work and existing scope. The National Grid supervisor or project manager shall review the work performed during the field checks and/or verbal contact and can ask the contractor to provide qualifications upon request.

During the field visits/verbal contacts, National Grid supervisor or project manager shall also review existing HASPs and/or job briefs as applicable for current work scope and require any revisions based on observations. The field checks/contacts are to be documented using Compliance Assessments, Contractor Evaluations, or ESDs.

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If HASP or job brief does not cover observed hazards and risk mitigation, work shall be stopped until a revised HASP or job brief and approval of the revision occurs, which is required before work can continue.

The frequency of the field visits/verbal contacts are based on risk perception of the job, including variability of conditions, and if there is greater chance of serious injury or fatality based on high-energy presence (gravity, pressure, energy). Higher volume of visits should be conducted if it's a new contractor, based on contractor's performance (review IMS, Compliance Assessments, etc.), or if variations exist including: change in project scope, weather, change in crew and/or subcontractors, change in equipment on site, new high energy factors are present (greater chance of SIF), and long duration job.

5. The contractor shall provide management personnel qualifications through resumes or other documents. National Grid may interview and/or approve management personnel if considered necessary.
6. For work on Process Safety assets (Gas Transmission, Generation, LNG, LNG Transportation and CNG), contractors shall provide a description of their experience in the business asset and specific tasks including similar projects, lists of licenses/certifications, and references from previous similar projects. Contractors shall be made knowledgeable of National Grid process safety requirements that are relevant to their specific work activities by the business hiring them.

3.2 Meetings

Applies to: All contractors; as needed

1. The pre-bid meeting is coordinated by National Grid Procurement to provide bidders with an opportunity to become acquainted with contractual requirements and specific safety issues concerning the project, including company-specific safety rules and known site conditions.
 - a. For contractors working on Major Hazard Assets, contractual language including designation of site medical facilities, locker rooms, bathrooms, etc. should be discussed by the project team with the contractor at this time.
2. At this time, Procurement will notify the prospective bidders of the following:
 - a. If they are required to submit a project safety plan (HASP) prior to the pre-construction meeting

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- b. The cost of specific safety equipment, practices and personal protective equipment shall be factored into their bid/proposal.

3.3 Project Health & Safety Plan (HASP)

Applies to: Contractors performing high or medium risk work

All HASPs shall be submitted to the National Grid project owner for review and approval before work commences. The National Grid project owner shall ensure the HASP meets National Grid criteria and includes all aspects of the project prior to a review by Field Safety (if applicable). The project owner shall review the HASP. Field Safety shall also review the HASP after the business conducts its review only if the work is unique, there's a new project manager or supervisor, the work involves PHAs, or there's unfamiliarity with the project or safety standards.

If changes are required, a new HASP shall be created and rereviewed.

If the scope of work on the job site changes from the approved HASP, work shall be stopped. The HASP shall be revised and rereviewed by National Grid Business (Field Safety review as applicable), and work can continue once the revised HASP has been reviewed for risk controls of changed scope. Until the HASP is updated work shall remain stopped. Failure to update the HASP will be considered a violation of safety requirements in line with section 1.5. It's the contractor's responsibility to inform National Grid personnel if the scope changes.

1. Contractors who perform high or medium risk-ranked services shall submit a project-specific HASP plan prior to the start of the project and/or at pre-construction meeting. The HASP is to be followed by the contractor's employees and its subcontractors.
2. At a minimum, the HASP shall include the following elements:
 - a. Roles and Responsibilities
 - b. Scope of Work
 - c. For contractors working on Major Hazard Assets - List of all equipment contractor is expected to use in work activities and indication that it meets regulatory and National Grid requirements
 - d. For contractors working on Major Hazard Assets - List of contractor materials to be brought onto work site for review and approval by National Grid

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- e. Task and hazard identification and risk assessment of the hazards
- f. Hazard mitigation/control procedures and work methods
- g. Incident investigation and reporting
- h. Compliance and monitoring

For an example of a HASP, a National Grid representative can provide related policies and procedures under the *Contractor Safety* website in Grid:home.

3. The following requirements shall be included in the HASP for all work at contaminated sites. The HASP shall be site-specific and meet the requirements of 29 CFR 1910.120(b)(4)(ii). The HASP must include at a minimum:
 - a. A safety and health risk or hazard analysis for each site task and operation
 - b. Personal Protective Equipment to be used by employees for each of the site tasks and operations
 - c. Medical surveillance requirements
 - d. Frequency and types of air monitoring and personnel monitoring to be used
 - e. Site control measures
 - f. Decontamination procedures
 - g. An emergency response plan for safe and effective responses to emergencies, including the necessary PPE and other equipment

The contractor/National Grid project representative shall contact the Environmental Department for guidance on site requirements and to initiate any required regulatory notifications.

For contractors performing bulk commodity transportation activities, a risk assessment including the potential consequences, frequency and safeguards to be used shall be performed and included in the HASP. If a preexisting National Grid requirement is in place for managing bulk commodity transportation activities, one shall follow those requirements, with no additional risk assessment being required.

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Every contracted and subcontracted employee, including those working alone, performing work on the project shall review the HASP to ensure steps in the plan are adhered to in order to mitigate hazards during the pre-job orientation. These mitigation steps shall be incorporated into all work plans and job briefs.

Truck drivers for daily, non-hazardous material deliveries such as stone, gravel, concrete material or porta john cleaning are exempt from completing a job brief unless there are potential hazards associated to the driver or delivery. A National Grid representative shall talk to the driver to determine if a job brief is needed.

In addition, all workers shall sign an attendance sheet during the pre-job orientation that they have reviewed the plan, will adhere to the mitigation steps and they fully understand the plan. This document will be kept at the job site and available for review as needed and if requested by any National Grid representative, or any other parties.

A. Roles and Responsibilities

The HASP shall identify who is providing project oversight and how they are qualified. For example, if the work requires excavation, there must be someone on-site who is qualified as an excavation competent person.

For multi-employer work-sites, the general contractor is responsible for all their employees and subcontractors. The safety plan shall clearly state this responsibility.

If requested to do so, Contractors shall designate a competent person to participate in or conduct a process hazard analysis (PHA) regarding a portion or the entirety of the project. National Grid will not be responsible for training the contractor on the PHA methodology.

B. Scope of Work

The Contractor shall clearly and briefly state the scope of work as provided by National Grid. The plan must specifically address the project or services requested by National Grid.

C. Task and Hazard Identification and Risk Assessment

The contractor shall perform a risk assessment by identifying all significant tasks, the anticipated hazards and hazard mitigation procedures.

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If, at any time, the risk level changes on the job site, the contractor is to stop work until a revised HASP or job brief is created and discussed on site and reviewed by National Grid personnel.

Contractors performing work where their employees are exposed to fatigue, shall assess fatigue risk in their HASPs and identify the mitigations they will take to manage the risk to their employees.

The contractor's cost to provide adequate safety measures and to comply with National Grid requirements must be considered and budgeted in the bid/proposal.

D. Hazard Mitigation Procedures and Work Methods

For each hazard, the contractor shall specify measures that will be taken to eliminate, control or mitigate these hazards.

A table below is an example of a method to simply and clearly organize and present the task, hazard, and mitigation steps:

Location: Substation Yard		
Task	Hazard	Mitigation Steps
Material Handling	Contact with overhead energized lines/equipment	Off load in the clear and have a safety observer present

E. Incident Investigation and Reporting

All work related incidents involving injury or illness to employees, the public or property damage (including contractor vehicle accidents) shall be reported to the National Grid project representative and documented in the ISN system.

F. Compliance Monitoring

To ensure that both contractor employees and subcontractors will achieve safety compliance, jobs with over 100 workers at any point in time or in excess of \$1 million will require a full time safety professional hired by the contractor. This safety professional must be qualified, competent and be on site anytime work is performed. Qualifications of this safety representative must be acceptable to National Grid prior to hire by the contractor and may be documented in the ISN system.

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For other jobs that don't meet the above criteria, contractors shall monitor jobs in line with their safety management system.

G. Environmental Compliance

Unless otherwise specified and based on the scope of work, any potential environmental risks shall be determined and addressed by the contractor following all applicable National Grid procedures. For more information, contact a National Grid representative regarding Environmental Procedure No.6 *Contracted Services* and Environmental Procedure No.25 Appendix A, *Environmental Screening Checklist*.

3.4 Contractor Orientation/Pre-Construction Meeting

Applies to: All contractors, as needed

1. A National Grid project representative, construction supervisor, or other designated National Grid representative that hires the contractor shall hold a contractor orientation and/or pre-construction meeting prior to the contractor working for National Grid. Other attendees may include: the Safety department, Environmental representatives, as well as contractor management as needed.
2. It is intended to serve as a method to provide the contractor with the tools necessary to educate their employees and subcontractors on National Grid's procedures and requirements. The session is not intended to train the contractor management, their employees or subcontractors.
3. All contractors are required to attend a National Grid orientation program specific to the type of work they will be performing. Contractor management representation shall also be present meeting and all documentation of attendance shall be kept at the job site and available to any National Grid representative. For visitors and contractors working on Major Hazard Assets, site orientation shall at a minimum include the following:
 - General site hazards
 - Specific hazards involved in each task the employee may perform
 - Safety policies and work rules, including Process Safety policies
 - Location of emergency equipment like fire extinguishers, eyewash stations, and first-aid supplies
 - Smoking regulations and designated smoking areas if applicable
 - Steps to take following an accident or injury

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- Proper reporting of emergencies, accidents, and near misses
- Selection, use, and care of personal protective equipment
- Emergency evacuation procedures, routes, and security systems
- Safe housekeeping rules
- Safe use of tools and equipment
- Hazardous materials in use and location of safety data sheets

Site access shall not be granted to contract employees working on process safety assets until orientation is conducted.

4. The contractor's Project Health & Safety Plan will be discussed at this meeting including a final review of the safety hazards checklist to ensure proper hazard identification and mitigation plan has been implemented.
5. These hazard mitigation measures shall be reviewed and work shall not commence until these hazards have been adequately addressed. The National Grid project representative will discuss the methods by which compliance will be achieved to National Grid safety requirements with the contractor.
6. An Emergency Call List shall be exchanged with the National Grid project representative for high or medium risk projects or as applicable. This list must contain 24-hour contact information for key contractor and project personnel, including the project representative and Safety representatives. This list should be distributed to all concerned, as determined by the project team, prior to the start of work. For contractors working on process safety assets who have an emergency response role, the emergency response plan shall be updated to clarify the contractor's role in the event of an emergency on site.
7. For routine maintenance services, a review of associated safety issues and specific facility issues, restrictions or practices, such as evacuation procedures, shall be discussed with the contractor upon initial hiring. Any changes in the facility that may affect the safety of contractor or National Grid employees or third parties must be communicated immediately.

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3.5 Job Safety Briefs

Applies to: All contractors; as needed

1. Job safety briefs shall be documented in writing. Written job safety briefs, permits, and/or plans shall be available at the job site for inspection and retained for 30 days after the job is completed.
2. National Grid reserves the right to perform a safety stand-down with any contractor for purposes including, but not limited to: recent injuries, incidents or near misses; identified hazards at job site or equivalent, and for other reasons to communicate with the contractor crew.
3. Each crew shall conduct these job safety briefs prior to commencing work at the job location. A new job brief is required when there are changes to the day's work order or plan, when there are changes in weather conditions, when a new worker or company joins the crew, and if the crew members take any extended breaks (i.e. lunch breaks). Working alone: A contractor working alone need not conduct a job brief; however, the contractor must review the hazards associated with the job as if a formal job brief had been performed.
4. Each worker must have the opportunity to voice concern. The work cannot begin until each worker signs off on the job safety brief stating that they have discussed the work, raised any questions, and agree with the plan.
5. Visitors to the work site shall be asked to read and sign the job brief acknowledging they understand contents. Contractors shall review the job brief and discuss the elements of the hazards and mitigation steps with each visitor prior to entering the job site. If a visitor refuses to sign, the general foreman will note it on the brief and will not allow the visitor to enter.
6. **SITE SIGNAGE:** An assessment of the work site should be conducted by the National Grid project representative overseeing the work with the contractor to determine if site signage will be needed to protect site visitors, the public or any other persons entering the work site. If Site Signage is required at the site, the signage shall be posted at the main entrance to the work site. The sign shall direct all visitors to check in with the Person in Charge (PIC), be escorted to the designated safe area and advised of all work currently in progress. The visitor is expected to comply with all related safety requirements and sign off on the Job Brief before entering the work site.

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3.6 Safety Meetings

1. In addition to job safety briefs, the contractor shall have regular safety meetings with their employees and subcontractors. Contractors performing high or medium risk work shall have weekly safety meetings, while low risk contractors, at a minimum, shall have safety meetings monthly and attendance must be documented.
2. The safety meetings shall include the following topics: statistics, incidents, near misses, updates on old business and new business raised. It will include the round table discussion by the workers and the action items discussed. Meeting minutes must be documented and shall include specific action items, their due dates, persons responsible and a completion date. This documentation shall be available for inspection during the project period, and for 30 days after the project is completed. For contractors working on Process Safety assets, meeting minutes from contractor shall be shared and discussed with National Grid site management.
3. Routine Safety meetings/calls between National Grid and the Contractor shall be coordinated on a regular basis. Safety meetings may include but are not limited to ESD/Compliance Assessments, Safety Briefs, Safety Day discussions and regularly scheduled calls to promote safety and best safety practices. Contractors working on Process Safety assets for more than 6 months shall schedule leadership visits to discuss process safety topics.
4. Contractors are to perform their own safety self-assessments.
5. Contractors working on process safety assets for greater than three (3) months, or as needed, shall hold project planning meetings to discuss short term and long term work items. Project planning meetings shall include safety performance monitoring against project targets and should include a National Grid SHE representative for jobs on Major Hazard Assets in addition to a National Grid site representative.

3.7 Incident Investigation

Applies to: All contractors (regardless of risk ranking)

1. All contractors are required to report any work-related incidents involving injury or illness to employees, the public or property damage to the National Grid project representative. The first priority is to ensure that anyone injured receives medical treatment. Examples of incidents may include, but is not limited to: injury, property damage, adverse public impact, near miss, a hazardous condition and road traffic collisions (RTC).

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2. Contractors will then be responsible to perform an incident investigation immediately following the incident and document root cause/corrective actions in the ISN system and to National Grid.

Incident Response Steps

In the event of an incident, the contractor shall provide details of the incident to National Grid that follows the steps below.

1. Contractor supervisor collects basic information about the incident from the employee or witnesses:
 - What happened?
 - Who and how many people were injured?
 - What treatment was administered?
 - What was the nature and seriousness of the injury?
 - Where did the incident occur?
 - When did the incident occur (date, time of day)?
 - Were there any witnesses?
2. Contractor supervisor immediately calls the project representative or other National Grid point of contact. All incidents shall be entered into the Incident Management System (IMS) as soon as possible by the National Grid project representative or National Grid designee. When dialing 1-866-322-5594, the caller will be prompted to select option 2 for anything other than an employee injury.
3. Contractor shall conduct an investigation within 24 hours of the incident that will identify contributing factors and root cause analysis relating to the incident and the corrective actions that will be taken to prevent future occurrence. This information will be documented in the ISN system.
4. Contractor vehicle accidents occurring during the performance of work will also be investigated and reported to National Grid.

Other Reporting

National Grid may periodically request the following annualized data for all work activities limited to National Grid operations:

- Lost Time Incident (LTI) rate for workers
- Restricted Work rate
- OSHA Recordable Incident (ORI) rate

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4.0 TECHNICAL SAFETY REQUIREMENTS

4.1 Personal Protective Equipment (PPE) Requirements – General

Applies to: All contractors (regardless of risk ranking)

1. The contractor and their employees, including subcontractors are expected to follow the same rules and protocols as National Grid personnel. Basic PPE attire at construction sites and other similar work zones include, at a minimum:
 - Hard hat
 - ASTM F2413 EH rated safety shoes
 - Safety glasses with side shields
 - Any contractor who is exposed to vehicular traffic shall wear ANSI 107 certified class 3 hi-vis vest or garment.
 - All contractors who are exposed to vehicular traffic and are exposed to energized electrical equipment or live gas are required to wear ANSI 107, class 3 hi-vis vest or garment, that also meets ASTM 1506 FR standard with a minimum Arc rating of HRC 1. All FR vests must be lime green/yellow. When FR clothing is required the FR vest shall be worn over appropriately rated FR clothing. Please reference the Gas PPE Matrix.
 - All contractors that are exposed to vehicular traffic, but will never be exposed to energized electrical equipment or live gas shall wear at a minimum ANSI certified class 3 vest or garment that is orange OR wear the FR vest in lime green/yellow.
 - ASTM 1506, HRC Category 1 FR vests must be in lime green or yellow. Any vest that does not meet the ASTM 1506, HRC 1 FR rating must be orange.

Storm contractors that do not have a Contractor of Choice contract should follow their existing practices and rules. All other contractors shall refer to the US Department of Transportation's Manual on Uniform Traffic Control Devices (MUTCD) to determine the correct class of hi-vis clothing / vests.

2. The contractor shall ensure that their employees and subcontractors use protective safety toe footwear when working in areas where there is a danger of foot injuries due to falling or rolling objects, or objects piercing the sole, and where such employee's feet are exposed to electrical hazards. In

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addition, during inclement weather conditions or adverse events, the addition of anti-slip footwear or outer foot wear may be appropriate.

3. Guidance for additional PPE is referenced in other sections of this document.

4.2 Flame Resistant Clothing Requirements

Applies to: All contractors; as needed

1. Flame Resistant (FR) clothing shall be worn when personnel work on energized equipment/lines or when distance and position will expose the worker to electric arc or flame hazards. FR clothing shall also be worn during live gas work as outlined in the gas PPE Matrix (Gas Policy SHE01001) and within LNG operations locations as required. FR clothing also includes arc-resistant rain gear. This additional ensemble may also be required as part of the job for contractor personnel. Contact a National Grid representative for a copy or to view the PPE matrix.
2. FR clothing shall be worn as the outermost layer of clothing and when workers measure voltages, test or ground electrical equipment/lines.
3. FR clothing shall be worn when work requires the use of rubber protective equipment or the use of insulated live line tools.
4. FR clothing shall be worn when workers control/operate electrical equipment over 50 volts at the device location or are within 10 feet of equipment which is being physically operated/ worked on by another worker.
5. Visitors are not required to wear FR clothing in substations or production plants unless they are engaged in electrical work. The National Grid project representative will be able to determine whether FR clothing will be required based on the specific contractor task. Note: Gas contractor FR requirements may differ slightly. Please refer to National Grid PPE Matrix for Gas operations within Gas Policy SHE01001 as needed.
6. FR clothing shall meet a minimum arc rating of 8 cal/cm² (HRC 2) for energized electrical equipment unless otherwise specified based on increased potential exposure as indicated in the Arc Flash Tables in H-807 *Arc Flash Analysis and Mitigation* program.
7. Additional FR clothing protection is required when performing work on the distribution system in NY North and New England (legacy National Grid) stations. Contact a National Grid representative for a copy. (NG

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Employees: If the link does not work, copy and paste the URL into your internet browser) [Arc Flash Awareness and Mitigation \(sharepoint.com\)](https://sharepoint.com)

8. Contractors who may be involved with tasks requiring the implementation of this program shall be informed by National Grid. Contractors will be required to follow all aspects of OSHA and any other applicable regulation as it applies to the tasks they perform.

4.3 Rubber Gloves and Sleeves

1. Rubber glove use is required for work on all electrical apparatus at 50 Volts or greater. Rubber gloves shall be donned before the worker leaves the ground and shall be worn until the worker returns to the ground (commonly referred to as “ground to ground”, “cradle to cradle”)
2. Class 0 gloves are required for exposures up to 1000 Volts.
3. Class 2 gloves are required for voltages between 1000-15,000 Volts.
4. Rubber sleeves must be worn where work is conducted within the MAD of primary electrical apparatus that is not tested, de-energized and grounded.
5. For voltages 23 kV and above, workers can use specialized equipment or work practices as long as these workers have been appropriately trained and qualified. National Grid may request training records from the contractor.
6. Rubber glove exceptions for specific jobs (other than those listed in this section) are permitted only with the dated, written approval of a Division Director.
7. It is the contractor’s responsibility to wear class 2 rubber gloves when grounding trucks or equipment due to a possible difference in potential.

Exceptions

No rubber gloves are required:

- When working in a properly established equi-potential zone.
- When the operator remains at the same potential as the equipment by being off the ground and on the equipment.

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- When a qualified worker performs transmission “hot stick” work on lines 69 kV or greater and no other energized wires are on the pole or structure below the worker.
- When work is performed on transmission structures carrying only energized conductors (115kV and above) and the Live Line Techniques are not being employed. While performing these activities, the worker shall utilize conductive clothing such as conductive gloves, boots, leg straps and/or any other applicable conductive clothing.
- When climbing a steel structure to perform structural reinforcements while maintaining MAD from energized conductors or apparatus.
- When climbing a steel structure to access an area that has been properly grounded.

4.4 Isolation of Energized Apparatus

1. Non-Reclosing Criteria and Live-Line Maintenance and Construction:

The appropriate interrupting devices (breakers, reclosers, circuit switches, etc.) will be placed on NON-RECLOSING in accordance with National Grid tagging procedures.

2. Tagging Out Lines or Apparatus

The National Grid Construction Supervisor or designee shall coordinate all switching and tagging in accordance with the most current EOP on Clearance and Control.

Upon receipt of Clearance, the project representative will present the Contractor's Person in Charge with the “Contractor Permission to Work Form” (Form NG0060), which states the specific apparatus that has been de-energized and that certain device(s) are tagged in the Protective Position and will remain so until the Contractor's Person in Charge informs the construction supervisor or designee of the completion of the work utilizing the “Contractor Completion of Work” section of the “Contractor Permission to Work” form.

The original transferred copy needs to be returned after the completion of work section is filled out & signed. In some cases the tailboard is outside & is susceptible to elements & damage; a copy shall be utilized in the field instead of the original.

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No work will be performed until the "Contractor Permission to Work Form" is received from the construction supervisor stating that the equipment has been de-energized and a clearance to work has been given. The Contractors Permission to Work Form and a written grounding plan shall be attached to the crews Job Briefing and be kept at the work location.

After the "clearance" is received from the National Grid Construction Supervisor, the various substation conductor bus and equipment to be worked will be tested and "Grounds" installed. Grounds shall be rated for the fault current of the line/equipment being grounded. (Note: Rubber Gloves and FR clothing are required when installing and removing grounds). The contractors "Person in Charge" (Construction Supervisor/General Foreman) shall be responsible for determining the location and number of grounds.

Vehicles and equipment may utilize a single 4/0 cu for grounding inside the substation. Employees working on de-energized lines and equipment shall always work between grounds.

Prior to the application of any personal protective grounds, the circuit to be worked on must be tested for the presence of voltage using an approved potential detector. The worker must verify the detector is in operating order prior to and after testing for voltage. MAD must be maintained during the testing, and appropriate PPE shall be worn. Testing for voltage shall be done at the point where the grounding devices are to be attached. All phases of the circuit to be worked on shall be tested at each location that grounds are installed.

When an Air Gap is required to create a work zone, the component (a tap) shall be removed in whole from the system unless removal of the component is impracticable or creates an additional hazard based on National Grid management in charge of the job. If the component (a tap) is deemed impracticable to be removed in whole it shall be disconnected from one end, isolated from all other conductors and properly secured to ensure accidental energization will not create a hazard. When National Grid switches out lines or apparatus, any grounds that may be installed shall only be considered a visual reference, and shall not be considered a means to protect the Contractor's employees. The Contractor is responsible to install their personal grounds, in accordance with all OSHA, Federal, State and local safety procedures. National Grid may provide guidance on the minimum size of the grounds to be used based on circuit available fault current. Refer to *Electric Operating Procedure D002*, for applicable grounding size. Ground rods shall be fully driven into the earth away from

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the workers and work area. T-Bar ground rods are not to be used on National Grid property.

The National Grid Construction Supervisor shall review the contractor's plan for the quantity and locations of grounds, ensuring that the work the contractor is performing is between grounds, covering all potential sources. All three phases shall be grounded. (In stations, from each phase to the station ground grid). Grounds shall be placed as close to the work area as reasonably possible, between the work area and all potential sources of inadvertent energization. A copy of the grounding plan shall be kept with the job safety brief.

It is the contractor's responsibility to account for all their grounds. The contractor shall provide, maintain, and enforce a ground tracking program suitable to National Grid. In the instance of a zone expanding/collapsing, remaining grounds shall be listed on the Contractor Permission to Work Form and verbally communicated to the construction supervisor.

3. Grounding Mobile Equipment

When mobile equipment requires grounding, it shall be solidly grounded by means of appropriate sized copper cable while using rubber gloves. The cable shall be fastened to a securely attached clean metallic portion of the equipment, or shall be fastened to a grounding stud provided for the purpose at one end and an adequate ground at the other end.

Non insulated booms such as digger derricks that have the possibility of encroaching the MAD shall be grounded and barricaded. The ground is to trip the circuit and the barricade is to protect anyone who may become in contact with the truck during this energization.

4. Minimum Approach Distance (MAD)

Refer to OSHA 29 CFR 1910.269 for more information and details regarding qualified and unqualified workers.

4.5 Appointment of a Safety Observer

A safety observer shall be required if an employee (operator) determines that it is difficult to accurately determine the distance between the equipment (minimum approach distance) and energized parts. The Safety Observer shall never be a substitute for minimum approach distance (MAD), personal protective equipment

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(PPE), insulate/isolate techniques or work area identification as a form of employee protection.

The person in charge of the work (contractor or National Grid), shall appoint a qualified employee or employees to perform the task of a safety observer. The person in charge shall:

1. Ensure a documented job brief is completed and includes the name of the safety observer, additional subjects such as the location of gas lines, energized equipment, in or adjacent to the work area and the limits of any de-energized work area
2. Discuss the scope of work and communication techniques used to warn or notify the equipment operator of hazardous conditions.
3. Communicate any changes to work and job completion to the safety observer
4. Select another safety observer if there is a need for the existing observer to have break in service.

The safety observer is a qualified employee who has been appointed by the person in charge based on the hazard assessment and the job brief. The safety observer shall:

1. Observe the worker performing the task/activity until all hazards have been eliminated or the task/activity has been completed
2. Have shown proficiency in the task/activity being observed and have a full understanding of the job and the hazards associated with the task/activity.
3. Remain continuously focused on the task/activity being performed and not perform or assist any other job activities while observing the worker performing the task/activity
4. Notify the person in charge if there is a need to have a break in service. Work must stop until a new observer is appointed or the safety observer returns.

A safety observer shall also be required when a critical lift is being performed. A critical lift plan shall be required during the following circumstances:

1. An object is lifted over energized apparatuses or assets where a failure of the lifting equipment or rigging could result in a significant safety hazard or cause significant disruption in service to National Grid customers.
2. The crane or other lifting apparatus is anticipated to be operated above 80% of its rated capacity for the specific load chart for the lift.

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3. A man basket (pinned or suspended) is to be utilized. All fall protection rules shall be followed when in a man basket.
4. Two cranes will be used in concert to lift a single object
5. Internal substation construction involving all power transformers, control houses, capacitor banks and transmission breakers.
6. Lifts in LNG or Gas plants where a hazard assessment or job brief identifies a significant risk.
7. The lifted load will be less than twice the minimum approach distance (MAD) of the nearest energized part. Until a qualified electrical worker confirms the MAD, loads and equipment shall maintain a 20 foot distance. Once nominal voltage is established, the MAD will be according to OSHA tables.
8. The lifted load is hoisted over buildings or the general public.

4.6 Work Zone Traffic Control

1. If work activity is on or near a road, the contractor and their subcontractors shall comply with all applicable parts of the most current US Department of Transportation's Manual on Uniform Traffic Control Devices (MUTCD), state, local Work Zone Traffic Control requirements and the National Grid Work Zone Traffic Control Manual. Please contact your National Grid representative for a copy of the manual found in the Safety Homepage on the Grid:home.
2. If pedestrian traffic is disrupted, pedestrians should be provided with a path that is reasonably safe, convenient and accessible. Pedestrians should not be led into conflicts with work site vehicles, equipment or operations.
3. If working in areas covered by state permits issued to National Grid, contractors shall comply with the provisions (work practices and notifications) of the permit language. These permits must be available on the job site upon request.

4.7 Qualified Gas Worker

Applies to gas projects/activities

1. Gas contractor employees will be operator qualified as required and defined according to the Code of Federal Regulations, Transportation, 49, Subpart 192.801 through 192.809.

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2. Until these qualified employees have demonstrated proficiency in the work practices involved, they are considered employees undergoing on-the-job training and must be under the direct supervision of a qualified person at all times. According to the definition of a “qualified employee”, the employee also must have demonstrated an ability to perform work safely at his or her level of training.
3. National Grid requires contractors with gas qualified employees to provide documentation on how they qualify their workers.
4. Additionally any qualifications’ of contractor personnel shall be in full accordance with the Company’s Operator Qualification written plan, (OQ Plan) Refer to the most current list of covered tasks in accordance with National Grids’ Operator Qualification Program and the Northeast Gas Association, (NGA).

4.8 Qualified Electrical Worker

Applies to electrical projects/activities

1. According to 1910.269(a)(2)(ii), a qualified electrical employee must be trained and competent in the following prior to starting work:
 - The skills and techniques necessary to distinguish exposed live parts of electrical equipment
 - The skills and techniques necessary to determine the nominal voltage of exposed live parts
 - The MAD specified in 1910.269 corresponding to the voltages to which the qualified employee will be exposed
 - The proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools for working on or near exposed energized parts of electrical equipment
2. Until these qualified employees have demonstrated proficiency in the work practices involved, they are considered employees undergoing on-the-job training and must be under the direct supervision of a qualified person at all times. According to the definition of a “qualified employee”, the employee also must have demonstrated an ability to perform work safely at his or her level of training.

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3. National Grid requires contractors with electrically qualified employees to provide documentation on how they qualify their workers.

4.9 Qualifying Non-Electrical Worker

Applies to: All qualifying non-electrical contractors working near energized lines and equipment; as needed

1. The contractor shall provide orientation for non-electrical workers entering and working within restricted areas such as a substation and those working near energized lines and equipment.
2. The information provided to these workers must meet the requirements of paragraph 1910.269(a)(2)(ii). However, the orientation and training may not be as comprehensive as the qualified electrical worker would be.

They must know:

- What is safe and not safe to touch in the specific areas they will be entering;
 - The maximum voltage of the area;
 - The MAD for the maximum voltage within the area;
 - Proper use of personal protective equipment and in the work practices necessary for performing their specific work assignments within the area.
3. Until these workers have demonstrated proficiency in the work practices involved, they are considered to be employees undergoing on-the-job training and must be under the direct supervision of a qualified person at all times.

4.10 Asbestos, Lead and other Hazardous Materials

1. Asbestos and lead materials associated with electrical and gas equipment includes, but is not limited to: cement-type cable covering, cable wrap, wire coatings, coal tar pipe wrap, and transite panels and conduits. Asbestos and lead materials may also be present in building materials including but not limited to: paint, mastics, caulking, insulation and roofing materials.
2. Where asbestos and other hazardous material is present and likely to be disturbed, the National Grid project representative and contractor shall coordinate how the asbestos, lead or other hazardous materials will be

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managed and shall consult National Grid's Safety & Environmental department as appropriate.

3. Removal of this material must be done by individuals specifically trained and qualified to handle asbestos and lead. Refer to National Grid Safety Procedures, F-615, F-617 and F-619 for guidance on asbestos and lead handling and removals. For more information, contact a National Grid representative for a copy of these procedures.

Note: Contractors who will encounter asbestos or lead as part of their work shall reference in their safety plan how they will address this hazard.

4.11 Lift Plans for Work Near Energized Electrical Equipment

1. All work involving hoists, cranes or other lifting equipment **within 10' of energized electrical equipment** must have a detailed lift plan/procedure.
2. As a minimum Lift Plans shall include the following:
 - a. Designated Operator and Signal person
 - b. Detailed travel and flight path that ensures the boom and material being raised is controlled 100% of the time and will maintain the appropriate clearance
 - c. Designated cover up and isolation to ensure employee and equipment safety in the event of an unplanned action or failure
 - d. Emergency action plan with detailed instructions to respond to unplanned/uncontrolled event during the lift or positioning of the lifting equipment.
 - e. Documented load weight and equipment lifting limits
 - f. Rigging equipment and methods that will be used during the lifting. Sign off/approval from the management official responsible for the work

4.12 Fall Protection

1. Fall protection or fall restriction devices shall be used when working at heights over 4 feet. When using portable straight and extension ladders,

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three points of contact shall be maintained. If 3 points of contact cannot be maintained a work positioning belt is required.

Step ladders shall be set up on level and stable surfaces, fully open with braces locked. Work positioning belts are not required for properly set up step ladders.

2. All fall protection shall be inspected before use each day to determine if equipment is in good working condition. Defective equipment shall not be used and shall be removed from service.
3. A worker may enter or exit an aerial lift (at heights above four (4) feet) provided that fall protection such as guardrails or a fall arrest system is used while the worker moves between the lift and the working surface. Before any such transfer is made, the employee shall be properly tied-off to an adequate support, the pole or structure prior to and in the direction of the transfer.

Exceptions to fall protection shall be in accordance with Federal & State requirements.

4.13 Herbicide Application

1. Vegetation spraying shall be conducted unescorted only by contractor employees who have been designated as a Qualified Electrical Worker, where applicable.
2. The spray applicator shall have ID cards issued by Security with background checks available from the contractor.
3. National Grid management shall require a schedule of the spraying in their areas.
4. Once spraying begins, the contractor must contact local management on a daily basis to inform them of progress or changes to the schedule.
5. The contractor shall post all stations with dated signs indicating when the station was sprayed. These signs should not inhibit access to the station.
6. The contractor shall ensure that any stored materials and equipment do not get covered with "overspray". Overspray represents a substantial safety hazard and cannot be allowed.
7. When applying herbicides, contractor employees shall wear appropriate PPE in accordance with product labels.

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5.0 UNDERGROUND OPERATIONS WORK

In addition to the other requirements referenced in this document, this section covers requirements that are specific to underground operations work.

5.1 PPE Requirements

All contractors shall comply with the applicable PPE and WZTC requirements referenced in Section 4.0.

5.2 Enclosed Space Assessment, Ventilation, Entry and Rescue

Refer to the National Grid EOP-UG006 *Underground Inspection and Maintenance* and National Grid Safety Procedure I-902 *Enclosed Space Procedure* for more information regarding enclosed space requirements.

1. Contractors are required to follow all procedures in this document in regards to enclosed spaces (manholes, sidewalk vaults, etc.), including assessment, ventilation, entry and rescue.
2. Each enclosed space shall be tested prior to removing manhole lids and entry. Atmospheric testing shall be continuous for the duration of the entry using a calibrated, industry approved atmospheric tester.
3. When performing hot lead work or when indicated by atmospheric monitoring, engineering controls such as forced mechanical ventilation shall be used when working in National Grid manholes at all times.
4. All contractors who are qualified electrical workers will treat these spaces as "enclosed spaces" and follow non-entry rescue provisions.
5. In some situations a boom is allowed for retraction from an enclosed space. Refer to Safety Procedure I-902 for more information.
6. Steel cable or wire rope for non-entry rescue is prohibited.

5.3 Equipment Safety Inspection

1. Inspect underground facilities (manholes, vaults, hand holes, splice boxes, junction boxes, pad mount transformers, switchgear and submersible equipment, etc.) each time a crew performs work at one of these facilities. All separable components in these facilities shall be inspected by infrared instrumentation. A National Grid representative can provide details from the

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National Grid EOP-UG001 *Infrared – Non-Contact Thermometer Inspection Requirement for Underground Equipment* for more information.

2. The infrared (IR) thermometer or camera shall, at a minimum, have a range of -25°F to 1400°F with a plus or minus 1% accuracy. For more details and current operating procedures, contact a National Grid representative regarding EOP UG001.
3. The format for data collected shall follow the National Grid EOP UG006 *Underground Inspection and Maintenance* requirements. Please contact a National Grid representative for more information.
4. “Touch Potential” testing of metal street lighting poles is required as a part of any maintenance work. For more information, a National Grid representative can provide a copy of the National Grid EOP G016 *Elevated Equipment Voltage Testing* and National Grid Work Methods Bulletin #04-26 *Touch Potential Testing of Metal Street Lighting Poles*.
5. Touch Potential testing results shall be recorded on the job safety brief and the manhole inspection form which shall be given to the National Grid Construction Supervisor or designee.
6. All contractors working for National Grid shall use materials and equipment in accordance with the manufacturing guidelines. It is the contractors’ responsibility to understand the manufacturers’ limits and prescribed use of their tools and equipment before each use.
7. Workers shall test and verify that the underground cable is de-energized and guillotine the cable if needed from outside the hole. Rubber gloves shall be worn at all times while performing this task.

6.0 OVERHEAD LINE WORK

In addition to the other requirements referenced in this document, this section covers requirements that are specific to overhead line work.

6.1 PPE Requirements

All contractors shall comply with the applicable PPE and WZTC requirements referenced in Section 4.0. In addition, contractors will follow ground-to-ground and cradle-to-cradle use of rubber gloves while performing work on energized overhead lines. Any foreign wire, including those on a pole or structure constitutes

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an energized source and requires the use of rubber gloves (ex: Cable TV, telephone, fire alarm wire, etc.).

6.2 Fall Protection

All contractors who climb structures such as wood poles or transmission towers shall utilize enhanced fall protection equipment (fall arrest devices) and techniques (ex: *Buckingham Buck-Squeeze*, *Miller StopFall* or *Jelco Pole Choker*). When working on wooden and steel structures, a full body harness and lanyard shall provide 100% fall protection at all times (100% tie off, Shepperd's Hook, etc.). Climbers shall never be allowed to drop or slide down a pole or structure more than two feet.

Exceptions to fall protection shall be in accordance with Federal & State requirements.

6.3 Pole/Structure Inspection

Contractor shall ascertain the structural integrity of the pole or other structure prior to installation, removal, repair or modification of the equipment on the structure.

1. Prior to climbing any pole, an inspection and test of the condition of any pole being climbed shall be performed. The weight of the employee, the equipment being installed and other working stresses (such as the removal or re-tensioning of conductors) can lead to the failure of a defective pole or one that is not designed to handle the additional stresses.
2. If the pole is found to be unsafe to climb or to work from, it must be secured so that it does not fail while an employee is on it. The pole can be secured by a line truck boom, by ropes or guys, or by lashing a new pole alongside it. [29 CFR 1910.269(q)] If measures cannot secure the pole, the contractor must cease operations and notify the National Grid Construction Supervisor or designee

6.4 Electrical Work Methods

1. Jumpers of any type shall not be used to keep transformers, risers or transformer banks energized for the purpose of changing potted porcelain cutouts. A National Grid representative can provide information to the National Grid Electric Operation Procedure (EOP) D001 *Cutouts – Open Type* for more information.

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2. Potted porcelain cutouts must be changed out when work is being completed on a pole even if this is not planned in the scope of the work provided.
3. Properly rated and inspected slings, chains or tongs shall be utilized to move poles and equipment. Winch lines must not be wrapped around poles or looped around transformer ears to lift without a sling or chain.

6.5 Transmission Overhead Lines

1. For work on transmission circuits, red tape shall be placed around any energized pole, pole structure, or tower adjacent to the de-energized line.
2. When one circuit of a double circuit pole or tower line is de-energized for work, a red or orange flag shall be placed on the energized side of the pole or tower nine feet below the lowest energized conductor. In addition, a red or orange flag shall be placed on the lower cage on the side toward the energized circuit at each arm level as employees work on them or pass them.
3. All contractors using ATV's, UTV's or RTV's for transmission or forestry work, are required to follow all local OHRV requirements for PPE and driving safety. Training shall include classroom and in-field instruction as well as a formal driving assessment on an annual basis for each type of vehicle planned for use: i.e. UTV specific training for UTV's and ATV specific training for ATV use. All contractor employees must be fully trained and qualified before use. Proof of individual operator training certifications for each operator shall be available at all times. US DOT rated helmets and safety glasses/goggles are required for any vehicle that does not have a seatbelt and a roll cage. In equipment with a roll cage and seatbelt, operators can utilize a hard hat and chin strap.
4. At the end of each day, unless other arrangements have been made for an extended outage, grounds will be removed and the National Grid project representative will be notified that all personnel are "clear" of the conductor bus work and equipment.
5. Wherever transmission line workers "touch" wires, a personal ground shall be installed at the work area to establish an equipotential zone, unless workers are engaged in live-line barehand work (29 CFR 1926.964)

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7.0 SUBSTATIONS

In addition to the other requirements referenced in this document, this section covers requirements that are specific to substations work.

For additional information, a National Grid representative can provide a copy of the National Grid Substation Maintenance Procedure SMP 499.01.2 *Protective Grounding Procedure* under the Substation Work Methods Grid:home page for specifics regarding substation grounding practices.

Grounding plans for substation, major distribution and transmission projects will be submitted to the National Grid construction supervisor a minimum of 1 week prior to construction for review. This plan will show the steps, work area limits and ground cable size and amount. Once reviewed with the National Grid and prior to starting the job, the plan will be reviewed by the contractors with all employees and subcontractors on the project.

The use of an "Equipotential" step/platform or a conductive mat is required for access and egress from the following:

- a. Crane or any other equipment, including aerial lift equipment, that is connected to the substation ground grid and/or bonded to transmission line conductors when working outside of the station fence
- b. In the rights-of-way
- c. In areas inside the substation where there is no ground grid present.

When work is performed inside the substation and there is a ground grid available, the "Equipotential" step/platform or conductive mat is not necessary.

All vehicles shall be grounded and barricaded per OSHA standards and the National Grid Electric Operating Procedure G026 *Mechanized Equipment Grounding*.

Proper clearances shall be maintained from adjacent energized substation bus, energized portions of substation equipment and other transmission lines at all times.

Use of proper insulated tooling (shotguns and sticks) shall be utilized per NECA standard maintaining MAD.

7.1 PPE Requirements

1. All contractors shall comply with the applicable PPE and WZTC requirements referenced in Section 4.0.

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2. Contractors who perform any ground breaking activities in a substation within a pre-marked area will require Dig Safe marks to be in place; otherwise, the job must be suspended and the National Grid construction supervisor or project representative shall be notified of the condition.
3. When using non-insulated man-lifts, and if provided by the manufacturer, a secure point of attachment for lifelines, or lanyards or deceleration devices shall be utilized, independent of the means to support or suspend the employee. Workers feet shall also always remain on the floor.

7.2 Notification of Control Authority When Entering a Substation

1. When a contractor enters and exits a National Grid substation, the contractor shall ensure that the System Control Center is notified. While work is being conducted, gates must be monitored at all times or the gates shall be locked. For more information, contact a National Grid representative regarding National Grid EOPG022 *Substation Security*.
2. Unescorted entry in substations can only be provided to contractors who provide assurance that their employees and subcontractors are electrically qualified as specified in 29 CFR 1910.269. Refer to Section 4.0 of this document
3. All National Grid specifically identified bulk power stations will require NERC-CIP training, certification and approval prior to entry to those sites.

7.3 Substation Work Area Identification (SWAI)

1. Contractors who will be working in substations shall follow the SWAI procedure. National Grid will provide a copy of this procedure if required by the project. For more information, contact a National Grid representative regarding National Grid SMP499.10.2 *Substation Work Area Identification Procedure*.
2. Qualified contractors as referenced in section 4.8 of this document shall install their own work area identification. National Grid shall arrange work area identification for non-qualified workers as required.
3. Designated storage areas for items not being used will be posted in the yard and should be the only place these items are kept.

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8.0 GAS OPERATIONS WORK

In addition to the other requirements referenced in this document, this section covers requirements that are specific to Gas operations work. For more information, contact a National Grid representative regarding National Grid General Safety Requirements SHE1001 *Gas Policy* which can be found following this link:

<http://dc-gasweb1/MelSite/WMSafetyAll.asp> .

8.1 PPE Requirements

1. All contractors shall comply with the applicable PPE and WZTC requirements referenced in Section 4.0.
2. The contractor shall wear all appropriate PPE and Class 2 rubber gloves for personal protection when digging or probing within 2 feet of known electrical conductors and when the location of energized conductors is unknown.

8.2 Gas Operations

1. Any contractor who performs covered tasks shall be operator qualified (OQ) as defined in the DOT Title 49 CFR, Subpart N and all applicable state requirements pursuant to the state the contractor is working in. Additionally, any qualifications of contractor employees shall be in full accordance with the Company's Operator Qualification written plan, (OQ Plan) Refer to the most current list of covered tasks in accordance with National Grids' Operator Qualification Program and the Northeast Gas Association, (NGA).
 - a. The Operator Qualified status of contractor employees must be regularly updated and accessible through the ISN system. This listing must detail employees' current tasks they are qualified for, the next recertification date, associated documentation and a documented annual acknowledgement in ISN on their qualified workers as referenced in section 3.1 of this document.
 - b. Contractor personnel involved with covered tasks may require certification by National Grid and an orientation of the involved tasks and National Grid Company standards. National Grid reserves the right to validate contractor qualifications prior to performing Live Gas work.
 - c. Atmospheres are to be tested with a properly calibrated Combustion Gas Indicator (CGI) or Gas Measurement Instrument

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(GMI) in accordance with National Grid excavation procedures as required.

- d. Each employee in an excavation shall be protected from cave-ins by an adequate protective system, such as sloping, benching or an appropriate shoring system. For more information, contact a National Grid representative regarding National Grid Safety Procedure M-1301 *Standards for Working in Excavations*.

9.0 FORESTRY AND VEGETATION MANAGEMENT

In addition to the other requirements referenced in this document, this section covers requirements that are specific to vegetation management work.

9.1 PPE Requirements

1. All contractors shall comply with the applicable PPE and WZTC requirements referenced in Section 4.0.
2. Flame Resistant Clothing is not required per the applicable OSHA Forestry standard. Forestry contractors must instead wear natural fiber clothing when working within 10 feet of energized equipment.
3. Forestry contractors must wear a properly adjusted full-body fall protection harness connected to an appropriate lanyard when working from an aerial lift. The lanyard must connect to an attachment anchored to either the boom or bucket mounting hardware. Attachment points anchored through only the fiberglass portion of the bucket are not acceptable.
4. Forestry contractors will be required to wear chaps while operating a chainsaw or when assisting and/or working in close proximity to a chainsaw that is being operated.
5. Saws shall not be left unattended with the engine running.
6. When a contractor employee carries a saw, the engine shall be off and/or covered or the saw shall be carried with the blade to the rear and locked.
7. Tree crews will not be allowed to fly their buckets in between the primary and secondary cables if the MAD will be violated in process of doing so.

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9.2 Equipment and Work Methods

1. Forestry contractors shall utilize fiberglass sticks and stick saws for work around energized equipment. Additionally, integrity tests shall be performed and documented annually. Test results and expirations shall be available on each vehicle as needed.
2. Forestry contractors shall perform and document dielectric testing of all aerial units annually. Test results and expirations shall be available on each vehicle as needed.
3. For lump sum or unit price mileage trimming projects, a single foreman may supervise up to four (4) bucket trucks on the same project. The minimum qualifications for the "lead" person on each of the other trucks shall be a Journeyman Tree Trimmer or equivalent (Qualified Line Clearance Tree Trimmer). At least one other employee on the truck shall be an OSHA defined, Qualified Line Clearance Tree Trimmer Trainee. For Upstate New York only, it is understood that a Qualified Line Clearance Tree Trimmer shall carry the title, wage and benefits as outlined in IBEW LU 1249's existing contract of a Journeyman Treeman and that a Qualified Line Clearance Tree Trimmer Trainee shall carry, at a minimum, the title, wage and benefits as outlined in IBEW LU 1249's existing contract of a Treeman Trainee, 2nd year.

9.3 Training

1. Forestry contractor management will be required to attend safety council meetings hosted by National Grid as required. The contractor shall ensure that all appropriate safety personnel for the National Grid territory are in attendance.
2. Forestry contractors shall implement and provide the required training and certification programs necessary to provide OSHA defined Qualified Line Clearance Tree Trimmers or Qualified Line Clearance Tree Trimmer Trainees. Contractors shall be able to provide the documentation relative to these training and certification programs upon request by National Grid. Forestry contractors shall provide an updated HASP by April 1st of each year for all work being conducted at National Grid.
3. All contractors using ATV's, UTV's and RTV's for transmission or Forestry work are required to follow all local OHRV requirements for PPE and Driving safety

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10.0 LNG PRODUCTION, TRANSPORT AND HANDLING

In addition to the other requirements referenced in this document, this section covers requirements that are specific to LNG Production facilities.

All contractors working at LNG plants will sign in and out of plants daily in the contractors log book. All other gas supply facilities and subcontractors require authorization under the contractor management official. If required by the project, trained National Grid plant personnel shall initially, and as needed, review and re-issue as needed, a work permit process which shall describe the work being performed, valves with their locations and Lock-out/Tag-out numbers.

10.1 PPE Requirements

1. All contractors shall comply with the applicable PPE and WZTC requirements referenced in Section 4.0 and shall include FR outer clothing.
2. Cryogenic protective gloves/gauntlets and face shields are required when making connections to load / unload LNG. National Grid retains the right to enhance PPE requirements as conditions warrant. The use of additional PPE shall be based on the task performed and the PPE matrix for work in production plants.

10.2 Training

1. Contractors who transport LNG/propane at National Grid facilities are required to be certified in first aid/CPR and are required to complete frost-bite awareness training. Documentation of training records shall be maintained in the ISN system.
2. National Grid expects contractors working at LNG plants to meet the requirements of 49 CFR 193 Subpart H for health, training or experience and/or any applicable National Grid procedures that supersede the above requirements. Contractors shall provide documentation on their qualified workers, as referenced in section 3.1 of this document.
3. All Contractor personnel performing work in LNG plants must meet the requirements of the National Fire Protection Association (NFPA), part 59.

11.0 ELECTRIC GENERATION

In addition to the other requirements referenced in this document, this section covers requirements that are specific to Electric Generation.

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11.1 PPE Requirements

1. All contractors shall comply with the applicable PPE and WZTC requirements referenced in Section 4.0
2. Hearing protection is required when working anywhere inside a generation plant and/or outside the plant where noise may be excessive. Acoustic barriers shall be maintained by the contractor as needed.
3. Safety shoes with a minimum height of six-inches are required in Generation plants.
4. Contractors working in generation plants are required to wear 8-Cal clothing protection. For additional guidance, a National Grid representative can provide reference to Electricity Distribution Operations Grid:home webpage under Electric Generation's Policies and Procedures EGO-028 *Personal Protective Clothing* & EGO-029 *Personal Protective Equipment*.

11.2 Training

1. Required training may include; PCB's, asbestos, mercury, confined space awareness and excavation competent person requirements. HAZCOM is required by contractors working in generation plants as applicable.
2. Contractors who work at a National Grid Generation Station shall attend an orientation regarding plant safety and as required, US Coast Guard Maritime Security (MARSEC) policies.
3. Equipment training is required per federal, state and local regulations and National Grid procedures. Operators of any powered industrial vehicle must be qualified and documentation shall be documented.

11.3 Equipment & Excavations

1. All excavations shall be performed in accordance with EGO-0005 *Procedure for Excavation in National Grid Generation Facilities* and National Grid Safety Procedure M-1301 *Standards for Working in Excavations*. For additional information, contact a National Grid representative for copies.
2. Gasoline and diesel powered fork trucks shall NOT be used inside the plant or other enclosed facility. Only propane/electric fork trucks are permitted except where additional hazards may exist.
3. All wood products necessary for the work must be made of flame retardant material.

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11.4 Equipment Isolation

For isolation of hazardous energy sources while working in Generation plants, please contact a National Grid representative regarding EGO-0010, *Control of Hazardous Energy Sources-Work Permit System*.

12.0 CIVIL CONSTRUCTION

In addition to the other requirements referenced in this document, this section covers requirements that are specific to civil construction work.

12.1 PPE Requirements

1. All contractors shall comply with the applicable PPE and WZTC requirements referenced in Section 4.0.
2. Rubber gloves shall be worn while carrying out work in and around energized or identified direct buried lines, live duct banks, transformer enclosures, manholes, switch gear and other electrical apparatus when performing civil investigations, installations or repairs.

12.2 Enclosed Space Assessment and Ventilation

Contact a National Grid representative regarding the National Grid EOP-UG006 *Underground Inspection and Maintenance* and National Grid Safety Procedure I-902 *Enclosed Space Procedure* for more information regarding enclosed space requirements.

1. Contractors are required to follow all procedures in this document in regards to enclosed spaces (manholes, sidewalk vaults, etc.), including assessment, ventilation, entry and rescue.
2. Each enclosed space shall be tested prior to removing manhole lids and entry. Atmospheric testing shall be continuous for the duration of the entry using a calibrated, industry approved atmospheric tester.
3. When performing hot work or when indicated by atmospheric monitoring, engineering controls such as forced mechanical ventilation shall be used when working in National Grid manholes at all times.
7. All contractors who are qualified electrical workers will treat these spaces as "enclosed spaces" and follow non-entry rescue provisions.
8. In some situations a boom is allowed for retraction from an enclosed space. Refer to Safety Procedure I-902 for more information.

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9. Steel cable or wire rope for non-entry rescue is prohibited.

12.3 Equipment Safety Inspection

All contractors shall comply with the applicable equipment safety inspection procedures referenced in Section 5.3

12.4 Excavation Requirements

All excavation work shall be performed under the control of a competent person. All soils in National Grid territories are to be considered class “C”, considered unstable and shall require all excavations be performed in accordance with OSHA 1926.651, EGO-0005 *Procedure for Excavation in National Grid Generation Facilities* and National Grid Safety Procedure M-1301, *Standards for Working in Excavations*. For more information, contact a National Grid representative for a copy.

Crews that are performing Excavations shall include an excavation log with their job brief that states the soil type, expected depth and length as well as final depth and length. All required steps need to prevent collapse will be documented on this form as well prior to entry.

Protective systems shall be used for certain manhole installations. These scenarios are covered below:

- The hazard assessment, competent person and/or National Grid supervisor deems it necessary
- If an excavation for a manhole in a roadway is completed and installation of manhole and backfill is not able to be done before the day is complete, a protective system will be required before road plating
- Installation of any manhole 3 way or greater in size/

Where trench boxes are required to be built on site, the contractor shall submit a PE stamped plan and the location shall be designated on the excavation drawings.

All lifts (not limited to materials and equipment) shall be planned and rigged by a competent person. A lift plan shall be provided for all “critical lifts” and must be submitted by a qualified professional to the National Grid representative prior to the lift taking place.

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12.5 Cable fault finding and replacements

For excavation work needed to support faulted cables and emergency cable locates, the use of Cable Avoidance Tooling (CAT) shall be used in addition to Dig Safe requirements as an added safeguard to further pin point unidentified buried cables.

For excavations within the tolerance zone, all hand digging in and around direct buried cables shall require basic PPE, non-metallic handled shovels, rubber gloves, FR clothing and EH rated work boots with Dielectric (DI) over shoes.

All excavation equipment shall be grounded in accordance with NG EOP G026. For additional information, contact a National Grid representative.

The use of GPR (Ground Penetrating Radar) shall also be required to verify the Dig Safe/811 locates after award of the project and prior to excavation. This shall include electric URD, UCD and Substation projects.

12.6 Technical Review

Where and when applicable, all trench and excavation work shall be reviewed and stamped by a civil PE in the state of record and will be executed under the supervision of a trenching and excavation competent person. All leading edges of trenches and excavations shall be appropriately demarcated, clearly posted and controlled to prevent unauthorized persons from entering and inadvertently falling into the excavation. All trenches and excavations shall be closed as soon as practical/possible. All excavations shall be fully controlled for the duration of the exposure by adequately substantial means to withstand the environment and conditions expected to be present.

All pot holing/test holing and exploratory excavations shall utilize vacuum excavation whenever near known underground utilities or hazards, and when the potential for unknown hazards such as live electrical or gas conveyances exist. When using vacuum extraction in combination with air blowing/air knife tools, all persons in the immediate area shall be wearing safety glasses in addition to a full face shields.

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13.0 CONSTRUCTION PROJECTS AT CONTAMINATED SITES

In addition to other requirements referenced in this document, all work on contaminated sites must be conducted per the requirements of 29 CFR 1910.120, including the worker qualification and training requirements of 1910.120(e).

14.0 AVIATION

1. Helicopter Crews of two or more shall perform a preflight documented job brief.
2. Helicopter work shall require the use of aviation helmets for both the pilot and passengers.
3. Helicopter pilots and passengers shall participate in the "Flying in the Wire and Obstruction Environment" training prior to flight.
4. Helicopter pilots shall meet the following minimum flight time experience:
 - a. 2000 hours as Pilot in Command or Second in command of a rotorcraft
 - b. 1000 hours in a turbine rotorcraft / helicopter
 - c. 100 hours in a helicopter of the make and model to be utilized at National Grid
 - d. 300 hours flight time in Wire Environments

For more information, contact a National Grid representative for a copy of EOP T012 *Helicopter Utilization & Notifications*.

15.0 TRANSPORTATION RISKS

Contractor shall define transportation related activities that can have potential process safety consequences. National Grid shall determine if additional risk assessment is needed and contractor shall participate in the assessment. Contractor shall modify their process to mitigate risk that is determined to be intolerable.

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APPENDIX A: NATIONAL GRID CONTRACTOR RISK MATRIX

National Grid Contractor Risk Matrix			
Category	Description of Work	Impact of Work	Examples to be included in this category (including, but not limited to)
<p>Medium / High Risk Exposure</p> <p>Tier I</p> <p><u>Inclusion in ISN Program is Required</u></p>	<p>Physical Work, activity, or service that is performed on National Grid property site or is performed off-site where Owner Client has responsibility and is liable for work performed.</p> <p>Includes, but is not limited to, any activity requiring confined space entry, elevated work, work on operating systems involving hazardous energy, work on contaminated sites, and most work requiring a general work permit, hot work permit, or confined space permit.</p>	<p>Work, activity, or service having:</p> <ul style="list-style-type: none"> • A potential for causing a catastrophic operational incident; • Access to operations; and/or • A direct role in site operations or maintenance, where failure could result in serious harm to employee or public well-being, company assets, or the environment <p>Also includes any Contractor personnel's job function which has no direct or very limited supervision for operational checks.</p>	<ul style="list-style-type: none"> • Maintenance, Construction and demolition contractors • Chemical cleaning, tank cleaning • Electricians and Instrumentation Technicians • Movers • Welding • Heavy equipment operations • Well drilling and testing • Environmental investigation, remediation, monitoring activities • Hazardous waste handling and/or transport • Excavation • Food service and handling • Equipment Inspection (e.g., X-ray & other NDT) • On-site sampling / gauging activities (not including escorted storm water sampling) • Common carriers transporting Owner Client-owned LNG or petroleum products • Landscaping services • Snow Removal • Janitorial services

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			<ul style="list-style-type: none"> • Vacuum truck affecting/involving process operations • Oil Spill Response Organizations (OSRO) • Work conducted in a high-risk area (i.e. substations, LNG plants, etc.) • Working at elevations greater than 4 ft (includes, but is not limited to): <ul style="list-style-type: none"> ◦ Working in buckets (includes technical advisors) • Working on ladders (straight ladders, extension ladders or step ladders taller than 4ft)
<p>Low Risk Exposure</p> <p>Tier II</p> <p><u>Inclusion in ISN Program is NOT Required</u></p>	<p>Work that is office based such as:</p> <ul style="list-style-type: none"> • Consultants that do not perform work or activities as described in the Medium/High Risk exposure category • Offsite services • On-site vendor pick-up/delivery and repair services • Work performed by public and private utilities 	<p>Work, activity, or service having an indirect role and no, or limited, access to operations or maintenance where failure could result in serious harm to employee or public well-being, company assets, or the environment.</p>	<ul style="list-style-type: none"> • Mail/package/part delivery or pick-up (e.g. UPS, Fed EX, vendor-specific) • Samples pick-up by laboratory/courier • Office machine servicing (copiers, printer, computer, etc.) • Laboratory apparatus servicing • Storm water Sampling Labs/Contractors (When Escorted by Owner Client personnel) • Deliver/supply services (vending machine, bottled water, laundry) • Municipal waste pick-up • General trash removal services • Off-site repair/fabrication shops (such as pump, safety valve, piping, vehicle)

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	<ul style="list-style-type: none"> Personnel on-site with Visitor Status, when escorted 		<ul style="list-style-type: none"> Telephone, electric, local municipal utility services Regulatory representatives Technical representatives Engineering services (when escorted by Owner) Auditors
A SHE VP can require any contractor to be part of ISN when deemed as a potential risk to National Grid			

HEALTH AND SAFETY PLAN HUDSON RIVER SEDIMENT REMEDICATION

Prepared for

PARSONS

Prepared by

Anchor QEA, LLC

4300 Route 50

Suite 202

Saratoga Springs, New York 12866

May 29, 2015

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LIST OF ACRONYMS AND ABBREVIATIONS

ACGIH	American Conference of Industrial Hygienists
AED	Automated External Defibrillator
Anchor QEA, LLC	Anchor QEA
ANSI	American National Standards Institute
ATV	All-Terrain Vehicle
BC 4x4	Brown and Caldwell 4 Courses in 4 Hours
CFR	Code of Federal Regulations
CM	Construction Manager
CPR	Cardiopulmonary Resuscitation
CSM	Corporate Safety Manager
dbA	A-weighted decibels
DEET	Diethyl-M-Toluamide
DOT	Department of Transportation
FL	field team leader
GE	General Electric Company
GFCI	ground fault circuit interrupter
GPS	Global Positioning System
HASP	Health and Safety Plan
HAZMAT	Hazardous Materials
HAZWOPER	Hazardous Waste Operations and Emergency Response
JSA	Job Safety Analysis
km	Kilometers
LO/TO	Lock Out/Tag Out
MHR	maximum heart rate
MPH	Miles Per Hour
NYSDOT	New York State Department of Transportation
RCA	Root Cause Analysis
SDS	Safety Data Sheets
N/A	Not Applicable
NIOSH	National Institute of Occupational Safety and Health
NRR	Noise Reduction Rating

NYS	New York State
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated Biphenyl
PFD	Personal Flotation Device
PM	project manager
PPE	Personal Protective Equipment
RA	Remedial Action
2015 RA HASP	<i>Phase 2 Remedial Action Health and Safety Plan for 2015</i>
RCRA	Resource Conservation and Recovery Act
SSO	Site Safety Officer
START	Supervisor Training in Accident Reduction Techniques
TLV	Threshold Limit Value
TWA	time-weighted average
USEPA	U.S. Environmental Protection Agency
VTs	Vessel Tracking System
WBGT	wet bulb globe temperature

1 IDENTIFICATION/RESPONSIBILITIES OF KEY LINE PERSONNEL AND SITE SETTING

1.1 Contacts

Contractor:

Anchor QEA, LLC
4300 Route 50, Suite 2
Saratoga Springs, New York 12866
(518) 792-3709

Corporate Safety Manager:

Christopher R. Torell, P.G., CSP
(315) 453-9009 phone
(315) 254-4954 cell
ctorell@anchoragea.com

Project Manager:

James Rhea
(315) 453-9009 phone
(315) 427-4451 cell
jrhea@anchoragea.com

Field Sampling Manager:

Mark LaRue
(315) 453-9009 phone
(315) 730-5341 cell
mlarue@anchoragea.com

Site Field Operations Coordinator:

Christopher Yates
(518) 792-3709 phone
(518) 522-7037 cell
cyates@anchoragea.com

Site Safety Officer:

Kevin Ballou
(518) 792-3709 phone
(914) 924-2176 cell
kballou@anchorqea.com

The personnel listed above have the authority and responsibility for implementing the provisions of this program for the Remedial Action (RA) monitoring and sediment remediation at the Hudson River Polychlorinated Biphenyls (PCBs) Superfund Site.

In the instance of an incident or near-miss (see Section 17), the Site Safety Officer (SSO) is to be notified immediately. If the SSO is unreachable, alternate personnel will be notified in sequence until a person is reached, as defined in Section 17. It is critical that supervisory personnel are made aware of illnesses, incidents, and near-misses so that appropriate and thorough response and corrective actions may take place.

All Anchor QEA, LLC (Anchor QEA) managers and supervisors are responsible for implementing and maintaining this Health and Safety Plan (HASP) in their work areas and for answering worker questions about this HASP. A copy of this HASP has been provided either electronically or in hard copy to each person participating in field activities associated with this project.

1.2 Incident Communication

In the event of an incident (i.e., Stop Work, Near-miss, Department of Environmental Conservation Reportable Spill, Property Damage, First Aid, or Injury Beyond First Aid), Table 1-1 provides guidance on incident management.

Table 1-1
Incident Management Guidance

Incident Type	Gensuite Entry < 4 hours	Conduct Investigation	Conduct Mini- RCA¹¹	Complete RCA < 72 hours¹²	Provide Report to Construction Manager < 7 working days
Stop Work ¹	✓				
Near-miss: Low Potential Severity ²	✓	✓	✓		✓
Near-miss: High Potential Severity ³	✓	✓		✓	✓
Near-miss Spill ⁴	✓	✓	✓		✓
DEC Reportable Spill ⁵	✓	✓		✓	✓
Property Damage: Minor ⁶	✓	✓	✓		✓
Property Damage: Major ⁷	✓	✓		✓	✓
First Aid: Minor ⁸	✓	✓	✓	✓	✓
First Aid: Major ⁹	✓	✓		✓	✓
Injury Beyond First Aid ¹⁰	✓	✓		✓	✓

Notes:

- 1 Temporary suspension of a task or operation by any individual to correct an unsafe behavior or condition
- 2 Low potential to have resulted in injury or property damage
- 3 High potential to have resulted in injury or property damage
- 4 Spill to containment, no release to impermeable surface or water
- 5 Uncontained release to water or to permeable surface
- 6 Less than \$500 damage and/or no impact to operations
- 7 Greater than \$500 damage or operational impact
- 8 First aid requiring very minor, on-site treatment (e.g., non-allergic bee stings, minor abrasions, and scrapes)
- 9 First aid treated on site or provided by a medical provider that could have become an Occupational Safety and Health Administration (OSHA) recordable treatment case but was managed
- 10 Any injury that becomes an OSHA recordable case
- 11 Mini Root Cause Analysis (RCA) involving a minimum of three individuals, including the individual involved in the incident
- 12 Scheduled RCA to include the involved individual(s), Contractor Site Safety Officer, union steward if desired, and safety and operational personnel from the Construction Manager and General Electric

1.3 Site Setting

The Hudson River is located in eastern New York State and flows approximately 300 miles in a generally southerly direction from its source, Lake Tear-of-the-Clouds in the Adirondack Mountains, to the Battery, located in New York City at the tip of Manhattan Island. The Upper Hudson River is defined as the section of river upstream from the Federal Dam in Troy, New York.

Work described in this HASP will be conducted generally in the Upper Hudson River. Additional detailed site information can be found in Parsons' *Phase 2 Remedial Action Health and Safety Plan for 2015* (2015 RA HASP).

2 STATEMENT OF SAFETY AND HEALTH POLICY

2.1 Health and Safety Plan

This Health and Safety Plan (HASP) has been developed in accordance with the requirements specified by the General Electric Company (GE) in Specification 1350, and prescribes the procedures that must be followed during activities conducted as part of the Hudson River RA by Anchor QEA personnel. These procedures comply with but are not limited to the procedures defined in the 2015 RA HASP, at a minimum. Operational changes that could affect the health and safety of personnel, the community, or the environment will not be made without prior approval of the Field Sampling Manager and the SSO. This document will be reviewed periodically to confirm that it is current and technically correct. Changes in conditions at the site and/or in the scope of work will require a review of, and potentially a modification to, this HASP. Such changes will be completed in the form of an addendum or a revision to the HASP.

The provisions of this HASP are mandatory for all Anchor QEA personnel and Anchor QEA subcontractors assigned to the project. Subcontractors may prepare their own site-specific HASPs that must meet the basic requirements of this HASP. All visitors to Anchor QEA work areas must abide by the requirements of this HASP.

This HASP complies with applicable state and federal Occupational Safety and Health Administration (OSHA) and U.S. Environmental Protection Agency (USEPA) regulations.

2.2 Anchor QEA Health and Safety Culture

Anchor QEA's Corporate Health and Safety Program is designed to provide guidelines to ensure that Anchor QEA provides its employees a place of employment that is free from recognized hazards that may cause death, serious physical harm, or illness. This program has been prepared in accordance with regulations established by OSHA, including the OSHA draft proposed Safety and Health Program Rule (29 Code of Federal Regulations [CFR] 1900.1).

Anchor QEA has set up its Corporate Health and Safety Program to manage workplace health and safety to reduce injuries, illnesses, and fatalities by systematically achieving

compliance with OSHA standards. The Corporate Health and Safety Program is designed specifically to address the workplace hazards to which Anchor QEA employees may be exposed. Preventing accidents and injuries and promoting employee health benefits the company and employees both personally and economically. Through the Corporate Health and Safety Program, Anchor QEA's goals are to:

- Establish a safe and healthy working environment
- Ensure that the design of the working environment accommodates individual employee limitations and capabilities
- Prevent personal injury, occupational illness, and damage to company assets
- Comply with all applicable federal, state, and local health, safety, and environmental regulations and guidelines

Effective leadership with regard to health and safety is essential at all levels of employment, from staff members to project managers (PMs) and partners. Cooperation from all employees is essential for an effective health and safety program. All employees will be held accountable for established program responsibilities. Active participation in health and safety activities will be expected on a routine basis as follows:

- Management
 - Task Manager: Weekly
 - PM: Weekly
 - Senior Project Personnel: Monthly
- Field staff lead 50% of the following activities:
 - Toolbox safety talks
 - Worker observations
 - Work area inspections
 - Root Cause Analysis (RCA) participation
 - Job Safety Analysis (JSA) review

Examples of management and field staff participation include: leading toolbox talks, conducting employee observations, and creation of JSAs.

Applicable federal, state, and local health, safety, and environmental regulations and guidelines are to be followed by all Anchor QEA employees and contractors, including the following:

- OSHA
- USEPA
- National Institute of Occupational Safety and Health (NIOSH)
- American National Standards Institute (ANSI)
- Applicable city, county, and state regulations regarding soil, sediment, water, air, radiation, and hazardous waste

2.3 Rewards and Recognition Program

At Anchor QEA, exemplary safety initiative and performance by individuals or project teams is formally recognized firm-wide on a regular basis through the quarterly Safety Award. Each quarter's winner receives a trophy for display commemorating their efforts.

Additionally, for this project, internal Anchor QEA safety meetings are held monthly to review the status of the company's health and safety program and the performance of all staff (as it pertains to safety) assigned to this project. These meetings are attended by both management and field staff, and include a presentation that summarizes the results of the previous month's safety observations and a review of any safety stops, near-misses, or incidents, including those reported by other contractors. Open discussion between management and field staff is encouraged. As this program is intended to provide positive reinforcement, participation in this meeting and the associated discussion is rewarded by a company-supplied lunch.

2.4 Return-to-Work Program

A successful return-to-work program minimizes time away from the job by proactively returning the injured employee to productive work activities. Additionally, this program benefits both the injured employee and Anchor QEA by doing the following:

- Maintaining productivity, services, and skills of a trained employee
- Maintaining contact and rapport between the employee and Anchor QEA
- Cutting costs associated with hiring and training new, replacement employees

- Mobilizing the employee and speeding medical recovery
- Reducing time-loss costs that impact future workers' compensation premiums

Return-to-work efforts are implemented on a case-by-case basis depending upon the specific injury or illness, the employee's recovery process and availability to work, and the feasibility of modified or light-duty work assignments. The injured employee, the attending physician, and Anchor QEA will work together to determine the most reasonable and beneficial return-to-work arrangement. Prior to returning to work, a written statement will be prepared by the attending physician indicating the employee's fitness to return to work, to be provided as required.

3 IDENTIFICATION OF COMPETENT AND QUALIFIED PERSONS

Table 3-1 presents a list of the project's competent and qualified persons and completed health and safety training.

Table 3-1
Competent and Qualified Persons and Completed Health and Safety Training

Name	Job Title	Parsons On-site Safety Orientation Class	40-hour HAZWOPER	8-hour HAZWOPER Supervisor	8-hour HAZWOPER Refresher Expires	Other Training
Adrianne Clough	Senior Scientist	3/31/2015	6/2/2006	8/14/2014	3/3/2016	10 Hour Construction 4/15/2008 Confined Space Entry 6/1/2006 CPR/AED – 2 years (expires) 4/19/2013 Defensive Driving 4/30/2012 DOT Awareness 11/24/2008 First Aid – 2 years (expires) 4/19/2013 RCRA Waste Handler 11/24/2008 Security Badge Application – Hudson River Project 3/31/2015
Charles Szablewski	Staff Scientist	3/31/2015	10/9/2008	N/A	3/3/2016	10 Hour Construction 4/24/2009 Boating Safety 6/18/2009 Confined Space Entry 10/7/2008 CPR, AED – 2 years (expires) 4/19/2013 DOT HAZMAT Advanced General Awareness 9/30/2014 Field Experience 10/24/2008 First Aid – 2 years (expires) 4/19/2013 RCRA Waste Handler 11/24/2008 Transportation Worker Identification Credential (TWIC) 3/17/2015 Security Badge Application – Hudson River Project 3/31/2015

Table 3-1
Competent and Qualified Persons and Completed Health and Safety Training

Name	Job Title	Parsons On-site Safety Orientation Class	40-hour HAZWOPER	8-hour HAZWOPER Supervisor	8-hour HAZWOPER Refresher Expires	Other Training
Chris Torell	Senior Engineer	Will complete the Site Orientation prior to starting work	7/20/1990	5/18/2011	2/5/2016	10 hour General Industry Outreach 6/22/2010 Certified Safety Professional 4/6/2012 CPR/AED – 2 years (expires) 2/20/2015 First Aid – 2 years (expires) 2/20/2015 Loss Prevention System Training 5/23/2012 OSHA Compliance and Workplace Safety 4/11/2012
Christopher Yates	Managing Scientist	3/31/2015	8/26/1997	5/9/2000	3/3/2016	10 Hour Construction 4/15/2008 Confined Space Entry 3/6/2002 Confined Space Rescue 1/27/2001 CPR, AED – 2 years (expires) 4/19/2013 Defensive Driving 3/12/2010 DOT Awareness 11/24/2008 Fire Extinguisher/Hot work 1/16/2002 First Aid – 2 years (expires) 4/19/2013 Hazardous Waste Management 6/27/2001 NYS Boating Course 3/27/2003 Patient Packaging 1/27/2001 RCRA Waste Handler 11/24/2008 Security Badge Application – Hudson River 3/31/2015 START 3/27/2009

Table 3-1
Competent and Qualified Persons and Completed Health and Safety Training

Name	Job Title	Parsons On-site Safety Orientation Class	40-hour HAZWOPER	8-hour HAZWOPER Supervisor	8-hour HAZWOPER Refresher Expires	Other Training
John Roche	Staff Scientist	3/31/2015	6/5/2006	N/A	3/3/2016	10 Hour Construction 4/24/2009 CPR, AED – 2 years (expires) 4/19/2013 Defensive Driving 4/27/2013 DOT Hazardous Materials Transportation 3/21/2014 DOT Awareness 11/24/2008 First Aid – 2 years (expires) 4/19/2013 NYS Boating Course 1/1/2000 RCRA Waste Handler 11/24/2008 Security Badge Application – Hudson River Project 3/31/2015
Kevin Ballou	Staff Engineer	3/31/2015	3/18/2005	4/5/2005	3/3/2016	10 Hour Construction 4/24/2009 Boating Safety 6/16/2009 CPR, AED – 2 years (expires) 4/19/2013 DOT HAZMAT Advance General Awareness 8/13/2014 Defensive Driving 5/6/2009 First Aid – 2 years (expires) 4/19/2013 NYS Boating Course 5/15/2009 Security Badge Application –Hudson River Project 3/31/2015 START 3/27/2009

Table 3-1
Competent and Qualified Persons and Completed Health and Safety Training

Name	Job Title	Parsons On-site Safety Orientation Class	40-hour HAZWOPER	8-hour HAZWOPER Supervisor	8-hour HAZWOPER Refresher Expires	Other Training
Margaret Murphy	Managing Scientist	3/31/2015	5/22/1992	3/11/2014	3/3/2016	CPR/AED – 2 years (expires) 8/21/2013 First Aid – 3 years (expires) 8/21/2013 DOT HAZMAT Advanced General Awareness 5/5/2014 HAZMAT Response Awareness Level 3/30/2012 NYS Boating Course 4/16/2003 Security Badge Application – Hudson River Project 3/31/2015
Mark LaRue	Senior Managing Scientist	3/31/2015	11/12/1987	11/1/1988	4/20/2016	CPR/AED – 2 years (expires) 5/5/2017 Defensive Driving 7/27/2010 First Aid – 2 years (expires) 5/5/2017 NYS Boating Course 4/3/2003 START 3/27/2009 Security Badge Application –Hudson River Project 3/31/2015
Matthew Cavas	Senior Scientist	Will complete the Site Orientation prior to starting work	4/12/2004	4/20/2004	1/28/2016	10 Hour Construction 4/15/2008 BC 4x4 General Field Health and Safety 3/17/2006 CPR, AED – 2 years (expires) 4/19/2013 DOT HAZMAT Advanced General Awareness 7/26/2014 First Aid – 2 years (expires) 4/19/2013 RCRA Waste Handler 11/11/2008 Security Badge Application – Hudson River Project 4/9/2014

Table 3-1
Competent and Qualified Persons and Completed Health and Safety Training

Name	Job Title	Parsons On-site Safety Orientation Class	40-hour HAZWOPER	8-hour HAZWOPER Supervisor	8-hour HAZWOPER Refresher Expires	Other Training
Richard Constant	Staff Scientist	3/31/2015	3/27/2009	8/6/2014	1/28/2016	10 Hour Construction 4/24/2009 CPR, AED – 2 years (expires) 4/19/2013 Defensive Driving 4/24/2012 DOT HAZMAT Security Awareness 8/8/2014 DOT HAZMAT Advanced General Awareness 8/5/2014 First Aid – 2 years (expires) 4/19/2013 Security Badge Application – Hudson River Project 3/31/2015
Ryan Davis	Principal Scientist	3/31/2015	10/24/2002	12/14/2006	3/3/2016	10 Hour Construction 4/24/2009 Confined Space Entry 10/24/2002 CPR, AED – 2 years (expires) 4/19/2013 Diving Rescue 8/1/1995 First Aid – 2 years (expires) 4/19/2013 NYS Boating Course 7/12/2006 Diving Rescue 8/1/1995 Security Badge Application – Hudson River Project 3/31/2015
Matt Smith	Staff Scientist	3/31/2015	5/24/2010	3/19/2014	2/5/2016	DOT HAZMAT Advanced General Awareness 5/30/2014 CPR, AED – 2 years (expires) 2/20/2017 First Aid – 2 years (expires) 2/20/2017 Defensive Driving 12/6/2010 DOT HAZWOPER Awareness Level 4/5/2012 Security Badge Application – Hudson River Project 3/31/2015

Table 3-1
Competent and Qualified Persons and Completed Health and Safety Training

Name	Job Title	Parsons On-site Safety Orientation Class	40-hour HAZWOPER	8-hour HAZWOPER Supervisor	8-hour HAZWOPER Refresher Expires	Other Training
Shaun Surani	Field Technician	3/31/2015	3/31/2006	N/A	3/3/2016	CPR, AED – 2 years (expires) 9/27/2016 First Aid – 2 years (expires) 9/27/2016 Defensive Driving 5/1/2014 DOT HAZMAT Security Awareness 10/3/2014 Security Badge Application – Hudson River Project 3/31/2015
James Ryan	Senior Scientist	3/31/2015	8/19/2002	6/22/2006	2/5/2016	10 Hour Construction 4/15/2008 CPR, AED – 2 years (expires) 2/20/2017 First Aid – 2 years (expires) 2/20/2017 Security Badge Application – Hudson River Project 3/31/2015

Notes:

AED – automated external defibrillator
 BC 4x4 – Brown and Caldwell 4 Courses in 4 Hours
 CPR – cardiopulmonary resuscitation
 DOT – Department of Transportation
 HAZMAT – hazardous materials
 HAZWOPER – Hazardous Waste Operations and Emergency Response
 N/A –Not Applicable
 NYS – New York State
 OSHA – Occupational Safety and Health Administration
 RCRA – Resource Conservation and Recovery Act
 START – Supervisor Training in Accident Reduction Techniques

Training for project personnel includes the following, as appropriate:

- 10-hour OSHA Construction Safety Certification: Required for site safety personnel.
- 1-day (8 hours) Hands-on Defensive Driving Certification: Required for personnel operating any type of vehicle on site, or for personnel operating motor vehicles off site for project-related purposes (other than driving to and from a place of residence for work).
- 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) and 8-hour Annual Refresher Certificates: Required for general site workers (such as equipment operators, general laborers, and supervisory personnel) engaged in hazardous substance removal or other activities that expose or potentially expose workers to hazardous substances and health hazards.
- 8-hour HAZWOPER Supervisor Certificate: Required for on-site management and supervisors directly responsible for, or who supervise employees engaged in, hazardous waste operations.
- Respirator Clearance: Required for all personnel that may need to wear a half face piece, full face piece, or supplied air respirator, or self-contained breathing apparatus; provide dates of training, medical clearance, and fit testing.
- Cardiopulmonary Resuscitation (CPR)/First-Aid Certification: Required in the absence of an infirmary, clinic, hospital, or physician that is reasonably accessible in terms of time and distance from the work site, which is available for the treatment of injured employees; a person who has a valid certificate in first-aid training from the U.S. Bureau of Mines, the American Red Cross, or equivalent training, which can be verified by documentary evidence, shall be available at the work site to render first-aid.

4 SCOPE OF WORK EVALUATION

Anchor QEA staff may perform the following work tasks as part of the project:

- Water quality sampling (vessel and land based)
- Water velocity measurements
- Monitoring buoy deployment, sampling, and retrieval
- Biota sampling (vessel and land based)
- Surface sediment sampling
- General field activities (motor vehicle operation, boat and barge operation)

JSAs for these activities are included as Attachment 1. Anchor QEA does not anticipate performing work between any dam safety warning cable or signage and the dam, or if within 1,000 feet upstream of any dam. However, if future work activities are required in these areas, a Near Dam River Operations Plan will be submitted to the Construction Manager (CM) for review and approval prior to initiating the work.

Anticipated field subcontractors (who must prepare their own HASP that meets the minimum requirements of this HASP and the 2015 RA HASP) include the following:

- Seaway Diving and Salvage (far-field monitoring station intake inspection)

5 HAZARD/RISK/EXPOSURE ASSESSMENT

5.1 Introduction

Major hazards or risks and exposures associated with the scope of work are listed below in Table 5-1. For each major activity listed, a JSA has been developed and is included in Attachment 1. Additionally, general safety procedures and hazards common to the various anticipated work tasks are discussed in detail in this section. Prior to engaging in any additional activities, a hazard assessment will be completed and reviewed by the SSO, Field Operations Coordinator, and Corporate Health and Safety Manager (CSM) before starting work.

Table 5-1
Tasks and Associated Job Safety Analysis

Task	Hazards/Risks	Controls
Blank New Format	See JSA001	See JSA001
Boat Fueling	See JSA002	See JSA002
Boat Operations ¹	See JSA003	See JSA003
Bridge Collection of Water Samples	See JSA004	See JSA004
Boat/Barge Decontamination	See JSA005	See JSA005
Personnel Decontamination	See JSA006	See JSA006
Tool and Equipment Decontamination	See JSA007	See JSA007
Far-Field Water Sampling	See JSA008	See JSA008
Fish Sampling	See JSA009	See JSA009
Sampling and Laboratory Glassware Handling	See JSA010	See JSA010
Habitat Assessment	See JSA011	See JSA011
Far-Field Intake Inspection	See JSA012	See JSA012
Monitoring Buoy Deployment, Sampling, and Retrieval	See JSA013	See JSA013
Motor Vehicle Operation	See JSA014	See JSA014
Near-field Water Sampling	See JSA015	See JSA015
Sediment Sampling	See JSA016	See JSA016

Note:

- 1 If work activities will take place between any dam safety warning cable or signage and the dam, or if within 1,000 feet upstream of any dam, a Near Dam River Operations Plan must be submitted to the Construction Manager for review and approval to initiating the work.

5.2 Management of Change

Changes potentially impacting safety of workers will be managed specifically to identify corrective actions that may be taken to improve the safety of procedures and behaviors. Changes will be identified through conduct of employee and management observations, review and continual updating of JSAs, and general awareness and Stop Work empowerment of workers. Certain changes may precipitate change management. These include but are not limited to the following:

- A deviation from an approved procedure, process, safe working practice or work instructions (JSA, 2015 RA HASP, etc.)
- Unplanned or planned modifications or changes to equipment
- Implementation of new systems, work processes, or equipment
- Changes to the sequence of operations
- Use of a piece of equipment in a non-traditional manner
- Unanticipated weather or environmental issues
- Modifications made in the work area or environment
- Impact by other site Contractors or processes
- Changes of safety-critical personnel
- Addition of new or inexperienced personnel
- Change instigated and/or requested by the client, CM, regulator, or other relevant party

Changes will be managed by several means, depending on the magnitude, complexity and potential impact of the change. These include but are not limited to the following:

- Feedback sessions conducted following observations
- Periodic intra-team communications
- RCA
- JSA updates
- Monthly safety meetings
- Project management meetings
- HASP reviews and updates
- Safety Summits

5.3 Personal Protective Equipment

Personal protective equipment (PPE) is required consistent with 1910.120(c)(5) during certain work tasks, as described in detail in respective JSAs. In general, the following PPE-related procedures will be followed, in accordance with Section 1.16 of Specification 01350:

- All field personnel (field team leaders [FLs] and field team members) are required to comply with PPE selection and use as stipulated in the JSAs related to their work task.
- PMs or FLs (or their designee[s]) will obtain new PPE for staff use consistent with the applicable JSA and ANSI standards.
- FLs will periodically inspect the supply, sizes, condition, use, and applicability of PPE used by field teams to verify compliance with this section.
- Each team member will inspect his/her PPE at the beginning of work tasks, at the end of work tasks, when task conditions change, and periodically during work tasks. Degraded, worn, inapplicable or obsolete PPE will be replaced immediately.
- Reusable PPE will be cleaned, maintained, and stored in accordance with the manufacturer's instructions.
- All PPE will be stored in a clean, dry, and cool location and in original packaging until needed
- Failure to follow the requirements of this section may result in disciplinary action consistent with Anchor QEA's internal and confidential human resources procedures.
- Employee training on the selection, inspection, use and care of PPE will be achieved through a combination of HAZWOPER and pre-work, person-to-person training led by Anchor QEA.
- A change in PPE level between D and modified D will be approved by the FL following discussion among the field team members and will be communicated to the PM as soon as practicable. A change to Level C must be approved in writing by GE and the PM before work in Level C may take place. Anchor QEA staff will not work in Level B or A, unless specifically approved in writing by the Anchor QEA CSM.

5.4 Air Monitoring

An industrial hygiene program is not required for Anchor QEA staff as their exposures to PCBs are negligible and similar to those experienced by the general public. Anchor QEA personnel are not directly involved with dredging and sediment handling operations;

therefore, the project air monitoring that is performed to assess the exposure of the public to PCBs is adequate to assess the exposure of Anchor QEA staff members. However, should project air monitoring at public receptor locations indicate that PCB concentrations in air are approaching OSHA permissible exposure levels, an industrial hygiene program for Anchor QEA employees will be developed.

5.5 Fall Protection

Working at heights greater than 6 feet is not anticipated in general during the work. In the event fall hazards are identified for a task, the JSA pertaining to that task will be amended and a task-specific fall prevention plan will be prepared including, at a minimum, the following:

- A description of the fall protection system(s) to be used
- Equipment and methods to be used
- Roles and responsibilities
- Self- and assisted-rescue procedures
- Training requirements
- Supervision procedures

To support currently planned work tasks, observe the following general falls/ladders procedures and practices:

- Assess work areas for fall hazards. A fall protection system that meets OSHA and ANSI Z3591 standards must be used if work is conducted 6 feet or more above the surface.
- Use Type 1A rated ladders.
- Make sure ladder rungs are sturdy and free of cracks.
- Use ladders with secure safety feet.
- Pitch ladders at a 1 horizontal to 4 vertical ratio.
- Secure ladders at the top or have another person at the bottom to help stabilize it.
- Ladders used to access an upper landing surface shall extend at least 3 feet above the upper landing surface.
- Use non-conductive ladders near electrical wires.
- The top rung of a ladder should not be used as a step.

5.6 Hearing Conservation

The highest noise level exposure for Anchor QEA personnel is associated with operating vessels equipped with outboard motors. Noise levels may exceed 85 A-weighted decibels (dbA) when underway from or to launch locations. These periods are infrequent and for short duration, and would unlikely result in an exceedance of the 85 dbA time-weighted average (TWA). Therefore, hearing conservation measures are not required for the current scope supported by this HASP. However, the following information is provided as guidance in the event that changes in scope result in increased noise exposure during Anchor QEA work tasks.

Excessive noise is hazardous not only because of its potential to damage hearing, but also because of its potential to disrupt communications and instructions. If changes in activities result in an increase in exposure to noise (i.e., noise levels above the criteria specified in Table 5-2), the following procedures and practices shall be followed to prevent noise-related hazards:

- All employees will have access to disposable ear plugs with a Noise Reduction Rating (NRR) of not less than 30.
- Ear plugs must be worn in any environment where workers must raise their voices to be heard while standing at a distance of 3 feet or less.
- Ear plugs must be worn by any personnel operating concrete cutting or sawing equipment.

Table 5-2
Noise Exposure Action Levels

Instrument	Measurement	Action
Type I or Type II Sound Level Meter or Dosimeter	> 80 dbA to 85 dbA	Hearing protection recommended. Limit work duration to 8-hour shifts.
	> 85 dbA to 90 dbA	Hearing protection required. Limit work duration to 8-hour shifts.
	> 90 dbA to 115 dbA	Hearing protection required. Investigate use of engineering controls. Limit work duration to 8-hour shifts.
	> 115 dbA	Stop work. Consult Corporate Safety Manager.

Hearing protection is required for workers operating or working near noisy equipment or operations, where the noise level is greater than 85 dbA (TWA), as well as personnel working around heavy equipment. Field staff will determine the need and appropriate testing procedures (i.e., sound level meter and/or dosimeter) for noise measurement.

When needed, a sound level meter will be used to measure noise levels at selected locations in the work area and on the site perimeter. When used, noise monitoring equipment must be calibrated before and after each shift.

If continuous noise levels are found to exceed 85 dbA at any location within the work area, warning signs will be posted. Workers and visitors will be notified that hearing protection is required. Appropriate hearing protection (i.e., ear plugs or ear muffs) will be worn whenever personnel or visitors are working in that location. A supply of ear plugs will be maintained on site.

Action levels in Table 5-2 will trigger the use of appropriate hearing protection (plugs or muffs). Hearing protection must be able to attenuate noise below 90 dbA (8-hour TWA). Each hearing protection or device has an NRR assigned by USEPA. The calculation for a hearing protection device's effectiveness is:

$$\text{Noise reading dbA} - (\text{NRR} - 7\text{dB}) < 90 \text{ dbA}$$

5.7 Site Control

The following are standard safe work practices that apply to all Anchor QEA site personnel and subcontractors and shall be discussed in the safety briefing prior to initiating:

- Eating, drinking, chewing gum or tobacco, applying cosmetics, and smoking are prohibited on site except in designated areas.
- Hands and faces must be washed upon leaving the work area and before eating, drinking, chewing gum or tobacco, applying cosmetics, and smoking.
- A buddy system will be used. Radio or hand signals will be established to maintain communication.

- During site operations, each worker will consider him/herself as a safety backup to his/her partner.
- Visual contact will be maintained between buddies on site when performing hazardous duties.
- No personnel will be admitted to the site without the proper safety equipment, training, and medical surveillance certification.
- All personnel must comply with established safety procedures. Any staff member who does not comply with safety policy, as established in this HASP, will be subject to corrective action potentially including but not limited to being reprimanded and immediate dismissal.
- Proper decontamination procedures must be followed before leaving a contaminated work area.

5.8 Hot or Cold Weather

5.8.1 Introduction

This section has been developed to address the hazards associated with working in hot or cold environments, consistent with the 2015 RA HASP.

5.8.2 Hazards

5.8.2.1 Cold Weather

Extreme cold temperatures may cause injury to exposed body parts and extremities that result in localized freezing of skin and tissue. If the exposure to the cold climate is longer in duration, it may result in lowered body temperatures that can cause hypothermia, which can be fatal.

5.8.2.2 Hot Weather

Extreme hot weather may cause dehydration, heat stress, and potentially heat stroke.

5.8.3 *Safety Measures*

5.8.3.1 *Cold Weather*

Table 5-3 applies to work in cold weather. The table indicates work/break schedules for warm up and protection of employees.

Table 5-3
TLVs Work/Warm-up Schedule for Outside Workers based on a 4-hour Shift

Air Temperature – Sunny Sky		No Noticeable Wind		Wind 8 km/hour (5 mph)		Wind 16 km/hour (10 mph)		Wind 24 km/hour (15 mph)		Wind 32 km/hour (20 mph)	
°C (approx.)	°F (approx.)	Maximum Work Period	No. of Breaks	Maximum Work Period	No. of Breaks	Maximum Work Period	No. of Breaks	Maximum Work Period	No. of Breaks	Maximum Work Period	No. of Breaks
-26° to -28°	-15° to -19°	(Normal breaks) 1		(Normal breaks) 1		75 minutes	2	55 minutes	3	40 minutes	4
-29° to -31°	-20° to -24°	(Normal breaks) 1		75 minutes	2	55 minutes	3	40 minutes	4	30 minutes	5
-32° to -34°	-25° to -29°	75 minutes	2	55 minutes	3	40 minutes	4	30 minutes	5	Non-emergency work should cease	
-35° to -37°	-30° to -34°	55 minutes	3	40 minutes	4	30 minutes	5	Non-emergency work should cease			
-38° to -39°	-35° to -39°	40 minutes	4	30 minutes	5	Non-emergency work should cease					
-40° to -42°	-40° to -44°	30 minutes	5	Non-emergency work should cease							
-43° and below	-45° and below	Non-emergency work should cease									

Source: American Conference of Industrial Hygienists (ACGIH) 2011

Notes:

°C – degrees Celsius

°F – degrees Fahrenheit

km – kilometers

mph – miles per hour

TLVs – Threshold Limit Values

In addition, the following safety measures will be instituted in cold weather operations:

- No work shall be performed at temperatures below -15°F.
- At 30°F or below, employees will be issued insulated gloves to protect their hands and fingers. When the air temperature reaches 0°F or below, mittens will be issued. When it is possible and does not decrease an employee's dexterity, metal surfaces that are required to be handled by the employee will be insulated.
- Employees will be encouraged to have extra clothing available in the event that their clothes become wet and a change of clothing is needed.
- Cold weather work shall be performed within a few minutes travel time of a heated shelter (vehicle, on land shelter, or enclosed cabin boat) in case emergency warming is necessary.
- Employees will be required to take breaks or rotate positions when working in extreme cold weather to provide break/warm-up periods, based on the American Conference of Industrial Hygienists (ACGIH) table above.
- For personnel working on the river, when the water temperature is below 40°F, employees will be provided and required to wear either a full Mustang survival suite or a flotation coat and bibs. When the water temperature is between 40°F and 50°F, employees will be required to wear a flotation coat.
- Employees working in exclusion zone areas will continue medical monitoring when entering or exiting. This monitoring will allow supervisors to monitor their conditions and be sure that cold weather operations are not posing a risk to employees.
- Employees will have proper hand protection that allows for dexterity of movement required for the job at temperatures below 50°F.

5.8.4 Hot Weather

During hot days, on-river work shall be performed during the morning or evening hours or performed on a vessel with shade protection. To the limits that scheduling allows, laborious activities or activities requiring long hours in the sun will be planned around abnormally hot and humid days.

5.8.4.1 Heat Stress

Observe the following general procedures and practices regarding heat stress:

- Increase the number of rest breaks and/or rotate workers in shorter work shifts.
- Watch for signs and symptoms of heat stress and fatigue (see Section 5.6.4.1).
- During hot months, plan work for early morning or evening.
- Use ice vests when necessary.
- Rest in cool, dry areas.

5.8.4.1.1 Signs, Symptoms, and Treatment

Adverse climatic conditions are important considerations in planning and conducting site operations. High ambient temperature can result in health effects ranging from transient heat fatigue, physical discomfort, reduced efficiency, personal illness, and increased accident probability to serious illness or death. Heat stress is of particular concern when chemical protective garments are worn because they prevent evaporative body cooling. Wearing PPE places employees at considerable risk of developing heat stress.

Heat stress is caused by a number of interacting factors, including environmental conditions, clothing, workload, and the individual characteristics of the worker. Because heat stress is probably one of the most common (and potentially serious) illnesses, regular monitoring and other preventive precautions are vital.

Heat Rash. Heat rash can be caused by continuous exposure to hot and humid air and skin abrasion from sweat-soaked clothing, rubber boots, or impermeable waders. The condition is characterized by a localized red skin rash and reduced sweating. Heat rash reduces the ability to tolerate heat. To treat, keep skin hygienically clean and allow it to dry thoroughly after using chemical protective clothing. Take measures to prevent heat rash by changing clothes often to maximize use of dry garments, or taking frequent breaks to allow doffing of equipment and drying of skin.

Heat Cramps. Heat cramps are caused by profuse perspiration with inadequate electrolytic fluid replacement. This often robs the larger muscle groups (stomach and quadriceps) of blood, which can cause painful muscle spasms and pain in the extremities and abdomen. To

treat, move the employee to a cool place and give him/her sips of water or an electrolytic fluid replacement. Watch for signs of heat exhaustion or heat stroke.

Heat Exhaustion. Heat exhaustion is a mild form of shock caused by increased stress on various organs to meet increased demand to cool the body. Onset is gradual and symptoms should subside within 1 hour. Symptoms include a weak pulse; shallow breathing; pale, cool, moist skin; profuse sweating; dizziness; and fatigue. To treat, move the employee to a cool place and remove as much clothing as possible. Give him/her sips of water or an electrolytic fluid replacement and fan the person continuously to remove heat by convection. Do not allow the affected person to become chilled. Treat for shock if necessary.

Heat Stroke. Heat stroke is the most severe form of heat stress; the body must be cooled immediately to prevent severe injury and/or death. ***This is a medical emergency!*** Symptoms include red, hot, dry skin; a body temperature of 105°F or higher; no perspiration; nausea; dizziness and confusion; and a strong, rapid pulse. Because heat stroke is a true medical emergency, transport the employee to a medical facility immediately. Prior to transport, remove as much clothing as possible and wrap the employee in a sheet soaked with water. Fan the employee vigorously while transporting to help reduce body temperature. If available, apply cold packs under the arms, around the neck, or any other place where they can cool large surface blood vessels. If transportation to a medical facility is delayed, reduce body temperature by immersing the employee in a cool-water bath (however, be careful not to over-chill the employee once body temperature is reduced below 102°F). If this is not possible, keep the employee wrapped in a sheet and continuously douse with water and fan.

5.8.4.1.2 Prevention

The implementation of preventative measures is the most effective way to limit the effects of heat-related illnesses. During periods of high heat, adequate liquids must be provided to replace lost body fluids. Replacement fluids can be a 0.1% saltwater solution, a commercial mix such as Gatorade, or a combination of these with fresh water. The replacement fluid temperature should be kept cool (50°F to 60°F) and should be placed close to the work area. Employees must be encouraged to drink more than the amount required to satisfy thirst.

Employees should also be encouraged to salt their foods more heavily during hot times of the year.

Cooling devices such as vortex tubes or cooling vests can be worn beneath impermeable clothing. If cooling devices are worn, only physiological monitoring will be used to determine work activity.

All workers are to rest when any symptoms of heat stress are noticed. Rest breaks are to be taken in a cool, shaded rest area. Employees shall remove chemical protective garments during rest periods and will not be assigned other tasks.

All employees shall be informed of the importance of adequate rest and proper diet, including the harmful effects of excessive alcohol and caffeine consumption.

5.8.4.1.3 Monitoring

Heat stress monitoring should be performed when employees are working in environments exceeding 90°F ambient air temperature. Monitoring will be performed and documented by a member of the field team that is current in First Aid/CPR. If employees are wearing impermeable clothing, this monitoring should begin at 77°F. There are two general types of monitoring that can be used: wet bulb globe temperature (WBGT), and physiological. The Heat Stress Monitoring Record form (see Attachment 2) will be used to record the results of heat stress monitoring.

Wet Bulb Globe Temperature. The WBGT index is the simplest and most suitable technique to measure the environmental factors that most nearly correlate with core body temperature and other physiological responses to heat. When WBGT exceeds 25°C (77°F), the work regimen in Table 5-4 should be followed.

Table 5-4
Permissible Heat Exposure Threshold Limit Values

Work/Rest Regimen	Workload		
	Light	Moderate	Heavy
Continuous work	86°F (30.0°C)	80°F (26.7°C)	77°F (25.0°C)
75% work, 25% rest each hour	87°F (30.6°C)	82°F (28.0°C)	78°F (25.9°C)
50% work, 50% rest, each hour	89°F (31.4°C)	85°F (29.4°C)	82°F (27.9°C)
25% work, 75% rest, each hour	90°F (32.2°C)	88°F (31.1°C)	86°F (30.0°C)
These Threshold Limit Values are based on the assumption that nearly all acclimated, fully-clothed workers with adequate water and salt intake should be able to function effectively under the given working conditions without exceeding a deep body temperature of 100.4°F (38°C).			

(From OSHA Technical Manual, Section III: Chapter 4 - Heat Stress)

The Threshold Limit Values (TLVs) denoted in Table 5-4 apply to physically fit and acclimatized individuals wearing light, summer clothing. If heavier clothing that impedes sweat or has a higher insulation value is required, the permissible heat exposure TLVs should be adjusted based on the WBGT Correction Factors in Table 5-5.

Table 5-5
Wet Bulb Globe Temperature Correction Factors

Clothing Type	Wet Bulb Globe Temperature Correction
Summer lightweight working clothing	32°F (0°C)
Cotton coveralls	28°F (-2°C)
Winter work clothing	25°F (-4°C)
Water barrier, permeable	21°F (-6°C)
Fully encapsulating	14°F (-10°C)

Physiological. Physiological monitoring can be used in lieu of, or in addition to, WBGT. This monitoring can be self-performed once the CSM demonstrates appropriate techniques to affected employees. Because individuals vary in their susceptibility to heat, this type of monitoring has its advantages. The two parameters that are to be monitored at the beginning of each rest period are:

- **Heart Rate.** The maximum heart rate (MHR) is the amount of work (beats) per minute a healthy person's heart can be expected to safely deliver. Each individual will count his/her radial (wrist) pulse for 1 minute as early as possible during each rest period. If the heart rate of any individual exceeds 75% of his/her calculated MHR ($MHR = 200 - \text{age}$) at the beginning of the rest period, then the work cycle will be decreased by one-third. The rest period will remain the same. An individual is not permitted to return to work until his/her sustained heart rate is below 75% of his/her calculated MHR.
- **Temperature.** Each individual will measure his/her temperature with a thermometer for 1 minute as early as possible in the first rest period. If the temperature exceeds 99.6°F at the beginning of the rest period, then the work cycle will be decreased by one-third. The rest period will remain the same. An individual is not permitted to return to work if his/her temperature exceeds 100.4°F.

Training. Employees potentially exposed to heat stress conditions will be instructed on the contents of this procedure. This training can be conducted during daily tailgate safety meetings.

5.9 Lightning

A project-specific lightning safety policy has been developed and is provided in Attachment 3.

5.10 Boating Emergencies

5.10.1 Person Overboard

In the event of a vessel passenger falling overboard, the following procedures will be followed:

- Upon realizing personnel is in the water, yell "person overboard!" ensuring all boat passengers are aware.
- If the engine is running, place the transmission in neutral and swing the stern clear to keep from hitting the person.
- Call 911, as appropriate.
- Assign a spotter to keep the person in sight at all times.

- Throw flotation devices immediately.
- Contact nearby vessels for assistance.
- Recover person from the water.
- Proceed with care for potential hypothermia.
- Initiate contact procedures per Section 17.
- If person overboard becomes lost from view, immediately notify all and proceed with notification requirements per Section 17.

The following are considerations for personnel who fall overboard themselves:

- If you fall overboard, hold your mouth and nose closed and protect your head.
- When you reach the surface, look for movement, listen for sounds, and call for help.
- Use the whistle attached to the personal flotation device (PFD) and activate the beacon light, as applicable.
- It is only sensible to swim if there is reason to believe that a chance of reaching your destination exists. Excessive movement in cold water may hasten hypothermia.
- Wear PFD and cold weather gear, as required.

5.10.2 Abandon Ship

In certain emergencies (e.g., fire, explosion, or immediate life-threatening condition), it may be necessary to abandon ship. The decision to abandon ship is a critical decision that will be made only by the vessel operator/captain. The project site (i.e., Hudson River) and anticipated Anchor QEA activities preclude, in general, the use of vessels equipped with separate lifeboats. As such, abandoning ship should by default include consideration of entering the water. The requirements for PFDs as well as cold weather gear are, therefore, paramount for work on the river. Although the shore will be visible and likely relatively close to all work activities, the flowing state of the river must also be considered when making the decision to abandon ship.

The following steps will be followed during abandoning ship:

- The vessel operator/captain will make the decision to abandon ship.
- Both other vessel operators (VHF Channel 13) and the U.S. Coast Guard (VHF Channel 16) will be immediately notified of the MAYDAY situation, including

current vessel position (if time permits, provide global positioning system [GPS] coordinates), nature of MAYDAY, and anticipated exit shore location.

- Simultaneously with VHF notifications, all will be called via an onboard cellular telephone.
- Move the vessel to the nearest shore, if possible.
- Drop anchor to immobilize the vessel, to the extent possible.
- Assist injured crew (if any) into the water and make way to shore in a group, maintaining physical contact (i.e., holding hands/PFDs), if possible.
- Exit the water and remain together but a safe distance from the boat.
- Await emergency services.
- If hypothermia becomes a concern during waiting, make an attempt to reach a dwelling or facility to seek shelter.
- Initiate notification requirements per Section 17.

5.11 Davit Crane Operation

One of the main work tasks supported by this HASP consists of monitoring buoy deployment, retrieval, and maintenance. Buoy maintenance may include removal/placement of the buoy using a davit crane mounted on Anchor QEA's pontoon boat. Attachment 4 provides a Lift Plan to be followed during each buoy lift operation.

5.12 Hand and Power Tools

All hand and power tools will be maintained in a safe condition and in good repair. All tools will be inspected, tested, and determined to be in safe operating condition prior to each use in accordance with the manufacturer's instructions. Any tool that fails an inspection will be immediately removed from the site, or tagged with a "Do Not Use" sign until repaired.

Eye protection (safety goggles) will be worn when executing field tasks involving hand or power tools. Additional eye and face protection, such as safety goggles or face shields, may also be required when working with specific hand and power tools, and when workers are exposed to falling, flying, abrasive, or splashing hazards. Workers using tools that may subject their hands to an injury, such as cuts, abrasions, punctures, or burns, will wear

protective gloves. Loose or frayed clothes, dangling jewelry, or loose, long hair will not be worn when working with power tools.

5.13 Safety Procedures for Working with Electricity

Anchor QEA does not anticipate performing maintenance tasks that will require the implementation of Lock Out/Tag Out (LO/TO) procedures. Currently, Anchor QEA staff do not use electrical equipment that cannot be readily de-energized (i.e., common household plug). If it becomes necessary for Anchor QEA personnel to perform maintenance on equipment that requires LO/TO procedures, these procedures will be developed and submitted to the CM for review prior to implementation.

The following procedures and practices will be followed to prevent electric shock:

- Use only appropriately trained and certified electricians to perform tasks related to electrical equipment. A good rule of thumb is to defer any task that would not normally and reasonably be completed by the average public consumer.
- Ensure that all equipment is grounded with either an appropriate plug (i.e., three-pronged) or by using a ground fault circuit interrupter (GFCI).
- Test all GFCIs prior to use.
- Use only extension cords that are in good condition—if in doubt, throw it out.
- Use only 16-gauge, heavy-duty, three-wire, three-pronged extension cords approved by Underwriters Laboratories Inc.
- Be sure to locate extension cords out of traffic areas or, if this is unavoidable, flag cords and protect workers from tripping over them (e.g., use barricades or tape the cord down).
- Do not stage extension cords or powered equipment in wet areas, to the degree possible. Elevate cords and equipment out of puddles.

5.14 Ropes and Lines

Inherent with anticipated Anchor QEA work tasks on or near the Hudson River is the use of ropes and lines. Ropes and lines may be used to do the following:

- Anchor a vessel

- Moor a vessel
- Secure equipment
- Stabilize monitoring devices
- Act as safety measures in the instance of sudden equipment movement

Safe use and care of ropes and lines is an important component of safe field work. The following guidelines will be followed during rope and line use:

- Use:
 - Be aware of line length, strength, material, flotation, and behavior (i.e., stretch tendencies, holding of knots), and weakness (i.e., synthetic ropes can degrade in sunlight, natural fiber ropes are susceptible to rot).
 - Select the correct rope material and diameter for the task, including consideration of cleat and tackle size.
 - Adopt a 12:1 maximum load guideline (a 12,000-pound rated rope should be subjected to no more than a 1,000-pound load).
 - Place loads on rope smoothly without jerking or sudden loading.
 - Use cleats whenever practicable; do not manually hold lines under load.
 - Do not stand or sit in a line's load direction.
 - Never stand on, near, or in the bight of a coiled rope under load to avoid becoming tangled should the rope load shift and the line runs out suddenly.
- Care:
 - Store ropes in only dry, cool, well-ventilated, and shaded (i.e., out of direct sunlight) locations to the extent practicable.
 - Coil the ropes not in use, as well as excess lengths, neatly and out of work paths with the lay of the ropes, without kinking (use coils, fakes, or flemishes).
 - Avoid setting dirt on ropes because dirt particles can enter the rope braid and cause abrasion.
 - Whip ropes occasionally to revive the lay.
 - Take frayed or chafed lines out of service immediately.
 - Inspect ropes daily or more often for heavily used or loaded lines.
 - Do not splice or otherwise connect ropes; obtain new, unspliced ropes for all uses.

5.15 Biological Hazards

Anchor QEA personnel may encounter a number of biting or stinging insects during site activities. Insects that may be present on site include chiggers, bees, wasps, mosquitoes, and ticks. If an insect bite or sting occurs, personnel trained in first aid procedures will administer first aid. Personnel with a history of allergic reactions to bee stings should inform the SSO prior to field work. If stung, these personnel will be transported to the hospital for treatment.

5.15.1 *Biting/Stinging Insects and Spiders*

Spiders

Venomous spiders are extremely rare in New York State, but other non-venomous spiders can bite and can cause an allergic reaction that can be severe. If personnel think they have been bitten by a spider they should obtain medical attention.

Mosquitoes

West Nile virus is transmitted by infected mosquitoes. To avoid mosquitoes, do not plan field work for early morning or at dusk, when they are most active. To protect against bites, wear long sleeves and long pants, with pant legs tucked into or taped around socks. Spray ankles, wrists, and head covering with repellent containing 100% diethyl-m-toluamide (DEET) and spray exposed skin with a repellent containing 25% to 30% DEET.

Ticks

Deer tick bites may result in the transmission of Lyme disease. A characteristic rash may develop a few days to a few weeks after the bite of an infected tick. The rash generally looks like an expanding red ring with a clear center, but it can vary from a blotchy appearance to red throughout the rash; however, it is important to note that some victims never exhibit a rash. Lyme disease symptoms include flu-like symptoms such as headache, stiff neck, fever, muscle aches, and/or general malaise. If Lyme disease is not treated early with antibiotics, the early symptoms may disappear but more serious problems may follow. Long-term effects of Lyme disease may include arthritis of the large joints, meningitis, neurological complications (e.g., numbness, tingling in extremities, loss of concentration and memory retention, Bell's Palsy), withdrawal, lethargy, or cardiac symptoms.

Personnel should use the following tick prevention tactics when working outside:

- Pre-treat clothing with a repellent containing Permethrin.
- Avoid walking through brush, woods, or grassy areas; try to avoid contact with plants if you must walk through these areas.
- Dress in light-colored clothing to make adhering ticks more visible. Wear long-sleeve shirts and tuck pants into or tape around socks.
- Spray ankles, wrists, and head covering with repellent containing 100% DEET and spray exposed skin with a repellent containing 25% to 30% DEET.

Perform frequent field checks for ticks. Shower at the end of the day and perform a whole-body check. Place clothing in a hot drier to kill ticks.







5.15.2 Poisonous Plants

Poisonous plants include poison ivy, poison oak, and poison sumac as shown in Table 5-6.

Observe the following procedures and practices regarding poisonous plants:

- Avoid entering areas infested with poisonous plants.
- Immediately wash any areas that come into contact with poisonous plants.
- Use PPE when there is a possibility of contact with poisonous plants.

Table 5-6
Hazardous Plant Identification Guide

Hazardous Plant Identification Guide		
<p>Poison Ivy</p> <p>Grows in West, Midwest, Texas, and the East Coast</p> <p>Several forms—vine, trailing shrub, or shrub</p> <p>Three leaflets (can vary from three to nine)</p> <p>Leaves are green in summer, and red in fall</p> <p>Yellow or green flowers</p> <p>White berries</p>		
<p>Poison Oak</p> <p>Grows in the East (New Jersey to Texas) and Pacific Coast</p> <p>6-foot tall shrubs or long vines</p> <p>Oak-like leaves in clusters of three</p> <p>Yellow berries</p>		
<p>Poison Sumac</p> <p>Grows in boggy areas, especially in the Southwest and Northern states</p> <p>Shrub up to 15 feet tall</p> <p>Seven to 13 smooth-edged leaflets</p> <p>Glossy pale yellow or cream-colored berries</p>		

If you have been exposed to poison ivy, oak, or sumac, act quickly because the toxin in the plants penetrates the skin within minutes. If possible, stay outdoors until you complete the first two steps:

- Cleanse the exposed skin with generous amounts of isopropyl alcohol.
- Wash the skin with water.
- Take a regular shower with soap and warm water. Do not use soap until this point because it will pick up the toxin from the surface and move it around.
- Wash clothes, tools, and anything else that may have been in contact with the toxin, with alcohol and water. Be sure to wear hand protection during that process.

Signs and symptoms of exposure include redness and swelling that appears 12 to 48 hours after exposure. Blistering and itching will follow. If you have had a severe reaction in the past, you should see a physician right away. Over-the-counter products that are available to alleviate symptoms include Cortaid®, Lanacort®, baking soda, Aveeno® oatmeal baths, and calamine lotion.

6 CONTROL MEASURES/JOB SAFETY ANALYSIS

The following sections discuss the potential worker health and safety hazards associated with field tasks. Controls of these hazards are addressed through the mechanical and physical control measures, use of PPE, monitoring, training, decontamination, emergency response, and safety procedures.

Significant changes in the scope of field tasks covered by this HASP must be communicated to the PM, and an amendment to this HASP must be created as needed. Any task conducted beyond those identified in this HASP must be evaluated using the JSA process prior to conducting the work.

6.1 Job Safety Analysis

Anchor QEA work tasks have been evaluated for their hazards, and JSA documents have been developed in accordance with the procedures specified in the 2015 RA HASP and GE Specification 1350 that detail the chemical, physical, and biological hazards associated with these tasks, along with the control measures (e.g., engineering controls, administrative controls, and/or PPE) that will be used to ensure that these tasks are conducted in a safe manner.

The FL and field team members are responsible for identifying work tasks and project site conditions that are beyond the previously developed JSA documents and for communicating such information to the PM. The PM and/or the FL will have primary responsibility to develop project-specific JSAs.

The contents of the JSA documents shall be communicated to project personnel during the site orientation meeting and during daily safety meetings when conducting work where the specific JSAs are applicable.

JSA documents applicable to this project are located in Attachment 1 of this HASP.

6.2 Augmented Job Safety Analysis Process

If work tasks are identified during the course of the project that were not previously addressed in the JSA documentation supplied in Attachment 1 of this HASP, then a task-specific JSA document will be developed and submitted electronically to the CM for review prior to initiating the task. Adequate time will be allotted for the CM to review and comment on the JSA. The PM and/or FL shall develop this document(s) and this HASP will be amended to include the document. Project personnel shall be trained on the contents of the developed task-specific JSA prior to its implementation. A copy of the task-specific JSA form used in this process is supplied in Attachment 1 of this HASP.

7 CONTRACTOR PERIODIC SAFETY INSPECTIONS/AUDITS

Periodic inspections to identify and evaluate ongoing workplace hazards shall be performed by the following competent persons or observers:

- Chris Yates
- Mark LaRue
- Kevin Ballou
- Chris Torell
- FLs, as appropriate (see list of competent and qualified persons in Section 3)

Periodic inspections are performed according to the following schedule:

- Daily: FLs will conduct daily tailgate safety meetings before the start of work and ongoing inspection/observation of conditions affecting health and safety. Safety and project management may also assist in daily inspections.
- Once per 200 hours of field work (approximately twice weekly): Employees will observe a task being performed by another worker to verify the JSA for that task is being followed and to determine whether the JSA for that task may need to be modified (Worker Safety Observation).
- Periodic and, at a minimum, monthly inspections: Safety inspections will be performed by PMs or SSO to verify the HASP is being followed and that site risks are controlled as appropriate.
- When new, previously unidentified hazards are recognized.
- When occupational injuries and illnesses occur.
- When we hire and/or reassign permanent or intermittent workers to processes, operations, or tasks for which a hazard evaluation has not been previously conducted.
- Whenever workplace conditions warrant an inspection.

Inspections will be documented using either the Management/Worker Safety Observation Form (Attachment 5), depending on the observer. The SSO, Field Operations Coordinator, Field Sampling Manager, and CSM will receive copies of the inspection forms. The results of the inspections will be discussed during the next morning's safety meeting and may be reviewed with client health and safety representatives as needed. If warranted, out-of-

compliance conditions will result in corrective action and tracking of corrective actions to completion.

7.1 Vehicle Safety

7.1.1 Vehicle and Trailer Inspections

A Safety Inspection is to be conducted prior to vehicle or trailer use. This inspection is in compliance with United States Department of Transportation (NYSDOT) requirements for commercial vehicle use and is recorded on NYSDOT inspection forms. Annual vehicle inspections shall be performed to ensure vehicles are in proper working order and all safety features are functioning. These inspections will comply with the vehicle inspection requirements mandated by the New York State Department of Motor Vehicles.

Inspection and maintenance documentation will be maintained for all Anchor QEA vehicles.

7.1.2 Operator Requirements

Operators of any Anchor QEA vehicle or other vehicle used on the project shall maintain current driver's licenses. Current driver's licenses will be verified annually. Documentation of current driver's licenses will be available for CM inspection upon request.

Handheld electronic device use by the operator is prohibited at all times.

8 CONTRACTOR RISK MITIGATION FOUR-WEEK LOOK-AHEAD PLANNING SUBMISSION

As needed, the Weekly Risk Mitigation Four-Week Look-Ahead Form in Attachment 6 is used to plan risk mitigation strategies at progress meetings.

9 WORK PERMIT/FLOAT PLAN COMMUNICATION SYSTEM

Prior to engaging work on or within 6 feet of water, a river work permit must be submitted into the Hudson River Gensuite System (<https://hudson.gensuite.com/>) monthly by either the SSO, Field Operations Coordinator, or CSM.

The river permit details the tasks that are anticipated to be completed and identifies the staff and equipment during the following week. Subsequently, daily float plans are required during all near- or on-water work, detailing information such as vessel type, work scope, contact personnel, and anticipated environmental conditions, including river flow velocities in the working area(s). The float plans are submitted via electronic means to the Hudson River Gensuite System and include automatic notification provisions in the event of missed call-in deadlines. The SSO and Field Operations Coordinator (or their designees) are responsible for float plan submission. If a vessel tracking system (VTS) is being used and all work is being conducted within the designated work zone monitored by the VTS, boats will not be required to complete a Float Plan but will be required to follow the procedures in use by the vessel traffic control center. Although the Float Plan is required to be an electronic submission, a template is provided in Attachment 7 for informational purposes. Attachment 8 provides the go/no-go decision procedure for vessel operation on the river.

10 COMPLIANCE REQUIREMENTS POLICY

Anchor QEA management is responsible for ensuring that all safety and health policies and procedures are clearly communicated and understood by all employees. Managers and supervisors are expected to enforce the rules fairly and uniformly.

All employees are responsible for using safe work practices; following all directives, policies, and procedures; and assisting in maintaining a safe work environment.

Our system of ensuring that all workers comply with the rules and maintain a safe work environment includes:

- Informing workers of the provisions of our Contractor HASP and the 2015 RA HASP
- Evaluating the safety performance of all workers
- Recognizing employees who perform safe and healthful work practices
- Providing training to workers whose safety performance is deficient
- Initiating verbal and/or corrective actions for workers for failure to comply with safe and healthful work practices, up to and including termination for repeated or egregious infractions
- Implementing a corrective action program to mitigate unsafe conditions or practices during field work

11 HAZARD CORRECTION POLICY

Unsafe or unhealthy work conditions, practices, or procedures shall be corrected in a timely manner based on the severity of the hazards. Observed or discovered hazards shall be corrected according to the following procedures:

- When an imminent hazard exists that cannot be immediately abated without endangering employees or property, all exposed workers shall be removed from the area except those necessary to correct the existing condition. Workers necessary to correct the hazardous condition shall be provided with the necessary protection.
- All such actions taken and dates they are completed shall be documented on the appropriate forms (see Attachments 1, 5, 9, and 10).
- All corrective measures, including near-miss incidents, will be immediately logged and tracked using General Electric Company's (GE's) Gensuite Event Notification online database (see Section 17).

12 TRAINING AND INSTRUCTION POLICY

All workers, including managers and supervisors, shall have training and instruction on general and job-specific safety and health practices. Training and instruction shall be provided as follows and as needed:

- When the Contractor HASP is first established
- To all new workers
- To all workers given new job assignments for which training has not previously been provided
- Whenever new substances, processes, procedures, or equipment are introduced to the workplace and represent a new hazard
- Whenever the employer is made aware of a new or previously unrecognized hazard
- To supervisors to familiarize them with the safety and health hazards to which workers under their immediate direction and control may be exposed
- To all workers with respect to hazards specific to each employee's job assignment
- When a worker's current training expires

Training on workplace safety and health practices for all locations include but are not limited to the following:

- Employer's Contractor HASP, 2015 RA HASP, emergency action plan, fire prevention and protection plan (Attachment 11), and measures for reporting any unsafe conditions, work practices, and injuries, and when additional instruction is needed
- Section 18 of this HASP
- Use of appropriate clothing, including gloves, footwear, and personal protective equipment
- Information about chemical hazards to which employees could be exposed and other hazard communication program information
- Availability of toilet, hand-washing, and drinking-water facilities
- Provisions for medical services and first aid, including emergency procedures

In addition, specific instructions will be provided to all workers regarding hazards unique to their job assignment, to the extent that such information was not already covered in other training.

13 PROJECT SITE EMPLOYEE ORIENTATION PROGRAM SUBJECTS

As a condition of working on a remediation project involving the potential for exposure to hazardous substances and health hazards, Anchor QEA workers will receive information about the following subjects:

- Names of personnel responsible for site safety and health
- Reporting emergencies, incidents, and unsafe conditions
- Emergency/evacuation plans
- Safety, health, and other hazards at the site
- Hudson River water work permit and float plan system for near- or on-water work
- Review of all activities on site and related JSAs
- Proper use of PPE
- Work practices by which a worker can minimize risk from hazards
- Safe use of engineering controls and equipment on site
- Acute effects of compounds at the site
- Contamination control and decontamination procedures

In addition to the above-mentioned information, and as warranted, Anchor QEA will also orient employees on:

- Client and/or CM safety requirements
- The employer's code of safe practices (e.g., good housekeeping)
- Road and highway safety practices (e.g., flagging and traffic control)
- Working in the vicinity of heavy equipment (e.g., cranes, excavators, and articulating dump trucks)
- Driver safety (e.g., defensive driving and operation of pick-up trucks and all-terrain vehicles [ATVs])
- Ladder safety
- Fire prevention
- Watercraft operation
- Worksite navigation (e.g., right-of-way, docking, speed zones, and no-wake policy)
- Cleaning, repairing, servicing, and adjusting equipment and machinery
- Proper use of hand, power, and powder-actuated (when applicable) tools

- Guarding of belts and pulleys, gears and sprockets, conveyor nip points, and sharp edges
- Guarding of machine, machine parts, and prime movers guarding
- Lockout/tagout procedures
- Materials handling
- Chainsaw and other power tool operation
- Unsafe weather conditions (e.g., lightning, high winds, and temperature-related hazards)
- Mobilization/demobilization (e.g., yard operations and running lines)
- Landing and loading areas (e.g., release of rigging, landing layout, moving vehicles and equipment, truck locating, loading, and shipping)
- Ergonomic hazards (e.g., proper lifting techniques)
- PPE
- Hazardous chemical exposures
- Hazard communication
- Scaffolds (e.g., safe use and erection/dismantling)
- Physical hazards (e.g., heat and cold stress, noise, and ionizing and non-ionizing radiation)
- Biological hazards (e.g., poisonous plants/vegetation, animals, and bloodborne pathogens)
- Other job-specific hazards

Anchor QEA project staff will also participate in the CM's orientation program, as applicable. Documents supporting these orientations are found in Attachment 12 (Hazard Communication Program), Attachment 13 (Safety Data Sheets), Attachment 14 (Corporate Health and Safety Program), Attachment 15 (Safety Meeting Sign-In Sheet), and Attachment 16 (Spill Prevention, Control, and Countermeasure Plan).

14 EMPLOYEE COMMUNICATION SYSTEM AND POLICY

Anchor QEA recognizes that open, two-way communication between management and staff on health and safety issues is essential to an injury-free, productive workplace. The following system of communication is designed to facilitate a continuous flow of safety and health information between management and staff in a form that is readily understandable and consists of one or more of the following items:

- New worker orientation including a discussion of safety and health policies and procedures
- Review of this HASP and the 2015 RA HASP, including periodic inspection and corrective action program
- Workplace safety and health training programs
- Regular daily and weekly safety meetings
- Effective communication of safety and health concerns between workers and supervisors, including translation where appropriate
- A labor/management safety and health committee that performs the following:
 - Meets regularly
 - Keeps written records of the safety and health committees meetings
 - Reviews results of the periodic scheduled inspections
 - Reviews investigations of accidents and exposures
 - Makes suggestions to management for the prevention of future incidents
 - Reviews investigations of alleged hazardous conditions
 - Submits recommendations to assist in the evaluation of employee safety suggestions

15 FATIGUE MANAGEMENT

Fatigue can occur at any time when working and may cause safety concerns due to decreased manual dexterity, reaction time, and alertness. As a result, the following plan has been developed to help detect and address fatigue-related issues. It is not anticipated that Anchor QEA personnel will be working after dark on this project. In the event work is required at nighttime, the relevant JSAs will be amended to include a Nighttime Operations Procedure—specific procedures to address unique nighttime risks, such as low lighting levels. Amended JSAs will be provided to the CM prior to the work.

Fatigue can be defined as an increasing difficulty in performing physical or mental activities. Signs of fatigue may include tiredness, changes in behavior, loss of energy, and reduced ability to concentrate. Fatigued workers may have a reduced ability to recognize or avoid risks on the work site, which may lead to an increase in the number and severity of injuries and other incidents.

Fatigue results from insufficient rest and sleep between activities. Contributing factors to fatigue may include the following:

- The time of day that work takes place
- The length of time spent at work and in work-related duties
- The type and duration of a work task and the environment (e.g., weather conditions and ambient noise) in which it is performed
- The quantity and quality of rest obtained prior to, during, and after a work period
- Non-work activities
- Individual factors such as sleeping disorders, medications, or emotional state

Personnel suffering from fatigue may exhibit both physical and mental effects, such as the following:

- Slower movements
- Poor coordination
- Slower response time to interaction
- Bloodshot eyes
- Slumped or weary appearance

- Nodding off
- Distractedness or poor concentration
- Inability to complete tasks
- Fixed gaze
- Appearing depressed, irritable, frustrated, or disinterested

Fatigue may cause an increased risk of incidents due to tiredness and lack of alertness. When workers are fatigued, they may be more likely to exercise poor judgment and have slower reactions to external and internal stimuli. This may increase all risks on site because fatigued workers may be less able or likely to respond effectively to changing circumstances, leading to an increased likelihood of incidents due to human error.

To stress the importance of managing fatigue, this topic will be covered in pre-work meetings and will include a discussion of what fatigue is, why it is hazardous, signs and symptoms, and ways to control or mitigate it. Employees will be strongly encouraged to get sufficient pre-work rest, maintain sufficient nutritional intake during work (i.e., eat and drink at regular intervals), and communicate with team members and leaders if their level of fatigue elevates.

Fatigue management can usually be assisted through the performance of a routine exercise program and an established regular sleep schedule. Workers will be informed that the odds of a good night's sleep can be enhanced by avoiding heavy meals or caffeine and minimizing or eliminating the consumption of alcohol and nicotine.

Workers will be periodically observed and directly queried for signs or symptoms of fatigue. Workers that express concern over their level of fatigue, or are observed to be fatigued such that elevated worker risk is evident, will be relieved or their work tasks adjusted so that they may rest sufficiently.

Consistent with applicable labor laws and the 2015 RA HASP, individuals will not be scheduled to work more than 13 hours and actually work more than 16 hours (including travel time) in any 24-hour period. Work schedules will consider fatigue factors and optimize continuous periods available for uninterrupted sleep. The employee is responsible

for reporting to work properly rested and fit for duty. All personnel will be scheduled to receive a minimum of 8 hours of rest (i.e., no work-related tasks) in any 24-hour period. At least 2 consecutive days off are required for employees who have worked 12 consecutive days or 1 day off for every 6 consecutive days worked. In case of an emergency or operational difficulties (e.g., limited access due to water levels or boat repairs), work hours may require adjustment, with worker consent.

16 RECORDKEEPING POLICY

Anchor QEA has instituted the following project-specific steps to document implementation of the HASP:

- Records of hazard assessment inspections, including the following:
 - The persons conducting the inspection
 - The unsafe conditions and work practices that were identified
 - The action(s) taken to correct the identified unsafe conditions or work practices
- Documentation¹ of safety and health training for each worker, including the following:
 - The worker's name or other identifier
 - Training dates
 - Types and topics of training
 - Training provider
 - Air monitoring and other exposure records
- Active and completed work permits and float plans (see Section 9)
- Written reports describing, in detail, any incidents or near-misses: A root cause shall be determined for such events. Corrective actions will be implemented and communicated to all site team members (see Section 17).
- Retain other records as required by contract specifications or by local, state, or federal OSHA: Where regulations do not specify the length of records retention, a minimum period of 3 years after project completion will be used.

¹ Sent to Parsons under separate cover.

17 INCIDENT AND NEAR-MISS REPORTING AND INVESTIGATION POLICY

17.1 Definitions

An incident is defined as a situation that occurs while performing work-related activities that results in property damage or an illness/injury that requires first aid or more advanced medical treatment. A near-miss is a situation in which no injury or property damage occurred but that under slightly different circumstances, an injury or property damage could have happened.

Near-misses result from the same factors that cause injuries; therefore, they must be reported on the near-miss form and investigated in the same manner.

17.2 Reporting Procedures

If an incident or near-miss occurs, report it to the Anchor QEA management team immediately by contacting the person at the top of Table 17-1, below. If that person is not available, attempt to contact the next person on the list in the table, in sequence. The first person contacted will be responsible for notifying all the other persons in the table via email, entering the incident into Gensuite within 4 hours, and will contact Parsons and GE (Table 17-2), in sequence as needed. Confirm with Parsons that they will notify the appropriate GE personnel. The Anchor QEA CSM will be responsible for determining whether the incident is reportable to OSHA, and will follow up as appropriate.

Table 17-1
Anchor QEA Incident Reporting Contacts

Name	Telephone	Cellular Phone	Email
Kevin Ballou	(518) 792-3709	(914) 924-2176	kballou@anchorqea.com
Chris Yates	(518) 792-3709	(518) 522-7037	cyates@anchorqea.com
Mark LaRue	(315) 453-9009	(315) 730-5341	mlarue@anchorqea.com
Chris Torell	(315) 453-9009	(315) 254-4954	ctorell@anchorqea.com
Jim Rhea	(315) 453-9009	(315) 427-4451	jrhea@anchorqea.com
Jennifer Benaman	(518) 792-3709	(512) 569-6365	jbenaman@anchorqea.com
Ryan Davis	(518) 792-3709	(518) 321-4256	rdavis@anchorqea.com

Table 17-2
Parsons/GE Incident Reporting Contacts

Name	Company	Telephone	Cellular Phone	Email
Lisa Rygiel	Parsons	(518) 695-3749	(518) 470-7067	lisa.rygiel@parsons.com
Joe Montinieri	Parsons	(518) 695-3749	(518) 361-7597	joseph.montinieri@parsons.com
Carl Jakob	Parsons	(518) 695-3832	(518) 705-3145	carl.jakob@parsons.com
Bob Gibson	GE	(518) 746-5253	(518) 527-3418	bob.gibson@ge.com

17.3 Investigation Procedures

Following a reported incident or near-miss, an RCA investigation must be completed within 72 hours, with a final report to the CM within 7 days. This ensures that all the details related to the incident are recorded while details are readily recallable by involved personnel.

Procedures for investigating workplace incidents and near-misses include the following:

- Responding to the incident scene as soon as possible, if appropriate
- Implementing measures to prevent further injury or damage and to preserve evidence
- Providing first aid or coordinating any needed medical care
- Reporting incidents and near-misses immediately to the appropriate point-of-contact (see above); DO NOT delay!—certain levels of incident require immediate communication to GE’s upper management, and possibly to regulatory authorities
- Interviewing injured workers and witnesses
- Examining the workplace for factors associated with the incident/near-miss incident²
- Determining the root cause of the incident/near-miss incident (see below)
- Taking corrective action to prevent the incident/near-miss from reoccurring
- Coordinating post-accident substance abuse testing, as appropriate

17.4 Documentation Procedures

Record the findings and corrective actions taken to address the incident or near-miss using the form included in Attachment 9. Additionally, an RCA using a diagram (Attachment 10)

² In the event drugs or alcohol are suspected as a cause of the incident, Anchor QEA personnel may be subject to post-incident testing at the Center for Occupational Health of Glens Falls Hospital, consistent with Anchor QEA’s internal policies.

will be completed to determine the root cause of the incident and document all mitigation measures. Upon completion, the RCA will be provided to Parsons and GE.

18 EMERGENCY AND NON-EMERGENCY ACTION PLAN

18.1 Emergency Incidents

In the event of an emergency, emergency response procedures, including specific fire and spill response protocols, medical, first aid, injury, illness, and near-miss reporting requirements described in the 2015 RA HASP, will be followed. In addition, due to the anticipated various field work locations, in the event of a site emergency, Anchor QEA personnel will congregate at the site-specific support area or the Anchor QEA Saratoga Springs office. The Anchor QEA FL will complete a head count of all Anchor QEA personnel on site that day, including personnel on the river (using the daily float plan information), assess the need for additional assistance, and call 911, as appropriate. Appropriate notifications will be made, as described in Section 1.2.

The following provides contingency measures for spills and unintentional discharges from handling hazardous materials. Spill and discharge control practices should follow specific procedures to ensure the safety of responders and bystanders and to limit environmental impacts. Immediate action should be taken to control and contain any spill by following these general guidelines:

- Report ALL INCIDENTS that involve property or personnel as described in Section 17 after securing the scene and activating the emergency response plan, as needed.
- Keep unnecessary personnel away from the spill or discharge.
- Isolate the hazardous area.
- If the spill or discharge creates a hazardous situation or results in injury or an environmental release, the emergency procedures above should be implemented. Emergency response telephone numbers and designated contacts are listed in Section 1.2.
- Stay upwind of the spill or discharge.
- Eliminate all sources of ignition if the spill involves combustible materials.
- Identify and cover or protect any drains, manholes, waterways, or sewers.
- Control the spill using appropriate absorbent media or devices.
- Collect the material after the spill or discharge is fully contained.
- If the spill or discharge is solid and nonreactive, scoop up the material and place it in a suitable and compatible container for disposal.

- Following cleanup, evaluate the spill area by collecting soil samples and/or screening the area with air monitoring equipment, if necessary.

18.2 Non-emergency Incidents

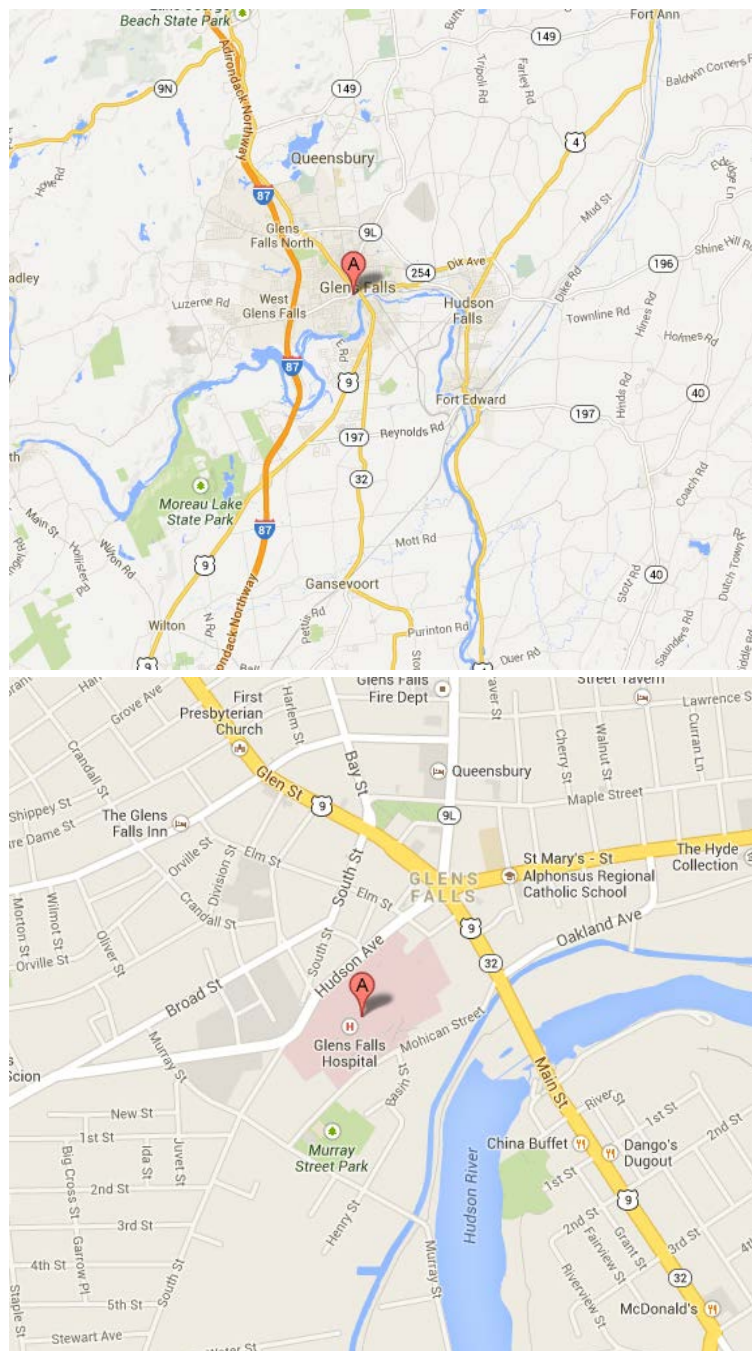
In the event of a non-emergency incident requiring medical attention (i.e., non-life threatening and not requiring immediate medical attention), the Center for Occupational Health of Glens Falls Hospital will be used for medical attention. Upon identification of the need for non-emergency medical attention due to an incident, notification procedures provided in Section 17 shall be followed.

18.3 Drills

A person overboard and abandon ship table top drill will be conducted every 2 months, accompanied by a field drill conducted at least once each field season. Table top and field drills simulating other emergency and non-emergency incidents will be conducted as warranted based on the field activities taking place, location of the work, seasonal conditions, and the proximity of emergency and non-emergency support services. At a minimum, one table top and one field drill will be conducted each field season for each major work task. The CM will be notified of upcoming drills and the results of drills will be provided to the CM.

19 SITE-SPECIFIC MEDICAL EMERGENCY PLAN

In the case of a medical emergency, the following are maps of and directions to the Glens Falls Hospital.



Route to Hospital:

Take either Route 4 or Fort Edward Road North

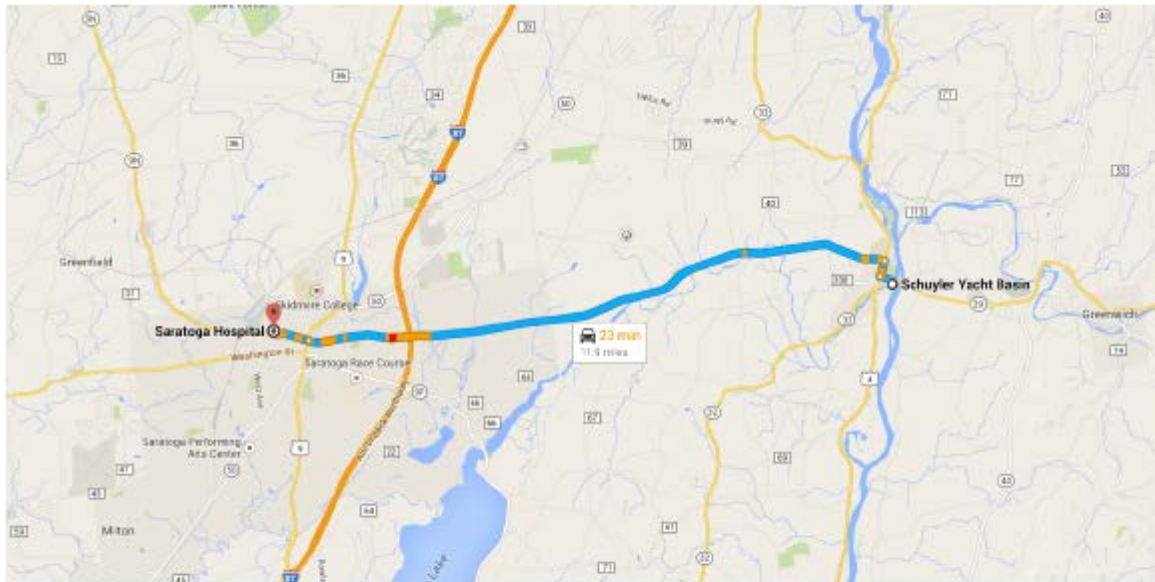
From Route 4:

- a. Bear left on Route 254
- b. Route 254 becomes Low Warren Street
- c. Low Warren Street becomes Warren Street (Route 32)
- d. Bear left on Hudson Avenue
- e. Turn left on School Street
- f. Turn Right on Park Street
- g. Glens Falls Hospital is at 100 Park Street

From Fort Edward Road:

- a. Continue on Fort Edward Road as it becomes Route 9
- b. Turn left on Park Street
- c. Glens Falls Hospital is at 100 Park Street

The following are directions from the Schuylerville Yacht Basin to the Saratoga Springs hospital.



○ Schuyler Yacht Basin

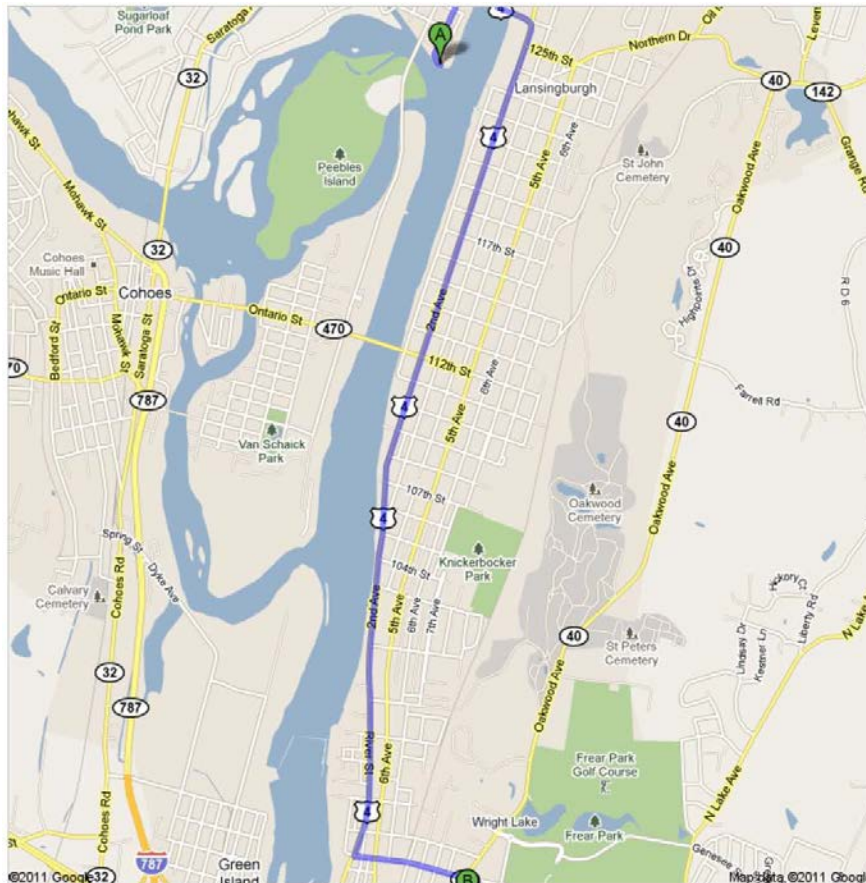
1 Ferry Street, Schuylerville, NY 12871

1. Head west on Ferry St toward Reds Rd
↑ 0.3 mi
2. Turn right onto Broad St
↘ 0.3 mi
3. Turn left at the 2nd cross street onto NY-29 W/Spring St
↙
Continue to follow NY-29 W 10.7 mi
4. Continue onto Church St
↑
Destination will be on the right 0.6 mi



○ Saratoga Hospital

211 Church Street, Saratoga Springs, NY 12866

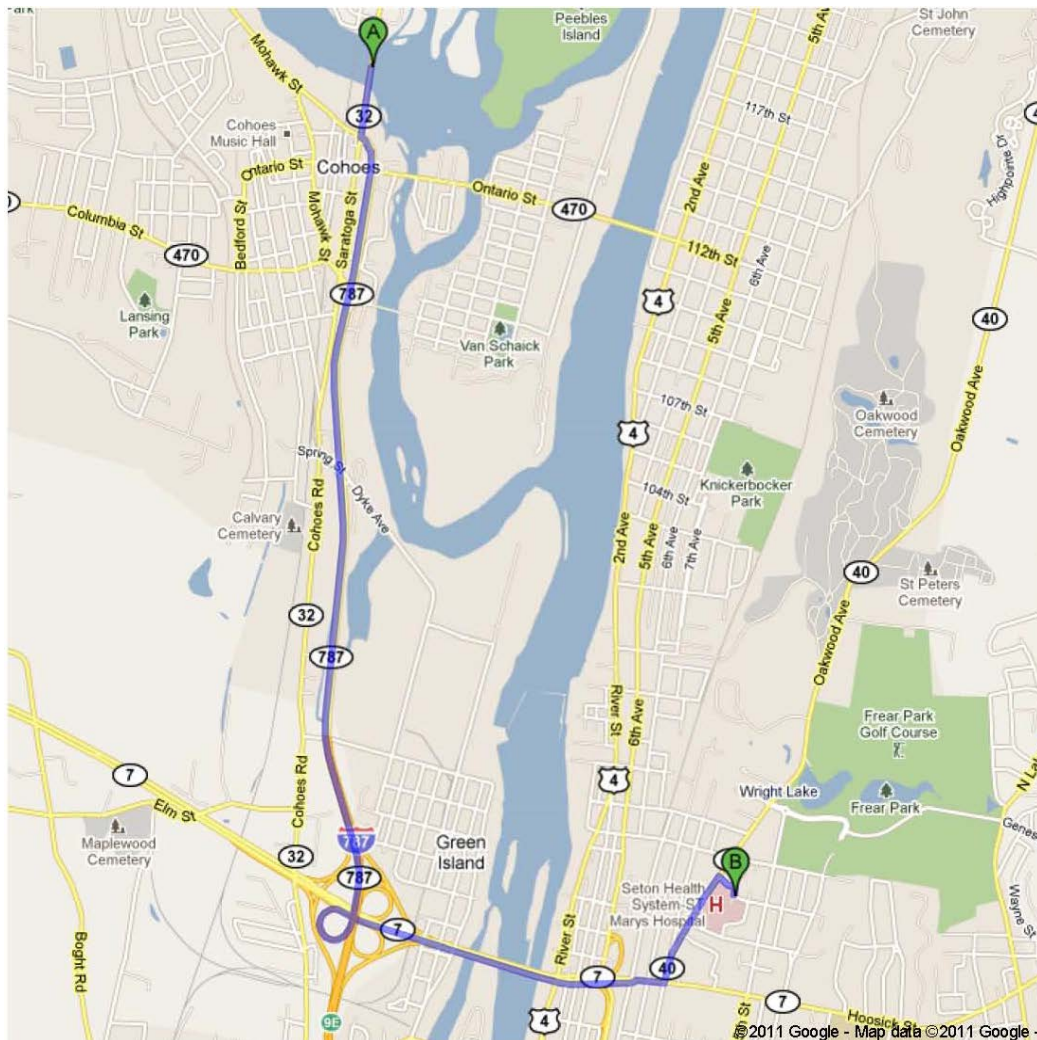
The following are directions from Waterford, Albany, and Poughkeepsie boat launches and the Mohawk River sampling bridge location to the closest hospitals.



A Waterford Boat Launch

1. Head **northwest** toward **1st St** go 240 ft
total 240 ft
2. Continue straight onto **1st St**
About 1 min go 0.2 mi
total 0.3 mi
-  3. Turn **right** onto **US-4 S/Broad St**
About 1 min go 0.2 mi
total 0.5 mi
-  4. Take the **1st right** onto **2nd Ave**
About 3 mins go 2.5 mi
total 3.0 mi
5. Continue onto **River St** go 0.5 mi
total 3.5 mi
-  6. Turn **left** onto **Middleburgh St**
About 3 mins go 0.4 mi
total 3.9 mi
7. Continue onto **Park Blvd**
About 1 min go 213 ft
total 4.0 mi
-  8. Turn **right** onto **Lindenwood Ct** go 463 ft
total 4.1 mi
-  9. Slight **left** onto **Massachusetts Ave**
Destination will be on the right go 164 ft
total 4.1 mi

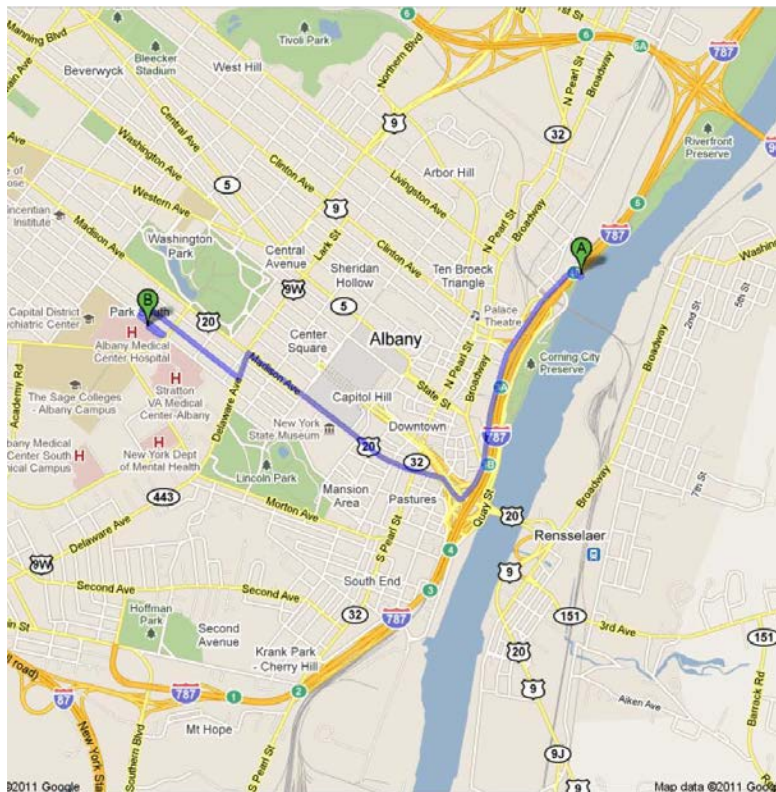
B Seton Health System-St Marys Hospital
1300 Massachusetts Avenue, Troy, NY 12180-1695 - (518) 268-5542



A Mohawk River

- 32** 1. Head south on NY-32 S/Saratoga Ave toward New Cortland St go 0.2 mi
total 0.2 mi
- 787** 2. Take the 1st left onto NY-787 S go 2.1 mi
About 4 mins total 2.3 mi
- 787** 3. Continue onto I-787 S go 0.3 mi
total 2.6 mi
- 7** 4. Take exit 9E to merge onto NY-7 E toward Troy/Bennington go 1.2 mi
About 3 mins total 3.8 mi
- ←** 5. Turn left onto 10th St go 466 ft
total 3.9 mi
6. Continue onto Oakwood Ave go 0.3 mi
total 4.1 mi
- 7. Turn right onto Massachusetts Ave go 292 ft
total 4.2 mi
- 8. Turn right to stay on Massachusetts Ave go 164 ft
Destination will be on the right total 4.2 mi

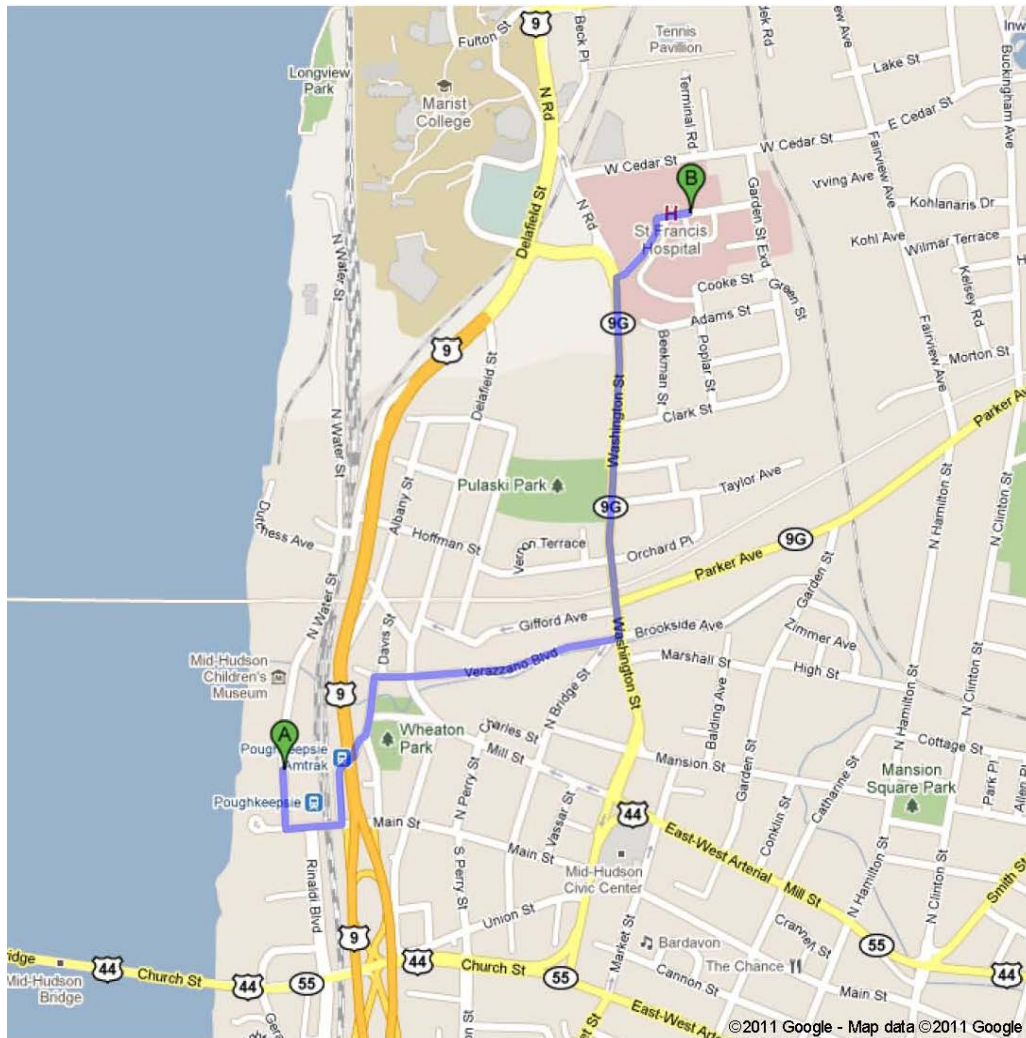
B Seton Health System-St Marys Hospital
1300 Massachusetts Avenue, Troy, NY 12180-1695 - (518) 268-5542



A Albany Boat Launch

1. Head southwest	go 72 ft total 72 ft
➡ 2. Turn right toward Water St	go 220 ft total 292 ft
⬅ 3. Turn left onto Water St About 2 mins	go 0.6 mi total 0.6 mi
9 4. Continue onto US-9 S About 1 min	go 374 ft total 0.7 mi
↗ 5. Slight right onto Frontage Rd	go 0.2 mi total 0.9 mi
6. Continue onto Broadway About 1 min	go 0.2 mi total 1.1 mi
➡ 7. Turn right onto Madison Ave About 2 mins	go 1.0 mi total 2.1 mi
⬅ 8. Turn left onto Delaware Ave About 1 min	go 0.1 mi total 2.2 mi
➡ 9. Turn right onto Morris St About 2 mins	go 0.5 mi total 2.7 mi
⬅ 10. Turn left onto Robin St	go 243 ft total 2.7 mi
⬅ 11. Turn left onto Myrtle Ave	go 0.1 mi total 2.8 mi
➡ 12. Sharp right	go 374 ft total 2.9 mi

B Albany Medical Center Hospital
43 New Scotland Avenue, Albany, NY 12208 - (518) 262-3125



1. Head south on **N Water St** toward **Main St**

go 466 ft
total 466 ft



2. Turn left onto **Main St**

go 440 ft
total 0.2 mi



3. Take the 1st left onto **Davies Pl**

go 0.1 mi
total 0.3 mi



4. Turn left to stay on **Davies Pl**

go 486 ft
total 0.4 mi



5. Turn right onto **Mill St**

go 276 ft
total 0.5 mi

6. Continue onto **Verazzano Blvd**
About 1 min

go 0.3 mi
total 0.8 mi



7. Turn left onto **Washington St**
About 2 mins

go 0.5 mi
total 1.3 mi



8. Turn right onto **Baker Ave**
Destination will be on the right

go 0.2 mi
total 1.5 mi

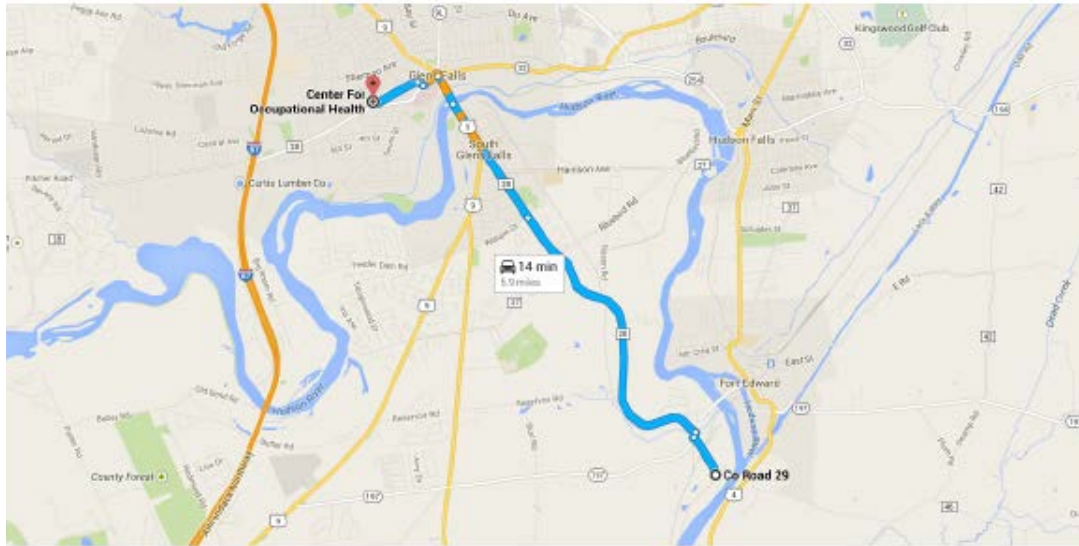


St Francis Hospital
Poughkeepsie, NY 12601 - (845) 483-5000

Non-emergency health services will be provided by the Center for Occupational Health of Glens Falls Hospital at 2 Broad Street Plaza in Glens Falls, and at 135 North Road in Wilton.



Route to Glens Falls from the Department of Environmental Conservation Boat Launch in Moreau



Follow W River Rd to NY-197 E

0.4 mi / 1 min



1. Head west on Co Rd 29 toward W River Rd

43 ft



2. Turn right onto W River Rd

0.4 mi

Take Fort Edward Rd and Main St to Broad Street Plz in Glens Falls

5.4 mi / 13 min



3. Turn right onto NY-197 E

292 ft



4. Turn left onto Fort Edward Rd

3.0 mi



5. Continue onto Main St

1.3 mi



6. Continue onto NY-32 N/U.S. 9 N/Glen St

0.3 mi



7. At Centennial Cir, take the 4th exit onto Hudson Ave

0.2 mi



8. Turn right onto School St

358 ft



9. Turn left onto Broad St

0.4 mi



Turn right onto Broad Street Plz

Destination will be on the left

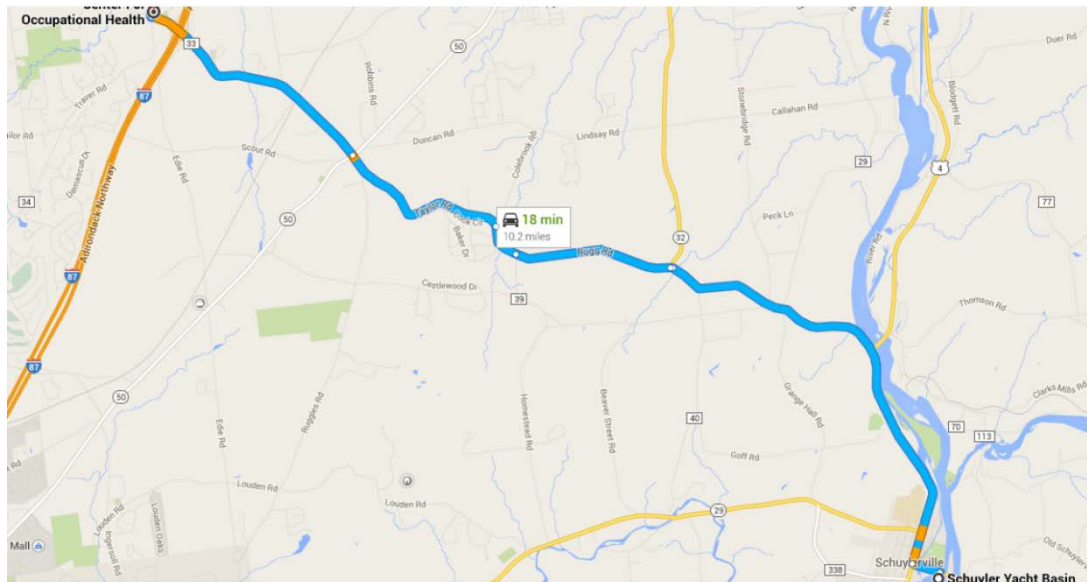
167 ft / 10 s



Center For Occupational Health

2 Broad Street Plaza #101, Glens Falls, NY 12801

Route to Wilton from the Schuylerville Yacht Basin



Take NY-32 N, Taylor Rd and Ballard Rd to N Rd in Wilton

10.2 mi / 17 min

1. Head west on Ferry St toward Reds Rd
0.3 mi
 2. Turn right onto NY-32 N/Broad St
Continue to follow NY-32 N
4.2 mi
 3. Slight left toward Rugg Rd
125 ft
 4. Slight left onto Rugg Rd
1.4 mi
 5. Continue onto Colebrook Rd
0.3 mi
 6. Continue onto Taylor Rd
1.6 mi
 7. Continue onto Ballard Rd
2.3 mi
- Turn right onto N Rd
Destination will be on the right
236 ft / 10 s

Center For Occupational Health
135 North Road, Wilton, NY 12831

ATTACHMENT 1

JOB SAFETY ANALYSES (JSAS)

Table A-1
Tasks and Associated Job Safety Analysis

Task	Hazards/Risks	Controls
Blank Form	See JSA001	See JSA001
Boat Fueling	See JSA002	See JSA002
Boat Operations ¹	See JSA003	See JSA003
Bridge Collection of Water Samples	See JSA004	See JSA004
Boat/Barge Decontamination	See JSA005	See JSA005
Personnel Decontamination	See JSA006	See JSA006
Tool and Equipment Decontamination	See JSA007	See JSA007
Far-Field Water Sampling	See JSA008	See JSA008
Fish Sampling	See JSA009	See JSA009
Sampling and Laboratory Glassware Handling	See JSA010	See JSA010
Habitat Assessment	See JSA011	See JSA011
Far-Field Intake Inspection	See JSA012	See JSA012
Monitoring Buoy Deployment, Sampling, and Retrieval	See JSA013	See JSA013
Motor Vehicle Operation	See JSA014	See JSA014
Near-Field Water Sampling	See JSA015	See JSA015
Sediment Sampling	See JSA016	See JSA016

Note:

- 1 If work activities will take place between any dam safety warning cable or signage and the dam, or if within 1,000 feet upstream of any dam, a Near Dam River Operations Plan must be submitted to the Construction Manager for review and approval to initiating the work.

Job Safety Analysis (JSA)

Activity/Work Task: Blank Form	Overall Risk Assessment Code (RAC) (Use highest code)					
Project Location:	Risk Assessment Code (RAC) Matrix					
Contract Number:	Severity	Probability				
Date Prepared: (mm/dd/yyyy)		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title):	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
Reviewed by (Name/Title):	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Employer/GBU:	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (see above). The RAC is developed after correctly identifying all the hazards and fully implementing all controls.					
Notes: (Field Notes, Review Comments, etc.) References:	P "Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.				RAC Chart	
	S "Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible.				E = Extremely High Risk	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on JSA. Annotate the overall highest RAC at the top of JSA.				H = High Risk	
					M = Moderate Risk	
					L = Low Risk	

Job Steps	Hazards	Controls	P	S	RAC
		•			
		•			

Job Steps	Hazards	Controls	P	S	RAC
		•			
		•			
		•			
		•			
		•			
		•			
		•			

Equipment to be Used	Training Requirements/Competent or Qualified Personnel	Inspection Requirements
•	<ul style="list-style-type: none"> • Medical Monitoring • 40-hour HAZWOPER • 8-hour Refresher • CPR/First Aid • Boater Safety • Hudson River Site Safety 	•

Job Safety Analysis (JSA)

Activity/Work Task: Boat Fueling		Overall Risk Assessment Code (RAC) (Use highest code)				M	
Project Location: Hudson River		Risk Assessment Code (RAC) Matrix					
Contract Number: TBD		Severity	Probability				
Date Prepared: 04/24/2012	Revised: 04/28/2015 KMB		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by: Richie Constant/Scientist		Catastrophic	E	E	H	H	M
		Critical	E	H	H	M	L
Reviewed by: Kevin Ballou/Site Safety Officer		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Employer/GBU: Anchor QEA		Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (see above). The RAC is developed after correctly identifying all the hazards and fully implementing all controls.					
Notes: PPE: Hard hat, safety glasses, steel-toed boots/shoes, personal flotation device (PFD; float coat/suit per water temp), and nitrile gloves	Controls: EI "Eliminate" S "Substitute" En "Engineer" A "Administrative" P "PPE"	P "Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.				RAC Chart E = Extremely High Risk H = High Risk M = Moderate Risk L = Low Risk	
		S "Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible.					
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on JSA. Annotate the overall highest RAC at the top of JSA.					

Job Steps	Hazards	Controls	P	S	RAC
Boat fueling at service station	Overflow/spills of fuel	<ul style="list-style-type: none"> En: Ensure that fuel pumps have a UL listed automatic closing valve. A: Workers will be aware of capacity of fuel tank/container. A: Do not leave pump unattended while fueling. P: Have spill sorbents or other spill containing/absorbing items available. 	S	N	L

Job Steps	Hazards	Controls	P	S	RAC
Boat fueling at service station or on water	Overflow/spills of fuel in or onto boat or water	<ul style="list-style-type: none"> • En: Use approved safety containers. • A: Workers will be aware of capacity of fuel tank/container. • P: Have spill sorbents or other spill containing/absorbing items available. 	S	N	L
	Explosion	<ul style="list-style-type: none"> • El: Ensure that all fuel is in approved safety containers. • El: Equipment/Motors that use flammable fuel shall be shut down during fueling, servicing, or maintenance. • A: No smoking or open flame within 50 feet. 	U	Ca	M
	Spill on clothing	<ul style="list-style-type: none"> • A: Workers should be aware of capacity of fuel tank. • P: Wear gloves while fueling. 	S	N	L
	Fire	<ul style="list-style-type: none"> • En: Remove any ignition sources from proximity of fueling area. • P: Ensure that boat has an approved fire extinguisher on board. 	U	Cr	L
Transporting fuel canister	Spill of fuel	<ul style="list-style-type: none"> • El: Use appropriate canister that does not spill if tipped over. 	S	N	L
	Muscle strain/injuries from improper lifting	<ul style="list-style-type: none"> • A: Personnel will utilize proper lifting techniques or ask for assistance with moving/lifting objects. 	S	M	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel	Inspection Requirements
<ul style="list-style-type: none"> • Hard hat, safety glasses, steel-toed boots/shoes, PFD (float coat/suit per water temp), and nitrile gloves • Fire extinguisher • Safety fuel canister 	<ul style="list-style-type: none"> • Medical Monitoring • 40-hour HAZWOPER • 8-hour Refresher • CPR/First Aid • Boater Safety • Hudson River Site Safety 	<ul style="list-style-type: none"> • Follow operations manual maintenance and inspection procedures for each piece of equipment used on site. • Inspect spill kit/fire extinguishers. • The fire extinguishers must be inspected and approved at specific intervals.

Job Safety Analysis (JSA)

Activity/Work Task: Boat Operations		Overall Risk Assessment Code (RAC) (Use highest code)				M	
Project Location: Hudson River		Risk Assessment Code (RAC) Matrix					
Contract Number: TBD		Severity	Probability				
Date Prepared: 05/18/2012	Revised: 04/28/2015 - KMB		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by: Richie Constant/Scientist		Catastrophic	E	E	H	H	M
		Critical	E	H	H	M	L
Reviewed by: Kevin Ballou/Site Safety Officer		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Employer/GBU: Anchor QEA		Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (see above). The RAC is developed after correctly identifying all the hazards and fully implementing all controls.					
Notes: PPE: Hard hat, safety glasses, steel-toed boots/shoes, personal flotation device (PFD; float coat/suit per water temperature), nitrile gloves, cut-resistant gloves, and hearing protection	Controls: EI "Eliminate" S "Substitute" En "Engineer" A "Administrative" P "PPE"	P "Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.				RAC Chart E = Extremely High Risk H = High Risk M = Moderate Risk L = Low Risk	
		S "Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible.					
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on JSA. Annotate the overall highest RAC at the top of JSA.					

Job Steps	Hazards	Controls	P	S	RAC
Boat operations near low head dams	Boat going over low head dams	<ul style="list-style-type: none"> A: Avoid working within 3,000 feet of a Dam if possible. A: Work will not be conducted by boat within 3,000 feet of a dam when Fort Edward flows are greater than 10,000 cubic feet per second (cfs). A: Near Dam Plan, Work Permit and Float Plan must be submitted and approved by 	U	M	M

Job Steps	Hazards	Controls	P	S	RAC
		<p>the Construction Manager before any work near dams.</p> <ul style="list-style-type: none"> • A: Health and Safety Manager should be contacted at the beginning and end of each day of work near dams. • A: When approaching dam, be aware of boat proximity to dam marker buoys; no work is to be performed on the downstream side of the buoys. • A: Before leaving the dock, double check anchor and anchor line, spuds (if applicable), and fuel level in boat motor. Take note of life-saving device locations. Ensure marine radio is functioning, and contact with vessel tracking is occurring. • A: Never work near dams with any fewer than three people on board, or two people on board and one on shore; there should always be a dedicated driver, a worker, and a spotter. 			
Boat-based field activities	Cold water work	<ul style="list-style-type: none"> • P: When the water temperature is below 40°F, field personnel working on or near water shall wear a float coat and bib overalls (e.g., a full two-piece “Mustang” survival suit or similar) or a one-piece survival suit. If the water temperature is between 40°F and 50°F, field personnel shall wear a float coat. Suits or float coats shall be U.S. Coast Guard (USCG) approved. If extremely cold or severe weather conditions are forecast, work activities should be postponed. 	S	Cr	M
	Spring boating hazards: elevated river flows	<ul style="list-style-type: none"> • A: Shore-based staff will be required as a safety watch during intake inspection and cleaning. Safety watch will have a working cell phone for emergency use if needed. • A: Ship to Shore radios will be used for 	U	Cr	L

Job Steps	Hazards	Controls	P	S	RAC
		<p>communication between vessel and safety watch.</p> <ul style="list-style-type: none"> A: Only perform intake work if flow is less than 7,500 cfs as locating the pump intakes at high flows becomes problematic. 			
	Exceeding boat capacity	<ul style="list-style-type: none"> El: A placard indicating the weight and passenger limits will be maintained on all vessels. The number of passengers and equipment will be within limits at all times. If conditions warrant (i.e., fast river flows), the weight capacity will be reduced to maintain boat stability. 	U	Cr	L
	Lock passage	<ul style="list-style-type: none"> A: Communicate with lock operator to ensure that vessel is in an appropriate location. A: Secure vessel to lock wall, but do not hard tie vessel. A: Crew member must hold rope to monitor tension and make adjustments as necessary. 	U	M	L
	High river flows	<ul style="list-style-type: none"> El: The river flows will be monitored prior to leaving the dock or boat launch and periodically throughout the day. A: Work will not be conducted by boat within 3,000 feet of a dam when Fort Edward flows are greater than 10,000 cfs. A: All on- and near-water work will be conducted according to Attachment 6 of the HASP – Anchor QEA Monitoring Vessel High Flow Operation Assessment June 3, 2011. 	U	Ca	M
	Loading boat/entering vessel hazards	<ul style="list-style-type: none"> A: Secure boat. En: Use rails or assistance from someone on the dock. A: Be cautious when entering or exiting the vessel. With one hand on the boat, quickly 	S	M	L

Job Steps	Hazards	Controls	P	S	RAC
		<p>lower straight down into the center of the craft. Never jump into or off of a vessel.</p> <ul style="list-style-type: none"> • A: If others are boarding, have them step along the fore or aft centerline of the boat while the boat is held in place along the pier. • A: Always have one person remain aboard the vessel when docking. If only one person is on the vessel, it should be tied off while the person remains in the vessel. • A: Never straddle the vessel and the dock when tying off or pushing off from the dock. • A: Avoid directly carrying anything on or off the vessel. Load the items off the pier or have someone hand them to you one by one. • El: Never overload the vessel. • A: Keep weight toward center of the boat and center of gravity as low as possible. • En: Distribute equipment evenly on vessel. 			
	Slips, trips, falls	<ul style="list-style-type: none"> • A: Be aware of potentially slippery surfaces and tripping hazards. • A: Wear footwear that has sufficient traction to reduce risk of slipping. • A: Avoid standing or walking around in a moving vessel. The exception would be if the vessel has side safety railings and is moving at low speed. • P: Wear steel-toed rubber boots versus over-the-shoe rubber boots. • A: Work slowly during transit. Jumping, running, and horseplay are prohibited. • A: Proceed carefully on floating docks and ramps. • A: Keep all areas clean and free of debris to deter any unnecessary trips and falls. 	S	M	L

Job Steps	Hazards	Controls	P	S	RAC
		<ul style="list-style-type: none"> • EI: Clean up all spills immediately. • A: Notify project safety personnel of any unsafe conditions. 			
	Slips, trips, falls off boat; drowning hazards	<ul style="list-style-type: none"> • P: Wear footwear that has sufficient traction to reduce risk of slipping. • P: Wear PFD. • A: Be aware of any obstacles on boat deck. 	U	Ca	M
	Man overboard	<ul style="list-style-type: none"> • A: Yell "man overboard!" • A: If the engine is running, place the transmission in neutral and swing the stern clear to keep from hitting the person. • A: Call 911, as appropriate. • A: Assign a spotter to keep the person in sight at all times. • A: Contact nearby vessels for assistance. • P: Throw flotation devices immediately. • A: Recover person from water. • A: If you fall overboard, hold your mouth and nose closed and protect your head. • A: When you reach the surface, look for movement, listen for sounds, and call for help. Use the whistle attached to the PFD and activate the beacon light. • A: It is only sensible to swim if there is reason to believe that a chance of reaching your destination exists. Excessive movement in cold water may hasten hypothermia. • A: Wear PFD. 	U	Ca	M
	Muscle strain/injuries from improper lifting	<ul style="list-style-type: none"> • A: Personnel will utilize proper lifting techniques or ask for assistance with moving/lifting objects. • A: Load items off from the boat or have someone hand them to you one by one. 	L	M	M

Job Steps	Hazards	Controls	P	S	RAC
	Heat stress	<ul style="list-style-type: none"> • A: Adjust work schedules, as necessary. • A: Perform work during cooler hours of the day if possible or at night if possible and if adequate lighting can be provided. • En: Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods. • A: Maintain hydration. • A: Train workers to recognize the symptoms of heat-related illness. 	O	N	L
	Cold stress	<ul style="list-style-type: none"> • En: Provide shelter (enclosed, heated environment) to protect personnel during rest periods. • A: Educate workers to recognize the symptoms of frostbite and hypothermia. • P: Have a dry change of clothing available. • A: Train workers to recognize the symptoms of cold-related illness. 	S	Cr	M
	Rain	<ul style="list-style-type: none"> • P: Wear appropriate Personal Protective Equipment (PPE) (i.e., rain gear). • A: Be aware of slip hazards, puddles, and electrical hazards when working near water, etc. 	O	N	L
	Sunshine	<ul style="list-style-type: none"> • P: Have sunscreen available for ultraviolet protection. Have water available for dehydration. 	L	N	L
	Fog	<ul style="list-style-type: none"> • A: Wait for fog to lift and there is adequate visibility before operating sampling vessel. 	S	N	L
	Lightning	<ul style="list-style-type: none"> • A: Do not begin or continue work until lightning subsides for 20 minutes. • A: Immediately head for shore if on the water and lightning is observed. • A: If you are not able to get to shore, disconnect and do not use or touch the 	U	Ca	M

Job Steps	Hazards	Controls	P	S	RAC
		major electronic equipment, including the radio, throughout the duration of the storm.			
	Boat traffic	<ul style="list-style-type: none"> A: Maintain a safe operating distance from shoreline, other vessels, etc. 	S	N	L
	Waves, surges, currents	<ul style="list-style-type: none"> A: Be aware of sudden surges caused by incoming waves, unstable waters, and currents. 	S	N	L
	Fire or major emergency – abandon ship	<ul style="list-style-type: none"> A: Be prepared to abandon ship in the event of fire too large to control with fire extinguisher or other major emergency. A: Only the boat captain can order abandon ship. A: Communicate intent to abandon ship to all personnel on board. A: Call 911. A: Notify nearby vessels of intent to abandon ship. A: Notify Project Manager and project safety personnel, if time permits. A: Be aware of position of the propeller before abandoning ship. A: Identify a rally point for all personnel. A: Know the dangers of hypothermia. A: Use the buddy system to support injured personnel. 	U	Ca	M
Launching and retrieving vessels	Pinch points, slips, trips and falls, property damage	<ul style="list-style-type: none"> A: Make a plan prior to launching vessel. Every launch is different. A: Back up trailer onto the level area on the launch approach. A: Walk around trailer and prepare boat for launching. Disconnect lights, tie downs, safety chain and release motor locks, and check drain plugs. A: Driver rolls down window to ease communication with boat captain. 	F	M	M

Job Steps	Hazards	Controls	P	S	RAC
		<ul style="list-style-type: none"> • A: Inspect launch before backing boat into water. Remove debris and be aware of any other launch specific considerations, such as deterioration of the pavement or a steep drop off. • A: Back trailer into water until there is sufficient water to start motor. Ensure the motor is functioning normally. • A: Driver sets emergency brake and then gets out of tow vehicle and disconnects the strap from boat to the trailer. • A: Back the trailer the remaining way into the water until the boat is free of the trailer. 			
Trailing	Boat not secured properly	<ul style="list-style-type: none"> • En: Ensure front of boat is latched to the trailer. • En: Ensure rear of boat is strapped down. • En: Boat motor should be in the up position. • En: All equipment on the boat should be secured. • En: Ensure female and male ends of the trailer hitch are secure and locked and chains are attached. • En: Ensure lights are plugged in while driving and unplugged when launching and pulling vessel. 	S	Cr	M
	Height constraints for traveling with boat and trailer on the road	<ul style="list-style-type: none"> • El: Check spud height; remove all spuds except for one in the spud guide hole. • El: Lay down any poles, antennas, etc. that may be sticking up beyond a safe trailering height. • El: Unless boat is being docked for a long period of time, at the end of the work day even if the boat is being docked it should be left in a trailerable state. 	U	Cr	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel	Inspection Requirements
<ul style="list-style-type: none"> • Generator • Electric water pump • Davit • 18-foot work boat • PPE: Hard hat, safety glasses, steel toed boots/shoes, PFD (Float coat / suit per water temp), nitrile gloves, cut resistant gloves, hearing protection, and steel toed boots • Fire extinguisher 	<ul style="list-style-type: none"> • Medical Monitoring • 40-hour HAZWOPER • 8-hour Refresher • CPR/First Aid • Boater Safety • Hudson River Site Safety 	<ul style="list-style-type: none"> • The Hudson River Operations Permit will be verified and float plans submitted daily. • The Boating Checklist will be reviewed daily any time a boat is used. • Check operation of communication equipment and review River Operations Permit • Monitor air and water temperature. • Cold weather gear inspected daily. • Inspect capacity limits and ensure boat is operating within limits. • Monitor river flows at nearest USGS gauging station (Fort Edward for work in the Upper Hudson). • PFDs should be inspected daily prior to use. • Man Overboard Plan should be reviewed weekly with the Boating Check List. Man Overboard drill should be done on an annual basis. • Monitor workers' physical conditions. • Monitor outside temperature versus worker activity. • PPE should be inspected daily prior to use. • Inspect boat lights. • Abandon Ship Plan should be reviewed weekly with the Boating Check List. Abandon Ship drill should be done on an annual basis. • A Hudson River Operations Permit must be completed and approved prior to initiation of work. Float plans and boat inspections will be submitted daily during work. • All water vessels will be equipped in accordance with USCG regulations. • Be aware of spud height when traveling underneath bridges and high tension wires. • Each vessel will carry a marine radio and monitor marine channel 13. Cellular phones will be required for work on or near the river. In addition, personnel will follow all requirements in General Electric Hudson River Operations Permit Standard Operating Procedure.

Job Safety Analysis (JSA)

Activity/Work Task: Bridge Collection of Water Samples		Overall Risk Assessment Code (RAC) (Use highest code)				M	
Project Location: Hudson River		Risk Assessment Code (RAC) Matrix					
Contract Number: TBD		Severity	Probability				
Date Prepared: 04/24/2012	Revised: 04/28/2015 – KMB		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by: Richie Constant/Scientist		Catastrophic	E	E	H	H	M
		Critical	E	H	H	M	L
Reviewed by: Kevin Ballou/Site Safety Officer		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Employer/GBU: Anchor QEA		Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (see above). The RAC is developed after correctly identifying all the hazards and fully implementing all controls.					
Notes: PPE: Hard hat, safety glasses, steel-toed boots/shoes, high visibility vest, nitrile gloves, leather gloves, cut-resistant gloves, and hearing protection	Controls: EI "Eliminate" S "Substitute" En "Engineer" A "Administrative" P "PPE"	P "Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.				RAC Chart	
		S "Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible.					
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on JSA. Annotate the overall highest RAC at the top of JSA.					
		E = Extremely High Risk H = High Risk M = Moderate Risk L = Low Risk					

Job Steps	Hazards	Controls	P	S	RAC
Bridge collection of water samples	Being struck by a passing vehicle	<ul style="list-style-type: none"> A: If possible, schedule sampling for off-peak traffic hours. P: Personnel conducting water column sampling must utilize personal protective equipment (PPE), including an orange traffic safety vest, safety cones, and "Men at Work" signs. En: If a sidewalk is not present, then 	U	Ca	M

Job Steps	Hazards	Controls	P	S	RAC
		<p>sampling personnel should park the vehicle on the shoulder of the road with the emergency flashers on; the shoulder must be at least 6 feet wide and the wheels of the vehicle must not extend over the white lines on the roadway. Additionally, all sampling personnel must conduct sampling on the opposite side of the vehicle from oncoming traffic (i.e., personnel are protected by the vehicle).</p> <ul style="list-style-type: none"> • A: A vehicle may not be parked in the roadway if the shoulder of the roadway is not sufficiently wide and the vehicle's wheels extend beyond the white line. • En: Sampling from a bridge without the use of a vehicle may only be performed if the shoulder is wide enough to allow ample room to work and the work area is sufficiently marked with cones and signage so it can be seen from a distance. • A: Sampling will only be conducted during daylight, and will not be conducted if slippery road conditions exist or if snowplows could potentially be in operation. 			
	Boats in the river contacting sampling equipment	<ul style="list-style-type: none"> • En: An easily visible rope will be used to suspend all equipment from the bridge. • A: Prior to lowering any sampling equipment, a visual observation will be performed to confirm the lack of boat traffic in the vicinity of the bridge. 	U	M	L
	Slips, trips, falls	<ul style="list-style-type: none"> • A: Be aware of potentially slippery surfaces and tripping hazards. • A: Wear footwear that has sufficient traction to reduce risk of slipping. • P: Wear steel-toed rubber boots versus over-the-shoe rubber boots. 	S	M	L

Job Steps	Hazards	Controls	P	S	RAC
		<ul style="list-style-type: none"> P: Wear personal flotation device (PFD). 			
	Muscle strain	<ul style="list-style-type: none"> A: When manually lowering the sampling apparatus the sampler should ask for a spotter to watch and take over if they feel they are getting tired or becoming strained. 	L	M	M
	Falling off bridge	<ul style="list-style-type: none"> P: All personnel must wear a U.S. Coast Guard (USCG)-approved PFD whenever working on or near the water, except when adequate railings exist on bridges (top rail and mid-rail). A: Sampling must be conducted so that both feet of the sampling personnel are on the base of the bridge, shoulder of the road, or sidewalk (i.e., not standing on the railing) with the center of gravity lower than the bridge railing. En: A functioning cellular phone must be present at the site at all times. 	U	Ca	M
	Cold water work	<ul style="list-style-type: none"> P: If adequate railings are not in place and the water temperature is below 40°F, field personnel working on or near water shall wear a float coat and bib overalls (e.g., a full two-piece “Mustang” survival suit or similar) or a one-piece survival suit. If the water temperature is between 40°F and 50°F, field personnel shall wear a float coat. Suits or float coats shall be USCG approved. If extremely cold or severe weather conditions are forecast, work activities should be postponed. 	S	Cr	M

Equipment to be Used	Training Requirements/Competent or Qualified Personnel	Inspection Requirements
<ul style="list-style-type: none">• Generator• Davit• MADIS sampler• PPE: Hard hat, safety glasses, steel-toed boots/shoes, high visibility vest, nitrile gloves, leather gloves, cut-resistant gloves, and hearing protection	<ul style="list-style-type: none">• Medical Monitoring• 40-hour HAZWOPER• 8-hour Refresher• CPR/First Aid• Boater Safety• Hudson River Site Safety	<ul style="list-style-type: none">• Inspect rope integrity (no fraying or knots).• PFDs should be inspected daily prior to use.• Monitor air and water temperature.• Cold weather gear should be inspected daily.

Job Safety Analysis (JSA)

Activity/Work Task: Boat/Barge Decontamination		Overall Risk Assessment Code (RAC) (Use highest code)				M	
Project Location: Hudson River		Risk Assessment Code (RAC) Matrix					
Contract Number: TBD		Severity	Probability				
Date Prepared: 04/25/2012	Revised: 04/28/2015 – KMB		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by: Richie Constant/Scientist		Catastrophic	E	E	H	H	M
		Critical	E	H	H	M	L
Reviewed by: Chris Torell/Health and Safety Director		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Employer/GBU: Anchor QEA		Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (see above). The RAC is developed after correctly identifying all the hazards and fully implementing all controls.					
Notes: PPE: Hard hat, safety glasses, steel-toed boots/shoes, personal flotation device (PFD; float coat/suit per water temperature), leather gloves, cut-resistant gloves, hearing protection, and when applicable steel-toed rubber boots	Controls: EI "Eliminate" S "Substitute" En "Engineer" A "Administrative" P "PPE"	P "Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.				RAC Chart E = Extremely High Risk H = High Risk M = Moderate Risk L = Low Risk	
		S "Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible					
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on JSA. Annotate the overall highest RAC at the top of JSA.					

Job Steps	Hazards	Controls	P	S	RAC
Boat/barge decontamination	Site hazardous material exposure	<ul style="list-style-type: none"> A: Training and safety awareness of potential exposure to contaminants of concern at the site and decontamination procedure. P: Appropriate personal protective equipment (PPE) will be worn. A: Personnel will follow decontamination procedures. 	U	M	L

Job Steps	Hazards	Controls	P	S	RAC
		<ul style="list-style-type: none"> A: Use caution when hosing or spraying the vessel. 			
	Slips, trips, falls	<ul style="list-style-type: none"> A: Be aware of potentially slippery surfaces and tripping hazards. P: Wear footwear that has sufficient traction to reduce risk of slipping. P: Wear steel-toed rubber boots versus over-the-shoe rubber boots. A: Work slowly during transit. Jumping, running, and horseplay are prohibited. En: Keep all areas clean and free of debris to deter any unnecessary trips and falls. A: Clean up all spills immediately. A: Notify project safety personnel of any unsafe conditions. 	S	M	L
	Slips, trips, falls off boat; drowning hazards	<ul style="list-style-type: none"> P: Wear footwear that has sufficient traction to reduce risk of slipping. P: Wear PFD. A: Be aware of any obstacles on boat deck. 	U	Ca	M
	Heat stress	<ul style="list-style-type: none"> S: Adjust work schedules, as necessary. S: Perform work during cooler hours of the day if possible or at night if possible and if adequate lighting can be provided. En: Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods. A: Maintain hydration. A: Train workers to recognize the symptoms of heat-related illness. 	O	N	L
	Cold stress	<ul style="list-style-type: none"> En: Provide shelter (enclosed, heated environment) to protect personnel during rest periods. A: Educate workers to recognize the symptoms of frostbite and hypothermia. P: Have a dry change of clothing available. 	S	Cr	M

Job Steps	Hazards	Controls	P	S	RAC
		<ul style="list-style-type: none"> A: Train workers to recognize the symptoms of cold-related illness. 			
	Cold water work	<ul style="list-style-type: none"> P: When the water temperature is below 40°F, field personnel working on or near water shall wear a float coat and bib overalls (e.g., a full two-piece “Mustang” survival suit or similar) or a one-piece survival suit. If the water temperature is between 40°F and 50°F, field personnel shall wear a float coat. Suits or float coats shall be U.S. Coast Guard approved. If extremely cold or severe weather conditions are forecast, work activities should be postponed. 	S	Cr	M
	Eye Injury	<ul style="list-style-type: none"> P: PPE (safety glasses, etc.) will be worn. 	U	M	L
	Rain	<ul style="list-style-type: none"> P: Have proper PPE (rain gear, footwear, etc.) available. Be aware of slip hazards, puddles, etc. 	O	N	L
	Sunshine	<ul style="list-style-type: none"> P: Have sunscreen available for ultraviolet protection. Have water for dehydration. 	L	N	L
	Snow	<ul style="list-style-type: none"> P: Have warm clothes available for cold temperatures. 	O	N	L
	Lightning	<ul style="list-style-type: none"> A: Do not begin or continue work until lightning subsides for 20 minutes. 	U	Ca	M

Equipment to be Used	Training Requirements/Competent or Qualified Personnel	Inspection Requirements
<ul style="list-style-type: none">• Generator• Electric water pump• PPE: Hard hat, safety glasses, steel-toed boots/shoes, PFD (Float coat / suit per water temp), leather gloves, cut-resistant gloves, hearing protection, and where applicable steel-toed rubber boots	<ul style="list-style-type: none">• Medical Monitoring• 40-hour HAZWOPER• 8-hour Refresher• CPR/First Aid• Boater Safety• Hudson River Site Safety	<ul style="list-style-type: none">• PFDs will be inspected daily prior to use.• Monitor workers' physical conditions.• Monitor outside temperature versus worker activity.• Monitor air and water temperature.• Cold weather gear inspected daily.

Job Safety Analysis (JSA)

Activity/Work Task: Personnel Decontamination		Overall Risk Assessment Code (RAC) (Use highest code)				M	
Project Location: Hudson River		Risk Assessment Code (RAC) Matrix					
Contract Number: TBD		Severity	Probability				
Date Prepared: 04/25/2012	Revised: 04/28/2015 – KMB		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by: Richie Constant/Scientist		Catastrophic	E	E	H	H	M
		Critical	E	H	H	M	L
Reviewed by: Chris Torell/Health and Safety Director		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Employer/GBU: Anchor QEA		Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (see above). The RAC is developed after correctly identifying all the hazards and fully implementing all controls.					
Notes: PPE: Hard hat, safety glasses, steel-toed boots/shoes, leather gloves, cut-resistant gloves, hearing protection, and where applicable steel-toed rubber boots	Controls: EI "Eliminate" S "Substitute" En "Engineer" A "Administrative" P "PPE"	P "Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.				RAC Chart E = Extremely High Risk H = High Risk M = Moderate Risk L = Low Risk	
		S "Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible.					
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on JSA. Annotate the overall highest RAC at the top of JSA.					

Job Steps	Hazards	Controls	P	S	RAC
Personnel decontamination	General	<ul style="list-style-type: none"> P: Personnel should dress in suitable safety equipment to reduce exposure. A: Collect rinse water and dispose of per appropriate standard operating procedures. A: Follow decontamination procedures. 	S	Cr	M
	Site hazardous material exposure	<ul style="list-style-type: none"> A: Training and safety awareness of potential exposure to contaminants of concern (COCs) at the site and 	S	Cr	M

Job Steps	Hazards	Controls	P	S	RAC
		decontamination procedure. Review COCs. • P: Appropriate Personal Protective Equipment (PPE) will be worn (e.g., Tyvek, nitrile gloves, safety glasses).			
	Slips, trips, falls	• A: Be aware of potentially slippery surfaces and tripping hazards. • P: Wear footwear that has sufficient traction to reduce risk of slipping. • P: Wear steel-toed rubber boots versus over-the-shoe rubber boots. • A: Work slowly during transit. Jumping, running, and horseplay are prohibited. • En: Keep all areas clean and free of debris to deter any unnecessary trips and falls. • A: Clean up all spills immediately. • A: Notify project safety personnel of any unsafe conditions.	S	M	L
	Heat stress	• A: Adjust work schedules, as necessary. • A: Perform work during cooler hours of the day if possible or at night if possible and if adequate lighting can be provided. • En: Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods. • A: Maintain hydration. • A: Train workers to recognize the symptoms of heat-related illness.	O	N	L
	Cold stress	• En: Provide shelter (enclosed, heated environment) to protect personnel during rest periods. • A: Educate workers to recognize the symptoms of frostbite and hypothermia. • P: Have a dry change of clothing available. • A: Train workers to recognize the symptoms of cold-related illness.	S	Cr	M

Job Steps	Hazards	Controls	P	S	RAC
	Eye injury	<ul style="list-style-type: none"> P: PPE (safety glasses, splash goggles) will be worn. 	U	M	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel	Inspection Requirements
<ul style="list-style-type: none"> PPE: Hard hat, safety glasses, steel toed boots/shoes, leather gloves, cut resistant gloves, hearing protection, and steel toed rubber boots 	<ul style="list-style-type: none"> Medical Monitoring 40-hour HAZWOPER 8-hour Refresher CPR/First Aid Boater Safety Hudson River Site Safety 	<ul style="list-style-type: none"> Monitor workers' physical conditions. Monitor outside temperature versus worker activity.

Job Safety Analysis (JSA)

Activity/Work Task: Tool and Equipment Decontamination		Overall Risk Assessment Code (RAC) (Use highest code)				M	
Project Location: Hudson River		Risk Assessment Code (RAC) Matrix					
Contract Number: TBD		Severity	Probability				
Date Prepared: 04/25/2012	Revised: 04/28/2015 – KMB		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by: Richie Constant/Scientist		Catastrophic	E	E	H	H	M
		Critical	E	H	H	M	L
Reviewed by: Chris Torell/Health and Safety Director		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Employer/GBU: Anchor QEA		Step 1: Review each “Hazard” with identified safety “Controls” and determine RAC (see above). The RAC is developed after correctly identifying all the hazards and fully implementing all controls.					
Notes: PPE: Hard hat, safety glasses, steel-toed boots/shoes, high visibility vest, leather gloves, cut-resistant gloves, hearing protection, and where applicable steel-toed rubber boots	Controls: EI “Eliminate” S “Substitute” En “Engineer” A “Administrative” P “PPE”	P “Probability”	is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.			RAC Chart	
		S “Severity”	is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible.				
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on JSA. Annotate the overall highest RAC at the top of JSA.					
					E = Extremely High Risk		
					H = High Risk		
					M = Moderate Risk		
					L = Low Risk		

Job Steps	Hazards	Controls	P	S	RAC
Tool and equipment decontamination	Site hazardous material exposure	<ul style="list-style-type: none"> A: Training and safety awareness of potential exposure to contaminants at the site and decontamination procedure. P: Appropriate Personal Protective Equipment (PPE) will be worn. A: Personnel will follow decontamination procedure as outlined in the work plan. 	U	Cr	L
	Slips, trips, falls	<ul style="list-style-type: none"> A: Be aware of potentially slippery surfaces 	S	M	L

Job Steps	Hazards	Controls	P	S	RAC
		and tripping hazards. <ul style="list-style-type: none"> • P: Wear footwear that has sufficient traction to reduce risk of slipping. • P: Wear steel-toed rubber boots versus over-the-shoe rubber boots. • A: Work slowly during transit. Jumping, running, and horseplay are prohibited. • A: Keep all areas clean and free of debris to deter any unnecessary trips and falls. • A: Clean up all spills immediately. • A: Notify project safety personnel of any unsafe conditions. 			
	Heat stress	<ul style="list-style-type: none"> • S: Adjust work schedules, as necessary. • S: Perform work during cooler hours of the day if possible or at night if practicable and if adequate lighting can be provided. • En: Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods. • El: Maintain body fluids at normal levels. • A: Train workers to recognize the symptoms of heat-related illness. 	O	N	L
	Cold stress	<ul style="list-style-type: none"> • En: Provide shelter (enclosed, heated environment) to protect personnel during rest periods. • A: Educate workers to recognize the symptoms of frostbite and hypothermia. • P: Have a dry change of clothing available. • A: Train workers to recognize the symptoms of cold-related illness. 	S	Cr	M
	Eye injury	<ul style="list-style-type: none"> • P: PPE (safety glasses, etc.) will be worn. 	U	M	L

Job Steps	Hazards	Controls	P	S	RAC
	General	<ul style="list-style-type: none"> • P: Personnel should dress in suitable safety equipment to reduce exposure. • A: To decontaminate portable equipment: <ul style="list-style-type: none"> - Wash and scrub with detergent. - Follow with tap water rinse. - Perform a de-ionized water rinse. - Air-dry and wrap in aluminum foil with the shiny side out for transport. • A: To decontaminate boat: rinse with river water. • A: To clean instrumentation: follow manufacturer's instructions. • A: For large equipment, transport to decontamination site and wash with hot water, high pressure spray or steam clean. • A: Collect rinse water and dispose of per appropriate standard operating procedures. 	U	M	L
	Remove gross contamination with brush – site hazardous material exposure:	<ul style="list-style-type: none"> • A: Training and safety awareness of potential exposure to contaminants at the site and decontamination procedure • P: appropriate PPE will be worn). 	U	M	L
	Remove gross contamination with brush – eye injury	<ul style="list-style-type: none"> • P: PPE (safety glass, etc.) will be worn. 	U	M	L
	Place in decontamination bucket or rinse with decontamination solution – site hazardous material exposure:	<ul style="list-style-type: none"> • A: Training and safety awareness of potential exposure to contaminants at the site and decontamination procedure. • P: Appropriate PPE will be worn. 	U	M	L
	Place in decontamination bucket or rinse with decontamination solution – eye injury	<ul style="list-style-type: none"> • P: PPE (safety glass, etc.) will be worn. 	U	M	L
	Place in decontamination bucket or rinse with decontamination solution – heat and cold stress	<ul style="list-style-type: none"> • A: Implement the cold/heat stress control program (see above). 	S	Cr	M
	Place in decontamination bucket or rinse with decontamination solution – clean with soap solution	<ul style="list-style-type: none"> • A: Training and safety awareness of potential exposure to contaminants at the site and decontamination procedure. • P: Appropriate PPE will be worn. 	U	M	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel	Inspection Requirements
<ul style="list-style-type: none">• Acetone• Hexane• DI Water• Funnel• Car boy• PPE: Hard hat, safety glasses, steel-toed boots/shoes, high visibility vest, leather gloves, cut-resistant gloves, hearing protection, and where applicable steel-toed rubber boots	<ul style="list-style-type: none">• Medical Monitoring• 40-hour HAZWOPER• 8-hour refresher• CPR/First Aid• Boater Safety• Hudson River Site Safety	<ul style="list-style-type: none">• Monitor workers' physical conditions.• Monitor outside temperature versus worker activity.

Job Safety Analysis (JSA)

Activity/Work Task: Far-Field Water Sampling		Overall Risk Assessment Code (RAC) (Use highest code)				M	
Project Location: Hudson River		Risk Assessment Code (RAC) Matrix					
Contract Number: TBD		Severity	Probability				
Date Prepared: 05/14/2012	Revised: 04/28/2015 – KMB		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by: Kevin Ballou/Engineer		Catastrophic	E	E	H	H	M
		Critical	E	H	H	M	L
Reviewed by: Christopher Yates/Project Manager		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Employer/GBU: Anchor QEA		Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (see above). The RAC is developed after correctly identifying all the hazards and fully implementing all controls.					
Notes: PPE: Hard hat, safety glasses, steel toed boots/shoes, personal flotation device (PFD; float coat/suit per water temperature), nitrile gloves, cut-resistant gloves, hearing protection, and Tyvek coveralls as needed	Controls: EI "Eliminate" S "Substitute" En "Engineer" A "Administrative" P "PPE"	P "Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.				RAC Chart E = Extremely High Risk H = High Risk M = Moderate Risk L = Low Risk	
		S "Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible.					
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on JSA. Annotate the overall highest RAC at the top of JSA.					

Job Steps	Hazards	Controls	P	S	RAC
Manual far-field water sampling (in river)	Boating hazards	<ul style="list-style-type: none"> Follow JSA for boat operations 			
	Cold water work	<ul style="list-style-type: none"> P: When the water temperature is below 40°F, field personnel working on or near water shall wear a float coat and bib overalls (e.g., a full two-piece "Mustang" survival suit or similar) or a one-piece survival suit. If the water temperature is between 40°F and 50°F, field personnel 	S	Cr	M

Job Steps	Hazards	Controls	P	S	RAC
		shall wear a float coat. Suits or float coats shall be U.S. Coast Guard approved. If extremely cold or severe weather conditions are forecast, work activities should be postponed.			
	Ingestion of contaminants, skin/eye contact with contaminants	<ul style="list-style-type: none"> • P: Wear appropriate Personal Protective Equipment (PPE). • A: Contact 911, as necessary. • A: Move the exposed person away from source of contamination, rinse mouth. Perform CPR if breathing stops. • A: If exposure to contaminated materials occurs, promptly wash contaminated skin using soap or mild detergent and water. Rinse eyes with large amounts of water. Keep the affected person warm and at rest 	U	Cr	L
	High winds/dust storm	<ul style="list-style-type: none"> • P: Wear goggles if dust/debris is visible 	U	M	L
	Biological hazards	<ul style="list-style-type: none"> • A: Personnel will be aware of potential exposure to biological hazards. • P: Wear appropriate clothing (hat, long-sleeve shirt, long pants, leather gloves, boots, Tyvek coveralls, as appropriate) and insect repellant. 	U	M	L
	Boat capacity	<ul style="list-style-type: none"> • EI: A placard indicating the weight and passenger limits will be maintained on all vessels. The number of passengers and equipment will be within limits at all times. If conditions warrant (i.e., fast river flows) the weight capacity will be reduced to maintain boat stability. 	U	Cr	L

Job Steps	Hazards	Controls	P	S	RAC
	River flows	<ul style="list-style-type: none"> A: The river flows will be monitored prior to leaving the dock or boat launch and periodically throughout the day. Work will not be conducted by boat within 3,000 feet of a dam when Fort Edward flows are greater than 10,000 cubic feet per second (cfs). A: Monitor river flows at nearest U.S. Geological Survey gauging station (Fort Edward for work in the Upper Hudson River). 	U	Ca	M
	Loading/unloading equipment onto vessel	<ul style="list-style-type: none"> A: Secure boat. En: Use rails or assistance from someone on the dock. A: Be cautious when entering or exiting the vessel. With one hand on the boat, quickly lower straight down into the center of the craft. Never jump into or off of a vessel. A: If others are boarding, have them step along the fore or aft centerline of the boat while the boat is held in place along the pier. A: Always have one person remain aboard the vessel when docking. If only one person is on the vessel, it should be tied off while the person remains in the vessel. A: Never straddle the vessel and the dock when tying off or pushing off from the dock. A: Avoid directly carrying anything on or off the vessel. Load the items off the pier or have someone hand them to you one by one. El: Never overload the vessel. A: Keep weight toward center of the boat and center of gravity as low as possible. En: Distribute equipment evenly on vessel. 	S	M	L

Job Steps	Hazards	Controls	P	S	RAC
	Slips, trips, falls	<ul style="list-style-type: none"> • A: Be aware of potentially slippery surfaces and tripping hazards. • A: Wear footwear that has sufficient traction to reduce risk of slipping. • A: Avoid standing or walking around in a moving vessel. The exception would be if the vessel has side safety railings and is moving at low speed. • P: Wear steel-toed rubber boots versus over-the-shoe rubber boots. • A: Work slowly during transit. Jumping, running, and horseplay are prohibited. • A: Proceed carefully on floating docks and ramps. • A: Keep all areas clean and free of debris to deter any unnecessary trips and falls. • El: Clean up all spills immediately. • A: Notify project safety personnel of any unsafe conditions. • A: When reaching over the side of the boat keep center of gravity inside the boat and keep contact with the vessel in case of sudden boat movement. 	S	M	L
	Man overboard	<ul style="list-style-type: none"> • A: Yell "man overboard!" • A: If the engine is running, place the transmission in neutral and swing the stern clear to keep from hitting the person. • A: Call 911, as appropriate. • A: Assign a spotter to keep the person in sight at all times. • A: Contact nearby vessels for assistance. • P: Throw flotation devices immediately. • A: Recover person from water. • A: If you fall overboard, hold your mouth and nose closed and protect your head. • A: When you reach the surface, look for 	U	Ca	M

Job Steps	Hazards	Controls	P	S	RAC
		<p>movement, listen for sounds, and call for help. Use the whistle attached to the PFD and activate the beacon light.</p> <ul style="list-style-type: none"> • A: It is only sensible to swim if there is reason to believe that a chance of reaching your destination exists. Excessive movement in cold water may hasten hypothermia. • A: Wear PFD. 			
	Muscle strain/injuries from improper lifting	<ul style="list-style-type: none"> • A: Personnel will utilize proper lifting techniques or ask for assistance with moving/lifting objects. • A: Load items off from the boat or have someone hand them to you one by one. 	L	M	M
	Heat stress	<ul style="list-style-type: none"> • Adjust work schedules, as necessary. • Perform work during cooler hours of the day if possible or at night if possible and if adequate lighting can be provided. • Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods. • Maintain hydration. • Train workers to recognize the symptoms of heat-related illness. 	O	N	L
	Cold stress	<ul style="list-style-type: none"> • Provide shelter (enclosed, heated environment) to protect personnel during rest periods. • Educate workers to recognize the symptoms of frostbite and hypothermia. • Have a dry change of clothing available. • Train workers to recognize the symptoms of cold-related illness. 	S	Cr	M

Job Steps	Hazards	Controls	P	S	RAC
	Rain	<ul style="list-style-type: none"> Wear appropriate PPE (i.e., rain gear). Be aware of slip hazards, puddles, and electrical hazards when working near water, etc. 	O	N	L
	Sunshine	<ul style="list-style-type: none"> Have sunscreen available for ultraviolet protection. Have water available for dehydration. 	L	N	L
	Fog	<ul style="list-style-type: none"> Wait for fog to lift and there is adequate visibility before operating sampling vessel. 	S	N	L
	Lightning	<ul style="list-style-type: none"> Do not begin or continue work until lightning subsides for 20 minutes. Immediately head for shore if on the water and lightning is observed. If you are not able to get to shore, disconnect and do not use or touch the major electronic equipment, including the radio, throughout the duration of the storm. 	U	Ca	M
	Boat traffic	<ul style="list-style-type: none"> Maintain a safe operating distance from shoreline, other vessels, etc. 	S	N	L
	Waves, surges, currents	<ul style="list-style-type: none"> Be aware of sudden surges caused by incoming waves, unstable waters, and currents. 	S	N	L
	Fire or major emergency – abandon ship	<ul style="list-style-type: none"> A: Be prepared to abandon ship in the event of fire too large to control with fire extinguisher or other major emergency. A: Only the boat captain can order abandon ship. A: Communicate intent to abandon ship to all personnel on board. A: Call 911. A: Notify nearby vessels of intent to abandon ship. A: Notify Project Manager and project 	U	Ca	M

Job Steps	Hazards	Controls	P	S	RAC
		safety personnel, if time permits. <ul style="list-style-type: none"> A: Be aware of position of the propeller before abandoning ship. A: Identify a rally point for all personnel. A: Know the dangers of hypothermia. A: Use the buddy system to support injured personnel. 			
	Pinch points	<ul style="list-style-type: none"> Maintain awareness of procedures underway and be attentive of sampling operations. Maintain distance when lowering spuds. Maintain safe distance from winches when in operation. 	S	M	L
	Overhead hazards	<ul style="list-style-type: none"> Wear hardhat. Tighten bolts on spud sections. 	S	CR	M
	Icy surfaces (during colder months)	<ul style="list-style-type: none"> Have ice melt available for placement on walkways. Wear ice trekkers if surfaces are covered with ice or snow. 	O	M	M
	Muscle strain/injuries from improper lifting	<ul style="list-style-type: none"> Personnel will utilize proper lifting techniques or ask for assistance with moving/lifting objects. Load items off from the boat or have someone hand them to you one by one. 	L	M	M
	Sampling from a bridge: <i>See Bridge Collection of Water Samples JSA</i>				
Manual far-field water sampling (from Bridge)	Slips, trips, falls	<ul style="list-style-type: none"> Be aware of potentially slippery surfaces and tripping hazards. Wear footwear that has sufficient traction to reduce risk of slipping. Work slowly during transit. Jumping, running, and horseplay are prohibited. Keep all areas clean and free of debris to deter any unnecessary trips and falls. 	S	M	L

Job Steps	Hazards	Controls	P	S	RAC
		<ul style="list-style-type: none"> Clean up all spills immediately. Notify project safety personnel of any unsafe conditions. 			
Automated Far-field water sampling (land based)	Driving hazards	<ul style="list-style-type: none"> All personnel must have completed a New York State defensive driving class. All cell phone use is prohibited while operating a motor vehicle. 	N	N	L
	Breakage of containers during field activities	<ul style="list-style-type: none"> Use appropriate sized tubs or bottle carriers with dividers to prevent bottle-to-bottle contact during transport. Consider using coated glassware if practicable. Carry oversize bottles in tubs/carriers using both hands during transfer to sampling vessels and whenever vessel is underway. 	U	M	L
Sampling and laboratory glassware handling procedures	Faulty glassware	<ul style="list-style-type: none"> Replace glassware with chips, nicks, or cracks. 	S	M	L
	Impact with equipment and other objects	<ul style="list-style-type: none"> Use care when loading and unloading sampling equipment. Minimize the handling of individual containers. 	U	N	L
	Over-tightening of bottle lids may cause breakage	<ul style="list-style-type: none"> Avoid use of excessive force to tighten bottle caps (i.e., finger tight). Secure lids with clear tape to prevent opening during transport. 	U	M	L
	Breakage during sample collection	<ul style="list-style-type: none"> Place containers in plastic tubs in between aliquots to limit contact with hard surfaces. Place containers on stable and non-slip surface during collection. Use buddy system as needed to hold bottles during filling. 	U	M	L
	Contact with sample preservatives; generally HCL or H2SO4 to lower pH to <2	<ul style="list-style-type: none"> Wear nitrile gloves and protective eyewear to prevent skin and eye contact if container is damaged. Do not open preserved bottles until 	U	C	L

Job Steps	Hazards	Controls	P	S	RAC
		necessary.			
	Breakage during packing and shipment	<ul style="list-style-type: none"> Use bottle wraps, foam sleeves, or bubble wrap to prevent bottle contact in cooler. Pack coolers snugly but do not over pack. 	S	M	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel	Inspection Requirements
<ul style="list-style-type: none"> Generator Sampling jars MADIS sampler Davit 14- or 18-foot work boat PPE: Hard hat, safety glasses, steel-toed boots/shoes, PFD (float coat/suit per water temperature), nitrile gloves, cut-resistant gloves, hearing protection, and Tyvek coveralls as needed 	<ul style="list-style-type: none"> Medical Monitoring 40-hour HAZWOPER 8-hour Refresher CPR/First Aid Boater Safety Hudson River Site Safety NYS Defensive Driving Class 	<ul style="list-style-type: none"> Monitor workers' physical conditions. Monitor outside temperature versus worker activity. Submit river work permit/float plan. PFDs should be inspected daily prior to use. Inspect for potential slips, trips, and falls. PPE should be inspected daily prior to use. Inspect boat lights. Daily inspection of boat. Continually survey area during on-going work activities. Inspect tool prior to use. Inspect vehicle and trailer before use.

Job Safety Analysis (JSA)

Activity/Work Task: Fish Sampling		Overall Risk Assessment Code (RAC) (Use highest code)				M	
Project Location: Hudson River		Risk Assessment Code (RAC) Matrix					
Contract Number: TBD		Severity	Probability				
Date Prepared: 03/22/2012	04/28/2015 – KMB		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by: Jim Ryan/Senior Scientist		Catastrophic	E	E	H	H	M
		Critical	E	H	H	M	L
Reviewed by: Kevin Ballou/Site Safety Officer		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Employer/GBU: Anchor QEA		Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (see above). The RAC is developed after correctly identifying all the hazards and fully implementing all controls.					
Notes: PPE: Safety glasses, steel-toed boots/shoes, personal flotation device (PFD; float coat/suit per water temperature), leather gloves, electrical protective gloves, cut-resistant gloves, hearing protection, and if needed waders or steel-toed rubber boots; hard hat in active dredge areas and in non-dredge areas when overhead hazards are present	Controls: EI "Eliminate" S "Substitute" En "Engineer" A "Administrative" P "PPE"	P "Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.				RAC Chart E = Extremely High Risk H = High Risk M = Moderate Risk L = Low Risk	
		S "Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible.					
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on JSA. Annotate the overall highest RAC at the top of JSA.					

Job Steps	Hazards	Controls	P	S	RAC
Boating	Follow JSA for boat operation				
Motor vehicle operation	Follow JSA for motor vehicle operation				

Job Steps	Hazards	Controls	P	S	RAC
Electrofishing	Electrical current	<ul style="list-style-type: none"> • P: Wear electrical protective gloves when netting fish. • A: Do not reach into water. • En: Boat operator and each netter have kill switch control. 	U	Ca	M
	Hitting other sampling personnel or being hit with long handled net	<ul style="list-style-type: none"> • A: Keep watch and know location of others on the boat to avoid contact with net handles. 	S	N	L
	Working near shore in shallow water	<ul style="list-style-type: none"> • A: Keep watch for low hanging tree branches and objects in the water (e.g., rocks, logs) and communicate with boat captain and other personnel. • A: Keep watch for activity on shoreline or in water; refrain from sampling when people or pets are close to shore or in water. 	L	M	M
Gill netting	Nearby boat striking nets	<ul style="list-style-type: none"> • A: Keep nets out of navigation channels, if possible. • En: Attach marker buoys to each end of net. 	S	N	L
	Retrieving net	<ul style="list-style-type: none"> • A: Maintain balance and use caution when leaning over edge of the sampling vessel. 	L	M	M
	Wading	<ul style="list-style-type: none"> • P: Inspect waders for leaks. • A: Be aware of potential slips, trips, and falls in the water due to fallen brush, logs, rocks, and other debris. • A: Be aware of water depth and potential drop-offs. 	S	M	L
	Flow and current	<ul style="list-style-type: none"> • El: Monitor tide and current charts in tidal portion of river. • El: Check National Oceanic and Atmospheric Administration prior to sampling event for small craft advisory. • A: Work will not be conducted by boat within 3,000 feet of a dam when Fort Edward flows are greater than 10,000 cubic feet per second (cfs). 	F	N	M

Job Steps	Hazards	Controls	P	S	RAC
	Muscle strain/injuries from improper lifting	<ul style="list-style-type: none"> A: Personnel will utilize proper lifting techniques or ask for assistance with moving/lifting objects. A: Load items off from the boat or have someone hand them to you one by one 	L	M	M
Boat-based activities	Heat stress	<ul style="list-style-type: none"> A: Adjust work schedules, as necessary. A: Perform work during cooler hours of the day if possible or at night if possible and if adequate lighting can be provided. En: Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods. A: Maintain hydration. A: Train workers to recognize the symptoms of heat-related illness. 	O	N	L
	Cold stress	<ul style="list-style-type: none"> En: Provide shelter (enclosed, heated environment) to protect personnel during rest periods. A: Educate workers to recognize the symptoms of frostbite and hypothermia. P: Have a dry change of clothing available. A: Train workers to recognize the symptoms of cold-related illness. 	S	Cr	M
	Rain	<ul style="list-style-type: none"> P: Wear appropriate Personal Protective Equipment (PPE) (rain gear). A: Be aware of slip hazards, puddles, and electrical hazards when working near water, etc. 	S	Cr	M
	Sunshine	<ul style="list-style-type: none"> P: Have sunscreen available for ultraviolet protection. Have water available for dehydration. 	O	N	L
	Fog	<ul style="list-style-type: none"> A: Wait for fog to lift and ensure there is adequate visibility before operating sampling vessel. 	L	N	L

Job Steps	Hazards	Controls	P	S	RAC
	Lightning	<ul style="list-style-type: none"> A: Do not begin or continue work until lightning subsides for 20 minutes. A: Immediately head for shore if on the water and lightning is observed. A: If you are not able to get to shore, disconnect and do not use or touch the major electronic equipment, including the radio, throughout the duration of the storm. 	S	N	L
	Heat stress	<ul style="list-style-type: none"> A: Adjust work schedules, as necessary. A: Perform work during cooler hours of the day if possible or at night if possible and if adequate lighting can be provided. En: Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods. A: Maintain hydration. A: Train workers to recognize the symptoms of heat-related illness. 	U	Ca	M
	High winds	<ul style="list-style-type: none"> El: Stay off the water or return to shore if already on the water if wind speeds and direction are determined to be too high to safely conduct work. 	U	M	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel	Inspection Requirements
<ul style="list-style-type: none"> Smith-Root 18 foot electrofishing vessel Starcraft 18 foot jon boat Gill nets PPE: Safety glasses, steel-toed boots/shoes, PFD (float coat/suit per water temperature), leather gloves, electrical protective gloves, cut-resistant gloves, hearing protection, and if needed waders or steel-toed rubber boots; hard hat in active dredge areas and in non-dredge areas when overhead hazards are present 	<ul style="list-style-type: none"> 40-hour HAZWOPER 8-hour Refresher CPR/First Aid NYS Boater Safety Hudson River Site Safety 	<ul style="list-style-type: none"> Complete boat safety checklist daily. Monitor workers' physical conditions. Monitor outside temperature versus worker activity. Submit and follow river work permit and float plan. PFDs should be inspected daily prior to use. PPE should be inspected daily prior to use. Perform boat inspection prior to use Continually survey area during on-going work activities Inspect tool prior to use.

Job Safety Analysis (JSA)

Activity/Work Task: Procedures		Sampling and Laboratory Glassware Handling		Overall Risk Assessment Code (RAC) (Use highest code)			L		
Project Location:		Hudson River		Risk Assessment Code (RAC) Matrix					
Contract Number:		TBD		Severity	Probability				
Date Prepared:	05/4/2014	Revised:	04/28/2015 – KMB		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by:		Chris Yates/Manager		Catastrophic	E	E	H	H	M
				Critical	E	H	H	M	L
Reviewed by:		Kevin Ballou/Site Safety Officer		Marginal	H	M	M	L	L
				Negligible	M	L	L	L	L
Employer/GBU: Anchor QEA				Step 1: Review each “Hazard” with identified safety “Controls” and determine RAC (see above). The RAC is developed after correctly identifying all the hazards and fully implementing all controls.					
Notes:		Controls:		P “Probability” is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.				RAC Chart	
PPE: Hard hat, safety glasses, steel-toed boots/shoes, personal flotation device (PFD; float coat/suit per water temperature), nitrile gloves, leather gloves, cut-resistant gloves, and hearing protection		El “Eliminate” S “Substitute” En “Engineer” A “Administrative” P “PPE”		S “Severity” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible.				E = Extremely High Risk	
								H = High Risk	
				Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on AHA. Annotate the overall highest RAC at the top of JSA.				M = Moderate Risk	
								L = Low Risk	

Job Steps	Hazards	Controls	P	S	RAC
Sampling and laboratory glassware handling procedures	Breakage of containers during field activities	<ul style="list-style-type: none"> Use appropriate sized tubs or bottle carriers with dividers to prevent bottle-to-bottle contact during transport. Consider using coated glassware if practicable. Carry oversize bottles in tubs/carriers using both hands during transfer to sampling vessels and whenever vessel is underway. 	U	M	L

Job Steps	Hazards	Controls	P	S	RAC
	Faulty glassware	<ul style="list-style-type: none"> S: Replace glassware with chips, nicks, or cracks. 	S	M	L
	Impact with equipment and other objects	<ul style="list-style-type: none"> En: Use care when loading and unloading sampling equipment. Minimize the handling of individual containers. 	U	N	L
	Over-tightening of bottle lids may cause breakage	<ul style="list-style-type: none"> A: Avoid use of excessive force to tighten bottle caps (i.e., finger tight). Secure lids with clear tape to prevent opening during transport. 	U	M	L
	Breakage during sample collection	<ul style="list-style-type: none"> A: Place containers in plastic tubs in between aliquots to limit contact with hard surfaces. A: Place containers on stable and non-slip surface during collection. A: Use buddy system as needed to hold bottles during filling. 	U	M	L
	Contact with sample preservatives; generally HCL or H2SO4 to lower pH to <2	<ul style="list-style-type: none"> P: Wear nitrile gloves and protective eyewear to prevent skin and eye contact if container is damaged. A: Do not open preserved bottles until necessary. 	U	C	L
	Breakage during packing and shipment	<ul style="list-style-type: none"> En: Use bottle wraps, foam sleeves, or bubble wrap to prevent bottle contact in cooler. A: Pack coolers snugly but do not over pack. 	S	M	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel	Inspection Requirements
<ul style="list-style-type: none"> Bottle carriers (plastic tubs with dividers) Plastic coated bottles (sampling containers) PPE: Hard hat, safety glasses, steel toed boots/shoes, PFD (Float coat / suit per water temp), nitrile gloves, leather gloves, cut resistant gloves, and hearing protection. 	<ul style="list-style-type: none"> Medical Monitoring 40-hour HAZWOPER 8-hour Refresher CPR/First Aid Boater Safety Hudson River Site Safety 	<ul style="list-style-type: none"> Ensure dividers are sufficient and will remain in place during transport. Inspect glassware before use. Ensure glass bottles do not touch to minimize potential breakage during transport.

Job Safety Analysis (JSA)

Activity/Work Task: Habitat Assessment		Overall Risk Assessment Code (RAC) (Use highest code)				M	
Project Location: Hudson River		Risk Assessment Code (RAC) Matrix					
Contract Number: TBD		Severity	Probability				
Date Prepared: 05/04/2014	Revised: 04/28/2015 – KMB		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by: Richie Constant/Scientist		Catastrophic	E	E	H	H	M
		Critical	E	H	H	M	L
Reviewed by: Kevin Ballou/Site Safety Officer		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Employer/GBU: Anchor QEA		Step 1: Review each “Hazard” with identified safety “Controls” and determine RAC (see above). The RAC is developed after correctly identifying all the hazards and fully implementing all controls.					
Notes: PPE: Safety glasses, steel-toed boots/shoes, hard hat, cut-resistant gloves, and personal flotation device (PFD)	Controls: EI “Eliminate” S “Substitute” En “Engineer” A “Administrative” P “PPE”	P “Probability” is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.				RAC Chart	
		S “Severity” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible.					
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on JSA. Annotate the overall highest RAC at the top of JSA.					
		E = Extremely High Risk					
		H = High Risk					
		M = Moderate Risk					
		L = Low Risk					

Job Steps	Hazards	Controls	P	S	RAC
Boating	Follow JSA for boat operation				
Motor vehicle operation	Follow JSA for motor vehicle operation				
Underwater video	Standing in boat, falling overboard	<ul style="list-style-type: none"> A: Maintain balance and use caution when leaning over edge of the sampling vessel. 	U	C	L
	Wires on the deck, tripping hazard	<ul style="list-style-type: none"> En: Organize loose wires to be out of the way as best as possible. 	O	M	M

Job Steps	Hazards	Controls	P	S	RAC
	Davit use, cutting hands on cable	<ul style="list-style-type: none"> • P: Wear protective gloves when operating davit. 	S	M	L
Portable generator use	Exhaust fumes	<ul style="list-style-type: none"> • El: Place generator in area of boat away from work activities. • En: Point exhaust downwind. 	L	L	L
	Fuel spillage	<ul style="list-style-type: none"> • El: Fill generator on shore prior to going out on boat. • En: Ensure vent cap is closed during transport. 	L	L	L
Boat-based activities	Flow and current	<ul style="list-style-type: none"> • A: Check U.S. Geological Survey (USGS) gage at Fort Edward for current river flows. • A: Review flow maps for designated work areas to identify areas with higher velocities. • A: The river flows will be monitored prior to leaving the dock or boat launch and periodically throughout the day. Work will not be conducted by boat within 3,000 feet of a dam when Fort Edward flows are greater than 10,000 cubic feet per second (cfs). 	F	N	M
	Muscle strain/injuries from improper lifting	<ul style="list-style-type: none"> • A: Personnel will utilize proper lifting techniques or ask for assistance with moving/lifting objects. • A: Never straddle the vessel and the dock when tying off or pushing off from the dock. • A: Avoid directly carrying anything on or off the vessel. Load the items off the pier or have someone hand them to you one by one. 	L	M	M
	Heat stress	<ul style="list-style-type: none"> • A: Adjust work schedules, as necessary. • A: Perform work during cooler hours of the day if possible or at night if possible and if adequate lighting can be provided. • En: Provide shelter (air-conditioned, if possible) or shaded areas to protect 	O	N	L

Job Steps	Hazards	Controls	P	S	RAC
		personnel during rest periods. <ul style="list-style-type: none"> A: Maintain hydration. A: Train workers to recognize the symptoms of heat-related illness. 			
	Rain	<ul style="list-style-type: none"> P: Wear appropriate PPE (i.e., rain gear). A: Be aware of slip hazards, puddles, and electrical hazards when working near water, etc. 	O	N	L
	Sunshine	<ul style="list-style-type: none"> P: Have sunscreen available for ultraviolet protection. Have water available for dehydration. 	L	N	L
	Fog	<ul style="list-style-type: none"> A: Wait for fog to lift and ensure there is adequate visibility before operating sampling vessel. 	S	N	L
	Lightning	<ul style="list-style-type: none"> A: Do not begin or continue work until lightning subsides for 20 minutes. A: Immediately head for shore if on the water and lightning is observed. A: If you are not able to get to shore, disconnect and do not use or touch the major electronic equipment, including the radio, throughout the duration of the storm. 	U	Ca	M
	High winds	<ul style="list-style-type: none"> EI: Stay off the water or return to shore if already on the water if wind speeds and direction are determined to be too high to safely conduct work. 	U	M	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel	Inspection Requirements
<ul style="list-style-type: none"> Starcraft 18-foot jon boat or pontoon boat Underwater video equipment Portable generator Boat-based davit PPE: Safety glasses, steel-toed boots/shoes, hard hat, cut-resistant gloves, and PFD 	<ul style="list-style-type: none"> 40-hour HAZWOPER 8-hour Refresher CPR/First Aid NYS Boater Safety Hudson River Site Safety 	<ul style="list-style-type: none"> The Hudson River Operations Permit will be verified and float plans submitted daily. The Boating Checklist should be reviewed daily. Check operation of communication equipment. Monitor air and water temperature. Inspect capacity limits and ensure boat is operating within limits.

Equipment to be Used	Training Requirements/Competent or Qualified Personnel	Inspection Requirements
		<ul style="list-style-type: none">• Monitor river flows at nearest USGS gauging station (Fort Edward for work in the Upper Hudson River).• PPE and PFDs should be inspected daily prior to use.• Monitor workers' physical conditions.• All water vessels will be equipped in accordance with U.S. Coast Guard regulations. Be aware of spud height when traveling underneath bridges and high tension wires.• Be aware of spud height when traveling underneath bridges and high tension wires.• Each vessel will carry a marine radio and monitor marine channel 13. Cellular phones will be required for work on or near the river.

Job Safety Analysis (JSA)

Activity/Work Task: Far-Field Intake Inspection		Overall Risk Assessment Code (RAC) (Use highest code)				M	
Project Location: Hudson River		Risk Assessment Code (RAC) Matrix					
Contract Number: TBD		Severity	Probability				
Date Prepared: 05/4/2014	Revised: 04/28/2015 – KMB		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by: John Roche/Scientist		Catastrophic	E	E	H	H	M
		Critical	E	H	H	M	L
Reviewed by: Chris Torell/Health and Safety Director		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Employer/GBU: Anchor QEA		Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (see above). The RAC is developed after correctly identifying all the hazards and fully implementing all controls.					
Notes: PPE: Hard hat, safety glasses, steel-toed boots/shoes, personal flotation device (PFD; float coat/suit per water temperature), and cut-resistant gloves	Controls: EI "Eliminate" S "Substitute" En "Engineer" A "Administrative" P "PPE"	P "Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.				RAC Chart	
		S "Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible.					
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on JSA. Annotate the overall highest RAC at the top of JSA.					
		E = Extremely High Risk H = High Risk M = Moderate Risk L = Low Risk					

Job Steps	Hazards	Controls	P	S	RAC
Far-field station intake cleaning	Spring boating hazards (swift and cold water)	<ul style="list-style-type: none"> A: Shore-based staff will be required as a safety watch during intake inspection and cleaning. Safety watch will have a working cell phone for emergency use if needed. A: Ship to Shore radios will be used for communication between vessel and safety watch. Only perform intake work if flow is less than 	U	Cr	L

Job Steps	Hazards	Controls	P	S	RAC
		7,500 cubic feet per second (cfs) as it can be dangerous to hold the boat in place at high flows.			
	Cold water work	<ul style="list-style-type: none"> A: When the water temperature is below 40°F, field personnel working on or near water shall wear a float coat and bib overalls (e.g., a full two-piece “Mustang” survival suit or similar) or a one-piece survival suit. If the water temperature is between 40°F and 50°F, field personnel shall wear a float coat. Suits or float coats shall be U.S. Coast Guard approved. If extremely cold or severe weather conditions are forecast, work activities should be postponed. 	S	Cr	M
	Contact with cutting/saw blade causing laceration	<ul style="list-style-type: none"> A: Perform work in a controlled and cautious manner. P: Wear leather or canvas cut-resistant gloves. 	U	M	L
	Using dull saw blades	<ul style="list-style-type: none"> En: To minimize flying debris while cutting, ensure blades are sharp and in good working condition; discard blades if dull or damaged. 	U	M	L
	Flying debris in eyes while cutting	<ul style="list-style-type: none"> A: Keep work area clear of people. P: Always wear safety glasses 	U	M	L
	Hand injury from tool misuse	<ul style="list-style-type: none"> P: Wear appropriate canvas or leather work gloves. En: Use proper tool for task. 	U	M	L
	Boat capacity	<ul style="list-style-type: none"> El: A placard indicating the weight and passenger limits will be maintained on all vessels. The number of passengers and equipment will be within limits at all times. If conditions warrant (i.e., fast river flows), the weight capacity will be reduced to maintain boat stability. 	U	Cr	L

Job Steps	Hazards	Controls	P	S	RAC
	River flows	<ul style="list-style-type: none"> A: The river flows will be monitored prior to leaving the dock or boat launch and periodically throughout the day. Work will not be conducted by boat within 3,000 feet of a dam when Fort Edward flows are greater than 10,000 cfs or within 1,000 feet at any flow. All on- and near-water work will be conducted according to Attachment 6 of the Health and Safety Plan– Anchor QEA Monitoring Vessel High Flow Operation Assessment June 3, 2011. 	U	Ca	M
	Loading/unloading equipment onto vessel	<ul style="list-style-type: none"> En: Tie off boat securely to the dock. A: Use rails or assistance from someone on the dock. A: Be cautious when entering or exiting the vessel. With one hand on the boat, quickly lower straight down into the center of the craft. Never jump into or off of a vessel. A: Avoid directly carrying anything on or off the vessel. Load the items off the pier or have someone hand them to you one by one. A: Never overload the vessel. A: Keep weight toward center of the boat and center of gravity as low as possible. A: Distribute equipment evenly on vessel. 	S	M	L
	Slips, trips, falls	<ul style="list-style-type: none"> A: Be aware of potentially slippery surfaces and tripping hazards. A: Wear footwear that has sufficient traction to reduce risk of slipping. A: Avoid standing or walking around in a moving vessel. The exception would be if the vessel has side safety railings and is moving at low speed. P: Wear steel-toed rubber boots versus over-the-shoe rubber boots. 	S	M	L

Job Steps	Hazards	Controls	P	S	RAC
		<ul style="list-style-type: none"> • A: Work slowly during transit. Jumping, running, and horseplay are prohibited. • A: Proceed carefully on floating docks and ramps. • A: Keep all areas clean and free of debris to deter any unnecessary trips and falls. • EI: Clean up all spills immediately. • A: Notify project safety personnel of any unsafe conditions. 			
	Slips, trips, falls off boat and drowning hazards	<ul style="list-style-type: none"> • P: Wear footwear that has sufficient traction to reduce risk of slipping. • P: Wear PFD. • A: Be aware of any obstacles on boat deck. 	U	Ca	M
	Man overboard	<ul style="list-style-type: none"> • A: Yell "man overboard!" • A: If the engine is running, place the transmission in neutral and swing the stern clear to keep from hitting the person. • A: Call 911, as appropriate. • A: Assign a spotter to keep the person in sight at all times. • A: Contact nearby vessels for assistance. • P: Throw flotation devices immediately. • A: Recover person from water. • A: If you fall overboard, hold your mouth and nose closed and protect your head. • A: When you reach the surface, look for movement, listen for sounds, and call for help. Use the whistle attached to the PFD and activate the beacon light. • A: It is only sensible to swim if there is reason to believe that a chance of reaching your destination exists. Excessive movement in cold water may hasten hypothermia. • A: Wear PFD. 	U	Ca	M

Job Steps	Hazards	Controls	P	S	RAC
	Muscle strain/injuries from improper lifting	<ul style="list-style-type: none"> • A: Personnel will utilize proper lifting techniques or ask for assistance with moving/lifting objects. • A: Load items off from the boat or have someone hand them to you one by one. 	L	M	M
	Heat stress	<ul style="list-style-type: none"> • A: Adjust work schedules, as necessary. • A: Perform work during cooler hours of the day if possible or at night if possible and if adequate lighting can be provided. • En: Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods. • A: Maintain hydration. • A: Train workers to recognize the symptoms of heat-related illness. 	U	N	L
	Cold stress	<ul style="list-style-type: none"> • En: Provide shelter (enclosed, heated environment) to protect personnel during rest periods. • A: Educate workers to recognize the symptoms of frostbite and hypothermia. • P: Have a dry change of clothing available. • A: Train workers to recognize the symptoms of cold-related illness. 	O	N	L
	Rain	<ul style="list-style-type: none"> • P: Wear appropriate Personal Protective Equipment (PPE) (i.e., rain gear). • A: Be aware of slip hazards, puddles, and electrical hazards when working near water, etc. 	S	Cr	M
	Sunshine	<ul style="list-style-type: none"> • P: Have sunscreen available for ultraviolet protection. Have water available for dehydration. 	O	N	L
	Fog	<ul style="list-style-type: none"> • A: Wait for fog to lift and there is adequate visibility before operating sampling vessel. 	L	N	L

Job Steps	Hazards	Controls	P	S	RAC
	Lightning	<ul style="list-style-type: none"> • A: Do not begin or continue work until lightning subsides for 20 minutes. • A: Immediately head for shore if on the water and lightning is observed. • A: If you are not able to get to shore, disconnect and do not use or touch the major electronic equipment, including the radio, throughout the duration of the storm. 	S	N	L
	Boat traffic	<ul style="list-style-type: none"> • A: Maintain a safe operating distance from shoreline, other vessels, etc. 	U	Ca	M
	Waves, surges, currents	<ul style="list-style-type: none"> • A: Be aware of sudden surges caused by incoming waves, unstable waters, and currents. 	S	N	L
	Fire or major emergency – abandon ship	<ul style="list-style-type: none"> • A: Be prepared to abandon ship in the event of fire too large to control with fire extinguisher or other major emergency. • A: Only the boat captain can order abandon ship. • A: Communicate intent to abandon ship to all personnel on board. • A: Call 911. • A: Notify nearby vessels of intent to abandon ship. • A: Notify Project Manager and project safety personnel, if time permits. • A: Be aware of position of the propeller before abandoning ship. • A: Identify a rally point for all personnel. • A: Know the dangers of hypothermia. • A: Use the buddy system to support injured personnel. 	U	Ca	M
	Pinch points	<ul style="list-style-type: none"> • A: Maintain awareness of procedures underway and be attentive of sampling operations. • A: Maintain distance when lowering spuds. 	S	M	L

Job Steps	Hazards	Controls	P	S	RAC
		<ul style="list-style-type: none"> A: Maintain safe distance from winches when in operation. 			
	Overhead hazards	<ul style="list-style-type: none"> P: Wear hard hat. El: Tighten bolts on spud sections. 	S	CR	M

Equipment to be Used	Training Requirements/Competent or Qualified Personnel	Inspection Requirements
<ul style="list-style-type: none"> Generator Saw Pipe cutters Wrenches Electric water pump Davit 18-foot work boat PPE: Hard hat, safety glasses, steel-toed boots/shoes, personal flotation device (PFD; float coat/suit per water temperature), and cut-resistant gloves 	<ul style="list-style-type: none"> Medical Monitoring 40-hour HAZWOPER 8-hour Refresher CPR/First Aid Boater Safety Hudson River Site Safety 	<ul style="list-style-type: none"> Monitor workers' physical conditions. Monitor outside temperature versus worker activity. Submit and follow river work permit and float plan. PFDs should be inspected daily prior to use. PPE should be inspected daily prior to use. Perform boat inspection prior to use. Continually survey area during on-going work activities. Inspect tool prior to use.

Job Safety Analysis (JSA)

Activity/Work Task: Monitoring Buoy Deployment, Sampling, and Retrieval		Overall Risk Assessment Code (RAC) (Use highest code)				M	
Project Location: Hudson River		Risk Assessment Code (RAC) Matrix					
Contract Number: TBD		Severity	Probability				
Date Prepared: 05/4/2014	Revised: 04/28/2015 – KMB		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by: John Roche/Scientist II		Catastrophic	E	E	H	H	M
		Critical	E	H	H	M	L
Reviewed by: Kevin Ballou/Site Safety Officer		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Employer/GBU: Anchor QEA		Step 1: Review each “Hazard” with identified safety “Controls” and determine RAC (see above). The RAC is developed after correctly identifying all the hazards and fully implementing all controls.					
Notes: (Field Notes, Review Comments, etc.) PPE: Hard hat, safety glasses, steel toed boots/shoes, PFD (Float coat / suit per water temp), leather gloves, cut resistant gloves, hearing protection, and steel toed rubber boots.	Controls: Ei “Eliminate” S “Substitute” En “Engineer” A “Administrative” P “PPE”	P “Probability” is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.				RAC Chart	
		S “Severity” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible.				E = Extremely High Risk	
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on JSA. Annotate the overall highest RAC at the top of JSA.				H = High Risk	
						M = Moderate Risk	
				L = Low Risk			

Job Steps	Hazards	Controls	P	S	RAC
Boating	Boating hazards	<ul style="list-style-type: none"> A: Watch for other boats and equipment A: Watch for underwater obstructions A: Follow all posted project rules and guidelines including but not limited to wake regulations, speed limits, etc. A: Follow requirements in JSA004 – Boat/Barge Activities A: Follow requirements in JSA009 – Water 	U	Cr	L

Job Steps	Hazards	Controls	P	S	RAC
		Sampling <ul style="list-style-type: none"> A: If deployment is located within the vicinity of low head dams; follow requirements in the JSA for Water Sampling Near Low Head Dams 			
Deploying/retrieving anchor lines	Laceration from handling anchor lines	<ul style="list-style-type: none"> P: Wear reinforced canvas gloves 	O	M	M
	Muscle strain/injuries from improper lifting	<ul style="list-style-type: none"> En: use mechanical assistance if necessary A: Personnel will utilize proper lifting techniques or ask for assistance with moving/lifting objects. A: Acquire help from co-workers when lifting large, heavy equipment. 	O	M	M
General boat based activities	Heat stress	<ul style="list-style-type: none"> A: Adjust work schedules, as necessary. A: Perform work during cooler hours of the day if possible or at night if practicable and if adequate lighting can be provided. En: Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods. A: Maintain body fluids at normal levels. A: Train workers to recognize the symptoms of heat-related illness. 	O	N	L
	Cold Water Work	<ul style="list-style-type: none"> A: When the water temperature is below 40°F, field personnel working on or near water shall wear a float coat and bib-overalls (e.g., a full two-piece “Mustang” survival suit or similar) or a one-piece survival suit. If the water temperature is between 40°F and 50°F field personnel shall wear a float coat. Suits or float coats shall be U.S. Coast Guard approved. If extremely cold or severe weather conditions are forecast, work activities should be postponed. 	S	Cr	M
	Rain	<ul style="list-style-type: none"> P: Wear appropriate PPE (rain gear). 	O	N	L

Job Steps	Hazards	Controls	P	S	RAC
		<ul style="list-style-type: none"> A: Be aware of slip hazards, puddles, and electrical hazards when working near water, etc. 			
	Sunshine	<ul style="list-style-type: none"> P: Have sunscreen available for ultraviolet protection. Have water available for dehydration. 	L	N	L
	Fog	<ul style="list-style-type: none"> A: Wait for fog to lift and there is adequate visibility before operating sampling vessel. 	S	N	L
	Lightning	<ul style="list-style-type: none"> A: Do not begin or continue work until lightning subsides for 20 minutes. A: Immediately head for shore if on the water and lightning is observed. A: If you are not able to get to shore, disconnect and do not use or touch the major electronic equipment, including the radio, throughout the duration of the storm. 	U	Ca	M
	Skin/eye contact with contaminated materials	<ul style="list-style-type: none"> P: Wear appropriate PPE. A: If exposure to contaminated materials occurs, promptly wash contaminated skin using soap or mild detergent and water. Rinse eyes with large amounts of water. 	S	Cr	M
	Slips, trips, falls off boat Drowning hazards	<ul style="list-style-type: none"> A: Submit River Work Permit to Parsons prior to initiation of work. P: Wear footwear that has sufficient traction to reduce risk of slipping. P: Wear personal flotation device. A: Be aware of any obstacles on boat deck. 	U	Ca	M
	Slips, Trips, Falls	<ul style="list-style-type: none"> A: Be aware of potentially slippery surfaces and tripping hazards. A: Wear footwear that has sufficient traction to reduce risk of slipping. A: Avoid standing or walking around in a moving vessel. The exception would be if the vessel has side safety railings and is moving at low speed. 	S	M	L

Job Steps	Hazards	Controls	P	S	RAC
		<ul style="list-style-type: none"> • P: Wear steel-toed rubber boots versus over-the-shoe rubber boots. • A: Work slowly during transit. Jumping, running, and horseplay are prohibited. • A: Proceed carefully on floating docks and ramps. • A: Keep all areas clean and free of debris to deter any unnecessary trips and falls. • EI: Clean up all spills immediately. • A: Notify project safety personnel of any unsafe conditions. 			
	Noise exposure	<ul style="list-style-type: none"> • P: Hearing protection will be worn in high noise areas or when working around heavy machinery or equipment (action level of 85 decibels [DBA] averaged over an eight-hour day). 	S	M	L
	Struck by Pinch Points	<ul style="list-style-type: none"> • A: Maintain distance when lowering spuds. • A: Maintain safe distance from winches and cables when in operation. • A: Maintain safe distance from potential swinging buoys. 	S	M	L
	Working above a low head Dam (no work is to be conducted within 1000 feet of any low head dam, or beyond the dam safety line or markers)	<ul style="list-style-type: none"> • A: Avoid working within 3,000 feet of a Dam if possible. • A: Work will not be conducted by boat within 3,000 feet of a dam when Fort Edward flows are greater than 10,000 cubic feet per second (cfs). • A: Near Dam Plan, Work Permit and Float Plan must be submitted and approved by the Construction Manager before any work near dams. • A: Health and Safety Manager should be contacted at the beginning and end of each day of work near dams. • A: When approaching dam, be aware of boat proximity to dam marker buoys; no work is 	U	Ca	M

Job Steps	Hazards	Controls	P	S	RAC
		<p>to be performed on the downstream side of the buoys.</p> <ul style="list-style-type: none"> • A: Before leaving the dock, double check anchor and anchor line, spuds (if applicable), and fuel level in boat motor. Take note of life-saving device locations. Ensure marine radio is functioning, and contact with vessel tracking is occurring. • A: Never work near dams with any fewer than three people on board, or two people on board and one on shore; there should always be a dedicated driver, a worker, and a spotter. 			

Equipment to be Used	Training Requirements/Competent or Qualified Personnel	Inspection Requirements
<ul style="list-style-type: none"> • PPE: Hard hat, safety glasses, steel toed boots/shoes, PFD (Float coat / suit per water temp), leather gloves, cut resistant gloves, hearing protection, and steel toed rubber boots. • Pontoon Boat • Crane • Generator • Bolt cutters 	<ul style="list-style-type: none"> • Medical monitoring • 40 hour HAZWOPER • 8 hour refresher • CPR/First Aid • Boater Safety • Hudson River site safety 	<ul style="list-style-type: none"> • Ensure there are fuel, safety equipment and other necessary items on board prior to departure. • Monitor workers physical conditions. • Monitor outside temperature versus worker activity. • Monitor air and water temperature. • Cold weather gear inspected daily. • PPE should be inspected daily prior to use. • Inspect boat lights. • Inspection of PPE prior to each use. • Submit river work permit/float plan. • PFDs should be inspected daily prior to use. • Continually survey area during on-going work activities

Job Safety Analysis (JSA)

Activity/Work Task: Motor Vehicle Operation		Overall Risk Assessment Code (RAC) (Use highest code)				M	
Project Location: Hudson River		Risk Assessment Code (RAC) Matrix					
Contract Number: TBD		Severity	Probability				
Date Prepared: 05/04/2014	Revised: 04/28/2015 – KMB		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by: Kevin Ballou/Health and Safety Officer		Catastrophic	E	E	H	H	M
		Critical	E	H	H	M	L
Reviewed by: Christopher Yates/Manager		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Employer/GBU: Anchor QEA		Step 1: Review each “Hazard” with identified safety “Controls” and determine RAC (see above). The RAC is developed after correctly identifying all the hazards and fully implementing all controls.					
Notes: PPE: Hard hat, safety glasses, and steel-toed boots/shoes	Controls: EI “Eliminate” S “Substitute” En “Engineer” A “Administrative” P “PPE”	P “Probability” is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.				RAC Chart	
		S “Severity” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible.					
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on JSA. Annotate the overall highest RAC at the top of JSA.					
		E = Extremely High Risk					
		H = High Risk					
		M = Moderate Risk					
		L = Low Risk					

Job Steps	Hazards	Controls	P	S	RAC
Motor vehicle operation	Vehicle collisions	<ul style="list-style-type: none"> A: Plan your travel route in advance and check maps for directions or discuss with colleagues. En: Clean windows and mirrors as needed throughout the trip. P: Wear sun glasses, as needed. EI: Follow vehicle maintenance schedule to reduce possibilities of breakdown while 	U	CR	L

Job Steps	Hazards	Controls	P	S	RAC
		driving.			
	Distraction while driving	<ul style="list-style-type: none"> A: Stop driving a vehicle, regardless of the speed (e.g., even 5 mph) or location (e.g., private road), when the potential of being distracted by conversation exists. A: Drivers are prohibited from using hand-held communication devices (e.g., cell phones) while operating any motor vehicle. 	U	M	L
	Fatigue/falling asleep	<ul style="list-style-type: none"> EI: Get adequate rest prior to driving. S: Pull over and rest if experiencing drowsiness. A: Change seat position, stretch, open the window, and adjust radio if experiencing drowsiness. 	U	CR	M
	Weather/road conditions	<ul style="list-style-type: none"> A: Check road and weather conditions prior to driving. A: Be prepared to adjust driving if conditions change. A: Travel in daylight hours, if possible. A: Give yourself plenty of time to allow for slow-downs due to construction, accidents, or other unforeseen circumstances. En: Use lights at night and lights/wipers during inclement weather. 	S	CR	M
	Launching accidents	<ul style="list-style-type: none"> A: When backing up vehicle, use a spotter for dim-light situations, high traffic areas, or where vision is obscured by trailer and boat being hauled. 	U	CA	M
Trailer	Boat not secured properly	<ul style="list-style-type: none"> En: Ensure front of boat is latched to the trailer. En: Ensure rear of boat is strapped down. En: Boat motor should be in the up position. A: All equipment on the boat should be secured. 	S	Cr	M

Job Steps	Hazards	Controls	P	S	RAC
		<ul style="list-style-type: none"> En: Ensure female and male ends of the trailer hitch are secure and locked and chains are attached. En: Ensure lights are plugged in while driving and unplugged when launching and pulling vessel. 			
	Height constraints for traveling with boat and trailer on the road	<ul style="list-style-type: none"> El: Check spud height; remove all spuds except for one in the spud guide hole. El: Lay down any poles, antennas, etc. that may be sticking up beyond a safe trailering height. En: Unless boat is being docked for a long period of time, at the end of the work day even if the boat is being docked it should be left in a trailerable state. 	U	Cr	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel	Inspection Requirements
<ul style="list-style-type: none"> Ford F250, GMC Pickup, GMC Van Various boat trailers PPE: Hard hat, safety glasses, and steel-toed boots/shoes 	<ul style="list-style-type: none"> Medical Monitoring 40-hour HAZWOPER 8-hour Refresher CPR/First Aid Boater Safety Hudson River Site Safety 	<ul style="list-style-type: none"> Inspect all fluid levels and air pressure in tires, adjust mirrors and seat positions appropriately, and watch fuel level and fill up when level is low. Be aware of trailer/boat height when traveling underneath bridges and high tension wires.

Job Safety Analysis (JSA)

Activity/Work Task: Near-Field Water Sampling		Overall Risk Assessment Code (RAC) (Use highest code)				M	
Project Location: Hudson River		Risk Assessment Code (RAC) Matrix					
Contract Number: TBD		Severity	Probability				
Date Prepared: 05/04/2014	Revised: 04/28/2015 – KMB		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by: Kevin Ballou/Site Safety Officer update 4/28/2015 KMB		Catastrophic	E	E	H	H	M
		Critical	E	H	H	M	L
Reviewed by: Christopher Yates/Project Manager		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Employer/GBU: Anchor QEA		Step 1: Review each “Hazard” with identified safety “Controls” and determine RAC (see above). The RAC is developed after correctly identifying all the hazards and fully implementing all controls.					
Notes: PPE: Hard hat, safety glasses, steel-toed boots/shoes, personal flotation device (PFD; float coat/suit per water temperature), nitrile gloves, cut-resistant gloves, hearing protection, and Tyvek coveralls as needed	Controls: EI “Eliminate” S “Substitute” En “Engineer” A “Administrative” P “PPE”	P “Probability” is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.				RAC Chart	
		S “Severity” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible.					
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on JSA. Annotate the overall highest RAC at the top of JSA.					
		E = Extremely High Risk H = High Risk M = Moderate Risk L = Low Risk					

Job Steps	Hazards	Controls	P	S	RAC
Water sampling from near-field buoys	Boating hazards	<ul style="list-style-type: none"> Follow JSA for boat operations. A: Make sure water is deep enough for the draft of the vessel. 			
	Cold water work	<ul style="list-style-type: none"> P: When the water temperature is below 40°F, field personnel working on or near water shall wear a float coat and bib overalls (e.g., a full two-piece “Mustang” survival suit or similar) or a one-piece survival suit. If the water temperature is 	S	Cr	M

Job Steps	Hazards	Controls	P	S	RAC
		between 40°F and 50°F, field personnel shall wear a float coat. Suits or float coats shall be U.S. Coast Guard approved. If extremely cold or severe weather conditions are forecast, work activities should be postponed.			
	Ingestion of contaminants, skin/eye contact with contaminants	<ul style="list-style-type: none"> • P: Wear appropriate Personal Protective Equipment (PPE). • A: Contact 911, as necessary. • A: Move the exposed person away from source of contamination; rinse mouth. Perform CPR if breathing stops. • A: If exposure to contaminated materials occurs, promptly wash contaminated skin using soap or mild detergent and water. Rinse eyes with large amounts of water. • A: Keep the affected person comfortable and at rest. 	U	Cr	L
	Biological hazards	<ul style="list-style-type: none"> • P: Personnel will be aware of potential exposure to biological hazards. • P: Wear appropriate clothing (hat, long-sleeve shirt, long pants, leather gloves, boots, and Tyvek coveralls, as appropriate) and insect repellent. 	U	M	L
	Boat capacity	<ul style="list-style-type: none"> • EI: A placard indicating the weight and passenger limits will be maintained on all vessels. The number of passengers and equipment will be within limits at all times. If conditions warrant (i.e., fast river flows), the weight capacity will be reduced to maintain boat stability. 	U	Cr	L
	High river flows	<ul style="list-style-type: none"> • EI: The river flows will be monitored prior to leaving the dock or boat launch and periodically throughout the day. • A: Work will not be conducted by boat within 3,000 feet of a dam when Fort Edward flows are greater than 10,000 	U	Ca	M

Job Steps	Hazards	Controls	P	S	RAC
		<p>cubic feet per second (cfs).</p> <ul style="list-style-type: none"> A: All on- and near-water work will be conducted according to Anchor QEA Monitoring Vessel High Flow Operation Assessment June 3, 2011. 			
	Loading/unloading equipment onto vessel	<ul style="list-style-type: none"> A: Secure boat. En: Use rails or assistance from someone on the dock. A: Be cautious when entering or exiting the vessel. With one hand on the boat, quickly lower straight down into the center of the craft. Never jump into or off of a vessel. A: If others are boarding, have them step along the fore or aft centerline of the boat while the boat is held in place along the pier. A: Always have one person remain aboard the vessel when docking. If only one person is on the vessel, it should be tied off while the person remains in the vessel. A: Never straddle the vessel and the dock when tying off or pushing off from the dock. A: Avoid directly carrying anything on or off the vessel. Load the items off the pier or have someone hand them to you one by one. El: Never overload the vessel. A: Keep weight toward center of the boat and center of gravity as low as possible. En: Distribute equipment evenly on vessel. 	S	M	L
	Slips, trips, falls	<ul style="list-style-type: none"> A: Be aware of potentially slippery surfaces and tripping hazards. A: Wear footwear that has sufficient traction to reduce risk of slipping. A: Avoid standing or walking around in a moving vessel. The exception would be if the vessel has side safety railings and is 	S	M	L

Job Steps	Hazards	Controls	P	S	RAC
		<p>moving at low speed.</p> <ul style="list-style-type: none"> • P: Wear steel-toed rubber boots versus over-the-shoe rubber boots. • A: Work slowly during transit. Jumping, running, and horseplay are prohibited. • A: Proceed carefully on floating docks and ramps. • A: Keep all areas clean and free of debris to deter any unnecessary trips and falls. • EI: Clean up all spills immediately. • A: Notify project safety personnel of any unsafe conditions. 			
	Slips, trips, falls off boat; drowning hazards	<ul style="list-style-type: none"> • P: Wear footwear that has sufficient traction to reduce risk of slipping. • P: Wear PFD. • A: Be aware of any obstacles on boat deck. • P: PFDs should be inspected daily prior to use. • A: When reaching over the side of the boat keep center of gravity inside the boat and keep contact with the vessel in case of sudden boat movement. 	U	Ca	M
	Man overboard	<ul style="list-style-type: none"> • A: Yell "man overboard!" • A: If the engine is running, place the transmission in neutral and swing the stern clear to keep from hitting the person. • A: Call 911, as appropriate. • A: Assign a spotter to keep the person in sight at all times. • A: Contact nearby vessels for assistance. • P: Throw flotation devices immediately. • A: Recover person from water. • A: If you fall overboard, hold your mouth and nose closed and protect your head. • A: When you reach the surface, look for movement, listen for sounds, and call for help. Use the whistle attached to the PFD 	U	Ca	M

Job Steps	Hazards	Controls	P	S	RAC
		and activate the beacon light. <ul style="list-style-type: none"> A: It is only sensible to swim if there is reason to believe that a chance of reaching your destination exists. Excessive movement in cold water may hasten hypothermia. A: Wear PFD. 			
	Muscle strain/injuries from improper lifting	<ul style="list-style-type: none"> A: Personnel will utilize proper lifting techniques or ask for assistance with moving/lifting objects. A: Load items off from the boat or have someone hand them to you one by one. 	L	M	M
	Heat stress	<ul style="list-style-type: none"> A: Adjust work schedules, as necessary. A: Perform work during cooler hours of the day if possible or at night if possible and if adequate lighting can be provided. En: Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods. A: Maintain hydration. A: Train workers to recognize the symptoms of heat-related illness. 	O	N	L
	Cold stress	<ul style="list-style-type: none"> En: Provide shelter (enclosed, heated environment) to protect personnel during rest periods. A: Educate workers to recognize the symptoms of frostbite and hypothermia. P: Have a dry change of clothing available. A: Train workers to recognize the symptoms of cold-related illness. 	S	Cr	M
	Rain	<ul style="list-style-type: none"> P: Wear appropriate PPE (i.e., rain gear). A: Be aware of slip hazards, puddles, and electrical hazards when working near water, etc. 	O	N	L
	Sunshine	<ul style="list-style-type: none"> P: Have sunscreen available for ultraviolet 	L	N	L

Job Steps	Hazards	Controls	P	S	RAC
		protection. Have water available for dehydration.			
	Fog	<ul style="list-style-type: none"> A: Wait for fog to lift and ensure there is adequate visibility before operating sampling vessel. 	S	N	L
	Lightning	<ul style="list-style-type: none"> A: Do not begin or continue work until lightning subsides for 20 minutes. A: Immediately head for shore if on the water and lightning is observed. A: If you are not able to get to shore, disconnect and do not use or touch the major electronic equipment, including the radio, throughout the duration of the storm. 	U	Ca	M
	Boat traffic	<ul style="list-style-type: none"> A: Maintain a safe operating distance from shoreline, other vessels, etc. 	S	N	L
	Waves, surges, currents	<ul style="list-style-type: none"> A: Be aware of sudden surges caused by incoming waves, unstable waters, and currents. 	S	N	L
	Fire or major emergency – abandon ship	<ul style="list-style-type: none"> A: Be prepared to abandon ship in the event of fire that is too large to control with fire extinguisher or other major emergency. A: Only the boat captain can order abandon ship. A: Communicate intent to abandon ship to all personnel on board. A: Call 911. A: Notify nearby vessels of intent to abandon ship. A: Notify Project Manager and project safety personnel, if time permits. A: Be aware of position of the propeller before abandoning ship. A: Identify a rally point for all personnel. A: Know the dangers of hypothermia. 	U	Ca	M

Job Steps	Hazards	Controls	P	S	RAC
		<ul style="list-style-type: none"> A: Use the buddy system to support injured personnel. 			
	Pinch points	<ul style="list-style-type: none"> A: Maintain awareness of procedures underway and be attentive of sampling operations. A: Maintain distance when lowering spuds. A: Maintain safe distance from winches when in operation. 	S	M	L
	Overhead hazards	<ul style="list-style-type: none"> P: Wear hard hat. En: Tighten bolts on spud sections. 	S	CR	M

Equipment to be Used	Training Requirements/Competent or Qualified Personnel	Inspection Requirements
<ul style="list-style-type: none"> Generator Sampling jars MADIS sampler Davit 18-foot Jon Boat PPE: Hard hat, safety glasses, steel-toed boots/shoes, PFD (float coat/suit per water temperature), nitrile gloves, cut-resistant gloves, hearing protection, and Tyvek coveralls as needed 	<ul style="list-style-type: none"> Medical Monitoring 40-hour HAZWOPER 8-hour Refresher CPR/First Aid Boater Safety Hudson River Site Safety 	<ul style="list-style-type: none"> Monitor workers' physical conditions. Monitor outside temperature versus worker activity. Submit river work permit/float plan. PFDs should be inspected daily prior to use. Inspect for potential slips, trips, falls. PPE should be inspected daily prior to use. Inspect boat before use. Continually survey area during on-going work activities. Inspect tool prior to use.

Job Safety Analysis (JSA)

Activity/Work Task: Sediment Sampling		Overall Risk Assessment Code (RAC) (Use highest code)				M	
Project Location: Hudson River		Risk Assessment Code (RAC) Matrix					
Contract Number: TBD		Severity	Probability				
Date Prepared: 05/05/2014	Revised: 04/28/2015 – KMB		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by: Chris Pelrah/Scientist		Catastrophic	E	E	H	H	M
		Critical	E	H	H	M	L
Reviewed by: Kevin Ballou/Site Safety Officer		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Employer/GBU: Anchor QEA		Step 1: Review each “Hazard” with identified safety “Controls” and determine RAC (see above). The RAC is developed after correctly identifying all the hazards and fully implementing all controls.					
Notes: PPE: Hard hat, safety glasses, steel-toed boots/shoes, personal flotation device (PFD; float coat/suit per water temperature), nitrile gloves, and cut-resistant gloves	Controls: EI “Eliminate” S “Substitute” En “Engineer” A “Administrative” P “PPE”	P “Probability” is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.				RAC Chart	
		S “Severity” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible.					
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on JSA. Annotate the overall highest RAC at the top of JSA.					
		E = Extremely High Risk H = High Risk M = Moderate Risk L = Low Risk					

Job Steps	Hazards	Controls	P	S	RAC
Boat-based field activities	Boating hazards	<ul style="list-style-type: none"> Follow JSA for boat activities. 			
	Cold water work	<ul style="list-style-type: none"> P: When the water temperature is below 40°F, field personnel working on or near water shall wear a float coat and bib overalls (e.g., a full two-piece “Mustang” survival suit or similar) or a one-piece survival suit. If the water temperature is between 40°F and 50°F field personnel 	S	Cr	M

Job Steps	Hazards	Controls	P	S	RAC
		shall wear a float coat. Suits or float coats shall be U.S. Coast Guard approved. If extremely cold or severe weather conditions are forecast, work activities should be postponed.			
	Ingestion of contaminants, skin/eye contact with contaminants	<ul style="list-style-type: none"> • P: Wear appropriate Personal Protective Equipment (PPE). • A: Contact 911, as necessary. • A: Move the exposed person away from source of contamination; rinse mouth. Perform CPR if breathing stops. • A: If exposure to contaminated materials occurs, promptly wash contaminated skin using soap or mild detergent and water. Rinse eyes with large amounts of water. • A: Keep the affected person comfortable and at rest. 	U	Cr	L
	Boat capacity	<ul style="list-style-type: none"> • EI: A placard indicating the weight and passenger limits will be maintained on all vessels. The number of passengers and equipment will be within limits at all times. If conditions warrant (i.e., fast river flows), the weight capacity will be reduced to maintain boat stability. 	U	Cr	L
	River flows	<ul style="list-style-type: none"> • A: The river flows will be monitored prior to leaving the dock or boat launch and periodically throughout the day. • Work will not be conducted by boat within 3,000 feet of a dam when Fort Edward flows are greater than 10,000 cubic feet per second (cfs) or within 1,000 feet at any flow. • All on- and near-water work will be conducted according to Anchor QEA Monitoring Vessel High Flow Operation Assessment June 3, 2011. 	U	Ca	M
	Loading/unloading equipment onto vessel	<ul style="list-style-type: none"> • A: Secure boat. 	S	M	L

Job Steps	Hazards	Controls	P	S	RAC
		<ul style="list-style-type: none"> • En: Use rails or assistance from someone on the dock. • A: Be cautious when entering or exiting the vessel. With one hand on the boat, quickly lower straight down into the center of the craft. Never jump into or off of a vessel. • A: If others are boarding, have them step along the fore or aft centerline of the boat while the boat is held in place along the pier. • A: Always have one person remain aboard the vessel when docking. If only one person is on the vessel, it should be tied off while the person remains in the vessel. • A: Never straddle the vessel and the dock when tying off or pushing off from the dock. • A: Avoid directly carrying anything on or off the vessel. Load the items off the pier or have someone hand them to you one by one. • El: Never overload the vessel. 			
	Slips, trips, falls	<ul style="list-style-type: none"> • A: Be aware of potentially slippery surfaces and tripping hazards. • A: Wear footwear that has sufficient traction to reduce risk of slipping. • A: Avoid standing or walking around in a moving vessel. The exception would be if the vessel has side safety railings and is moving at low speed. • P: Wear steel-toed rubber boots versus over-the-shoe rubber boots. • A: Work slowly during transit. Jumping, running, and horseplay are prohibited. • A: Proceed carefully on floating docks and ramps. • A: Keep all areas clean and free of debris to 	S	M	L

Job Steps	Hazards	Controls	P	S	RAC
		deter any unnecessary trips and falls. <ul style="list-style-type: none"> • EI: Clean up all spills immediately. • A: Notify project safety personnel of any unsafe conditions. 			
	Slips, trips, falls off boat; drowning hazards	<ul style="list-style-type: none"> • P: Wear footwear that has sufficient traction to reduce risk of slipping. • P: Wear PFD. • A: Be aware of any obstacles on boat deck. 	U	Ca	M
	Man overboard	<ul style="list-style-type: none"> • A: Yell "man overboard!" • A: If the engine is running, place the transmission in neutral and swing the stern clear to keep from hitting the person. • A: Call 911, as appropriate. • A: Assign a spotter to keep the person in sight at all times. • A: Contact nearby vessels for assistance. • P: Throw flotation devices immediately. • A: Recover person from water. • A: If you fall overboard, hold your mouth and nose closed and protect your head. • A: When you reach the surface, look for movement, listen for sounds, and call for help. Use the whistle attached to the PFD and activate the beacon light. • A: It is only sensible to swim if there is reason to believe that a chance of reaching your destination exists. Excessive movement in cold water may hasten hypothermia. • A: Wear PFD. 	U	Ca	M
	Muscle strain/injuries from improper lifting	<ul style="list-style-type: none"> • A: Personnel will utilize proper lifting techniques or ask for assistance with moving/lifting objects. • A: Load items off from the boat or have someone hand them to you one by one. 	L	M	M
	Heat stress	<ul style="list-style-type: none"> • A: Adjust work schedules, as necessary. 	O	N	L

Job Steps	Hazards	Controls	P	S	RAC
		<ul style="list-style-type: none"> A: Perform work during cooler hours of the day if possible or at night if possible and if adequate lighting can be provided. En: Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods. A: Maintain hydration. A: Train workers to recognize the symptoms of heat-related illness. 			
	Cold stress	<ul style="list-style-type: none"> En: Provide shelter (enclosed, heated environment) to protect personnel during rest periods. A: Educate workers to recognize the symptoms of frostbite and hypothermia. P: Have a dry change of clothing available. A: Train workers to recognize the symptoms of cold-related illness. 	S	Cr	M
	Rain	<ul style="list-style-type: none"> P: Wear appropriate PPE (i.e., rain gear). A: Be aware of slip hazards, puddles, and electrical hazards when working near water, etc. 	O	N	L
	Sunshine	<ul style="list-style-type: none"> P: Have sunscreen available for ultraviolet protection. Have water available for dehydration. 	L	N	L
	Fog	<ul style="list-style-type: none"> A: Wait for fog to lift and ensure there is adequate visibility before operating sampling vessel. 	S	N	L
	Lightning	<ul style="list-style-type: none"> A: Do not begin or continue work until lightning subsides for 20 minutes. A: Immediately head for shore if on the water and lightning is observed. A: If you are not able to get to shore, disconnect and do not use or touch the major electronic equipment, including the radio, throughout the duration of the storm. 	U	Ca	M

Job Steps	Hazards	Controls	P	S	RAC
	Boat traffic	<ul style="list-style-type: none"> A: Maintain a safe operating distance from shoreline, other vessels, etc. 	S	N	L
	Waves, surges, currents	<ul style="list-style-type: none"> A: Be aware of sudden surges caused by incoming waves, unstable waters, and currents. 	S	N	L
	Fire or major emergency – abandon ship	<ul style="list-style-type: none"> A: Be prepared to abandon ship in the event of fire too large to control with fire extinguisher or other major emergency. A: Only the boat captain can order abandon ship. A: Communicate intent to abandon ship to all personnel on board. A: Call 911. A: Notify nearby vessels of intent to abandon ship. A: Notify Project Manager and project safety personnel, if time permits. A: Be aware of position of the propeller before abandoning ship. A: Identify a rally point for all personnel. A: Know the dangers of hypothermia. A: Use the buddy system to support injured personnel. 	U	Ca	M
	Pinch points	<ul style="list-style-type: none"> A: Maintain distance when lowering spuds. A: Maintain safe distance from winches when in operation. A: Maintain awareness of procedures underway and be attentive of sampling operations. A: Maintain safe distance from closing mechanisms and moving parts when Van Veen, Ponar, or Ekman dredge is pre-loaded and or triggered. 	S	M	L
	Overhead hazards	<ul style="list-style-type: none"> P: Wear hard hat. A: Watch for swinging vibracore or Van 	S	CR	M

Job Steps	Hazards	Controls	P	S	RAC
		<p>Veen sampler due to wave action or boat being in motion.</p> <ul style="list-style-type: none"> A: Watch for swinging hazard when using attachment poles for Ekman dredge. En: Tighten bolts on spud sections. 			

Equipment to be Used	Training Requirements/Competent or Qualified Personnel	Inspection Requirements
<ul style="list-style-type: none"> Generator Saw Pipe Cutters Wrenches Electric water pump Van Veen sampler Vibracore Ponar/Ekman dredge Davit Pontoon boat PPE: Hard hat, safety glasses, steel-toed boots/shoes, personal flotation device (PFD; float coat/suit per water temperature), nitrile gloves, and cut-resistant gloves 	<ul style="list-style-type: none"> Medical Monitoring 40-hour HAZWOPER 8-hour Refresher CPR/First Aid Boater Safety Hudson River Site Safety 	<ul style="list-style-type: none"> Monitor workers' physical conditions. Monitor outside temperature versus worker activity. Submit river work permit/float plan. PFDs should be inspected daily prior to use. Inspect for potential slips, trips, and falls. PPE should be inspected daily prior to use. Inspect boat before use. Continually survey area during on-going work activities. Inspect tool prior to use.

ATTACHMENT 2

HEAT STRESS MONITORING RECORD



DATE: _____

PROJECT NAME: _____

PROJECT NUMBER: _____

LOCATION: _____

HEAT STRESS MONITORING RECORD

Employee Name	Monitoring Results													
	Initial Reading Time:	First Work Period Time:		Second Work Period Time:		Third Work Period Time:		Fourth Work Period Time:		Fifth Work Period Time:		Sixth Work Period Time:		
	WBGT (°F):	WBGT (°F):		WBGT (°F):		WBGT (°F):		WBGT (°F):		WBGT (°F):		WBGT (°F):		
	Air Temp (°F):	Air Temp (°F):		Air Temp (°F):		Air Temp (°F):		Air Temp (°F):		Air Temp (°F):		Air Temp (°F):		
	Initial Temp:	Initial Temp:	Final Temp:	Initial Temp:	Final Temp:	Initial Temp:	Final Temp:	Initial Temp:	Final Temp:	Initial Temp:	Final Temp:	Initial Temp:	Final Temp:	
	Initial H.R.:	Initial H.R.:	Final H.R.:	Initial H.R.:	Final H.R.:	Initial H.R.:	Final H.R.:	Initial H.R.:	Final H.R.:	Initial H.R.:	Final H.R.:	Initial H.R.:	Final H.R.:	
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	Initial H.R.:	Initial H.R.:	Final H.R.:	Initial H.R.:	Final H.R.:	Initial H.R.:	Final H.R.:	Initial H.R.:	Final H.R.:	Initial H.R.:	Final H.R.:	Initial H.R.:	Final H.R.:	
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	Initial Temp:	Initial Temp:	Final Temp:	Initial Temp:	Final Temp:	Initial Temp:	Final Temp:	Initial Temp:	Final Temp:	Initial Temp:	Final Temp:	Initial Temp:	Final Temp:	
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	Initial Temp:	Initial Temp:	Final Temp:	Initial Temp:	Final Temp:	Initial Temp:	Final Temp:	Initial Temp:	Final Temp:	Initial Temp:	Final Temp:	Initial Temp:	Final Temp:	
	Initial H.R.:	Initial H.R.:	Final H.R.:	Initial H.R.:	Final H.R.:	Initial H.R.:	Final H.R.:	Initial H.R.:	Final H.R.:	Initial H.R.:	Final H.R.:	Initial H.R.:	Final H.R.:	

Notes:

Completed by:

Printed Name

Signature

Date

ATTACHMENT 3

LIGHTNING

2015 RA Health and Safety Plan

LIGHTNING SAFETY

Purpose:

This policy is intended to provide a project-wide guideline for the identification, warning, and safety procedures for lightning for the GE Hudson River Dredging Project. This policy identifies contractor responsibilities, technical equipment requirements, and procedures.

Contractor Responsibilities:

Contractors working on the GEHR Dredging Project who have workers with a potential for exposure to lightning are required to provide either a computer-based weather tracking service (such as the one available via Vessel Traffic Service [VTS]) or a hand-held lightning detection system to identify, track, and warn employees of lightning storms. Workers with a potential for exposure would include, but are not limited to, those performing dredging, surveying, quality-of-life monitoring, habitat restoration, ecological work, wetlands work, sampling, rail operations, and processing. In addition, all contractors are required to monitor weather conditions such as rain, extreme temperatures, heavy winds, etc., through conventional systems such as the National Weather Service and local news. When severe weather conditions develop that would impact project personnel, operations, and/or equipment, the CM and contractors will coordinate appropriate response actions. Each contractor is responsible for documenting the implementation of the lightning safety policy as demonstrated by the completion of the Shelter Risk Assessment Form (Attachment 1) and the Contractor Shut Down and Start-Up Evaluation (Attachment 2) at the beginning of each dredging season.

In order to provide effective shelter in the event of lightning storms or adverse weather, each contractor is responsible for identifying appropriate shelter areas prior to hazardous weather events. Attachment 1, Shelter Risk Assessment Form, or similar tool, will be used to identify and document that safe shelter areas have been identified.

The ranges presented in Table 1 – Distance – Response Action, below, provide some flexibility to be used by the Contractor depending on the actual time needed to safely secure personnel and equipment as predetermined by their Contractor Shut Down and Start-Up Evaluation. The Contractor is also responsible for identifying the appropriate shutdown and start up processes based on the equipment and working atmosphere where they are conducting work as well as the severity and direction of the storm. See Attachment 2.

Technical Equipment Requirements:

Contractors with exposure to lightning are required to acquire either a computer-based weather tracking service or a hand-held portable system with the capability of identifying lightning strikes at long range. This range must encompass the locations of the Contractor's active work crews while working on the Project Site in addition to the surrounding geographical area. The purpose of using a technology-based system (as opposed to visual observation) is to provide a consistent, reliable, and more accurate method of detection and storm clearance. The lightning detection system must be capable of identifying the distance to lightning within a 50-mile range from the various work locations and send out a visual and audible alert when lightning is located within the prescribed distance found in Table 1.

2015 RA Health and Safety Plan

Procedures:

Lightning

Each contractor must assign responsibility to one or more workers for staying apprised of daily-anticipated weather conditions. On days when the potential for lightning is present, hand-held detection systems must be activated and be present in the immediate location of the workers. The detector will be pre-set to provide a visual and audible alert when lightning is located within a prescribed distance as specified below. If the contractor relies on a computer-based weather tracking service, the contractor will monitor the alerts provide by the service. During lightning storms, distance to lightning will be monitored and assessed by the contractor with updates and appropriate response actions provided to the workers.

Table 1 – Distance – Response Action

Lightning Storm Distance	Response Action
Approaching Lightning Storm	
50 – 25 miles	Implement a heightened alert status. Communicate with supervisory and safety personnel that a lightning storm is in the area and is being tracked.
25 – 15 miles	Prepare for shut down in accordance with the Contractor Shut Down and Start-Up Evaluation. Notify supervisory personnel to begin shut-down process of outdoor equipment and activities and identify the nearest appropriate shelter based on the time necessary for shutdown as indicated in Attachment 2. The shut down must be complete when lightning is within a 15-mile range.
15 – 10 miles	Take Shelter. Verify that all workers are accounted for.
< 10 miles	Shelter in place: Maintain workers in shelter, continue to track path and direction of storm.
Retreating Storm	
10 – 15 miles	Continue shelter in place.
15 to 25 miles	Work may resume and appropriate start up measures implemented once the lightning storm has passed the 15-mile distance from the operation and is moving away from the work area. Employees can return from shelter and initiate start-up activities as indicated in Attachment 2.
25 to 50 miles	Continue to monitor the weather pattern for any changes in storm direction until the storm has passed the 50-mile mark.

Note: The ranges presented in Table 1 above are intended to provide guidance and are not to intended to supersede sound professional judgment.

Attachment 1: Shelter Risk Assessment Form

Attachment 2: Contractor Shut Down and Start-Up Evaluation

2015 RA Health and Safety Plan

Attachment 1 GEHR Shelter Risk Assessment Form

Contractor Name: _____

Work Area/Location/Task _____

Date of Assessment: _____

<input type="checkbox"/> Yes <input type="checkbox"/> No	Is the shelter a secured structure with walls, a ceiling, and flooring? Comments:
<input type="checkbox"/> Yes <input type="checkbox"/> No	Will there be enough room in the shelter to accommodate area personnel? Comments:
<input type="checkbox"/> Yes <input type="checkbox"/> No	Are additional shelters available to accommodate area personnel and others if necessary? Comments:
<input type="checkbox"/> Yes <input type="checkbox"/> No	If there is an absence of a secured structure, are there enclosed vehicles close by? Comments:
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do marine vessels used as shelters have enclosed cabins? Comments:
<input type="checkbox"/> Yes <input type="checkbox"/> No	Are shelters located in a close enough proximity to allow employees time to evacuate to the shelters? Comments:
<input type="checkbox"/> Yes <input type="checkbox"/> No	Have shelter locations and designations been communicated to employees? Comments:

Note: "No" answers indicate the need to identify a different shelter or additional shelters.

2015 RA Health and Safety Plan

Attachment 2 Contractor Shut Down and Start-Up Evaluation

Contractor Name: _____

Work Area/Location/Task: _____

Date of Evaluation: _____

Prior to the implementation of this policy, it the Contractor's responsibility to determine what steps need to be implemented to safely shut down and start up work prior to and after a lightning storm event. The following items must be considered in this evaluation:

- Equipment to be shut down.
- Proximity and time needed to secure safe shelter.
- Duration of time necessary to effectively execute a safe shut down.
- Risks to the employees involved in the shut down and start up process.
- Path, duration, and severity of the storm

Specify shut down considerations and procedure here, must include the time necessary to implement shut down (add additional pages if necessary):
--

Specify start-up considerations and procedures here (add additional pages if necessary):
--

ATTACHMENT 4

LIFT PLAN

Anchor QEA Lift Plan

Lift Plan Title: _____

Site / Project Site: _____

Client / Project / Location: _____

Lift Location: _____

Lift Type: ☐ Routine ☐ Non-routine ☐ Critical ☐ Engineered

References: Lift Plan No. _____ Procedures Ref. _____

Risk Assessment No. _____ Drawings Ref. _____

Permit to Work No. _____

Load Details / Crane Details (maximum hook load not to be exceeded)

Load ID (include Load Dimensions):	Center of gravity: <input type="checkbox"/> Obvious <input type="checkbox"/> Estimated <input type="checkbox"/> Drawing	Design lift conditions (maximum): Wind (knots):
Gross lift weight/max. hook load In air: <input type="checkbox"/> Actual <input type="checkbox"/> Assessed	Crane configuration/mode:	Maximum radius:
SWL at this radius:	Design hook height: Maximum hook height:	Other information:

Description of lifting operation

Deployment/retrieval of monitoring buoys from Hudson River using davit crane

Possible safety measures to be considered (tick as applicable and detail in "step-by-step" section overleaf)

To be completed onshore for safety measures included by lift supervisor

<input type="checkbox"/> Weight not verified	<input type="checkbox"/> Lifting equipment/accessories certificates	<input type="checkbox"/> Sudden changes in environmental conditions
<input type="checkbox"/> Stability of load	<input type="checkbox"/> Stability of lifting equipment	<input type="checkbox"/> Load visibility during night work
<input type="checkbox"/> High center of gravity	<input type="checkbox"/> Pre-use equipment checks	<input type="checkbox"/> Blind lifting
<input type="checkbox"/> Awkward size/shape/sharp edges	<input type="checkbox"/> Crane mode verified	<input type="checkbox"/> Lighting pick-up and set-down areas
<input type="checkbox"/> No dedicated lift points	<input type="checkbox"/> Crane stability	<input type="checkbox"/> Dynamic factors involved
<input type="checkbox"/> No certified suspension points for lifting equipment	<input type="checkbox"/> Lifting over plant/equipment/assets	<input type="checkbox"/> Competent and sufficient personnel
<input type="checkbox"/> Packing protection load/lifting equipment/assets	<input type="checkbox"/> Restricted head room	<input type="checkbox"/> Suitable adequate supervision
<input type="checkbox"/> Loose objects removed from load	<input type="checkbox"/> Lay-down area size/strength/stability	<input type="checkbox"/> Correct PPE
<input type="checkbox"/> Load on pallet requires securing	<input type="checkbox"/> Route and lay-down area clear	<input type="checkbox"/> Toolbox talk required
<input type="checkbox"/> Tag lines required	<input type="checkbox"/> Route and lay-down area obstructed	<input type="checkbox"/> Pre-use equipment check
<input type="checkbox"/> Lifting of chemicals	<input type="checkbox"/> Lay-down in operational radius of lifting equipment	<input type="checkbox"/> Working space adequate and unobstructed
<input type="checkbox"/> Access and egress for slinging	<input type="checkbox"/> Conflicting operations	<input type="checkbox"/> Aisles and exit paths unobstructed
<input type="checkbox"/> No lift point directly above load	<input type="checkbox"/> Cultural, communication, language issues	<input type="checkbox"/> Overhead clearance adequate and unobstructed
<input type="checkbox"/> Accessories/equipment fit for purpose/SWL	<input type="checkbox"/> Emergency/rescue plans	
	<input type="checkbox"/> Environment: visibility/wind speed/other	

Lifting of personnel (attach task risk assessment with information on the following)

<input type="checkbox"/> Prevention of person(s) becoming stuck/trapped	<input type="checkbox"/> Environmental hazards	<input type="checkbox"/> Site-specific procedures
<input type="checkbox"/> Prevention of person(s) falling/being crushed	<input type="checkbox"/> Correct PPE/harnesses/etc.	<input type="checkbox"/> Equipment secured in transporter
<input type="checkbox"/> Communications methods	<input type="checkbox"/> Trained/competent personnel	<input type="checkbox"/> Means of rescue
	<input type="checkbox"/> Certification/pre-use of checks	<input type="checkbox"/> Limiting conditions of use

Any further safety measures (as identified in the risk assessment)

(Follow applicable
JSA)

Communications

Communications available:

☐ Radio ☐ Hand signal ☐ Voice ☐ Other (specify):

Communication checks:

☐ Primary checked ☐ Secondary checked

Lifting equipment and accessories to be used (specify type, SWL and configuration)

Step-by-step details of lifting operation

(Responsible)

Technical review

Has a technical review been conducted?

☐ Yes (attach details)

☐ No



Sketches

<p>Sketch detailing the rigging-up of the lifting equipment and lifting accessories <i>(optional)</i></p> <p>(See attachment)</p>	<p>Sketch of initial pick-up location, load path and lay-down area <i>(include any obstructions or equipment clashes that may occur and how they will be avoided)</i></p> <p>(See attachment)</p>
---	---

Debrief and learning points *(did the lift go as planned or are changes to the lift plan required?)*

This is a routine procedure; no modifications needed at this time.

Competent person(s)

Print Name	Mark D. LaRue	Signature		Date:	5/21/2014
Print Name	Christopher Yates	Signature		Date:	5/21/2014



FOLD-**A**-WAY
CRANE

www.westernmule.com

P10 SERIES

Lifting Capacity: 1,000 lbs.

Boom Length: 5 ft.

Featuring a **unique**, lightweight, portable design, for mounting into pickups, service bodies, vans, loading docks, platforms, etc.

Very **compact**, weighing only 132 lbs. installed, and with a fold-down boom design requiring minimal mounting space.

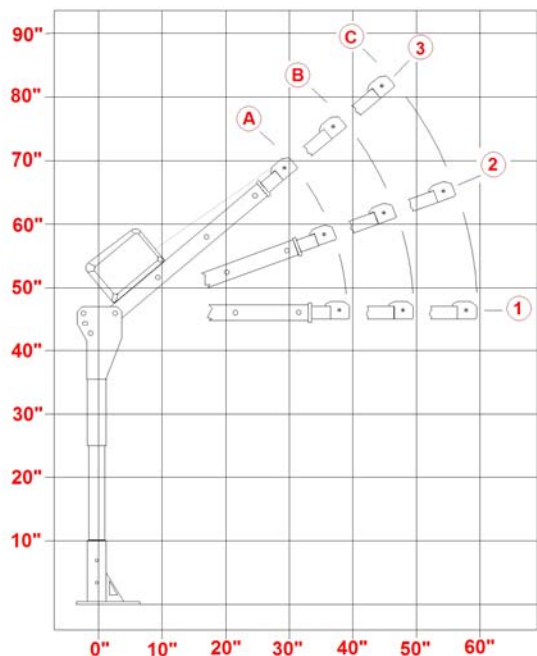
A **versatile** design with 12V-DC, 120V-AC or Manual Hand Crank operated models. Optional Mast Heights, Mounting Bases, and Accessories are also available.



- ▶ 1000 lbs. Max. Lifting Capacity
- ▶ Portable Design allows the crane to be utilized in multiple locations (additional mounting bases sold separately)
- ▶ Three Boom Elevation Angles: 0°, 20°, 40° raised manually
- ▶ Three Position Telescoping Boom: 40", 50" & 60" extended manually
- ▶ 360° Continuous Manual Rotation on a Sealed Thrust Bearing
- ▶ Rotation Hand Brake
- ▶ Three models powered by either a 12V-DC, 120V-AC or Manual Hand Crank Winch
- ▶ 12V-DC model is Circuit Breaker Protected, 120V-AC model is equipped with Ground Fault Protection
- ▶ 10' Remote Pendant Control
- ▶ 20' x 3/16" Lifting Cable w/Hook
- ▶ Detachable Power Cable
- ▶ Durable Powder Coat Finish
- ▶ 1-Year Warranty (excluding lifting cable)

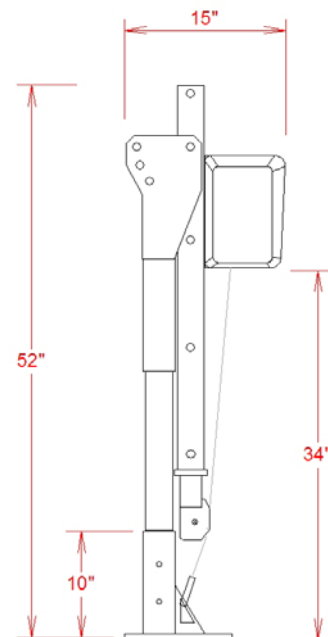
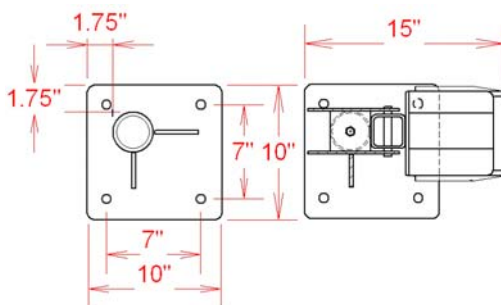
Optional mast heights, mounting bases, and custom configurations also available.

R91



LOAD CHART

Boom	A	B	C
3	1000	870	800
2	1000	835	700
1	1000	800	600



Optional mast heights, mounting bases, and custom configurations available.

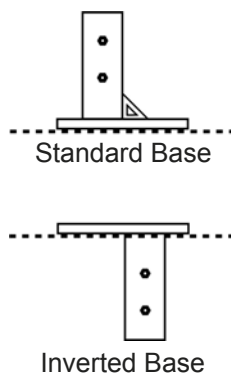
STANDARD FEATURES

MODEL:	P10-DC	P10-AC	P10-MN
Lifting Capacity (maximum)	1000 Lbs	1000 Lbs	1000 Lbs
Lifting Height Max. Std. (base to hook)	72"	72"	72"
Storage Height Folded (from base)	52"	52"	52"
Reach Max. (from center of rotation)	60"	60"	60"
Rotation (continuous) with Brake	360° Manual	360° Manual	360° Manual
Lifting Cable	20' x 3/16"	20' x 3/16"	20' x 3/16"
Line Speed (feet/min) No Load / Load	16 / 6	17 / 8	Manual Crank
Power Requirements	12 VDC 70 amps	120 VAC 6 amps	Manual
Controls	10' Remote	10' Remote	none
Mounting Base	10" x 10"	10" x 10"	10" x 10"
Mounting Bolt Hole Pattern	7" x 7"	7" x 7"	7" x 7"
Finish	Powder Coated	Powder Coated	Powder Coated
Weight of Crane / Shipping Weight (Lbs)	132 / 170	132 / 170	121 / 154
Warranty (excluding lifting cable)	1-Year	1-Year	1-Year

OPTIONS

Part #	Description
WP-120	Taller Mast (increases height 12")
WP-240	Taller Mast (increases height 24")
WP-22	50' x 3/16" Lifting Cable (upgrade from 20')
WP-34	Fold-Down Adjustable Outrigger
WP-110	Extra Mounting Base - (Standard)
WP-114	Extra Mounting Base - (Inverted)

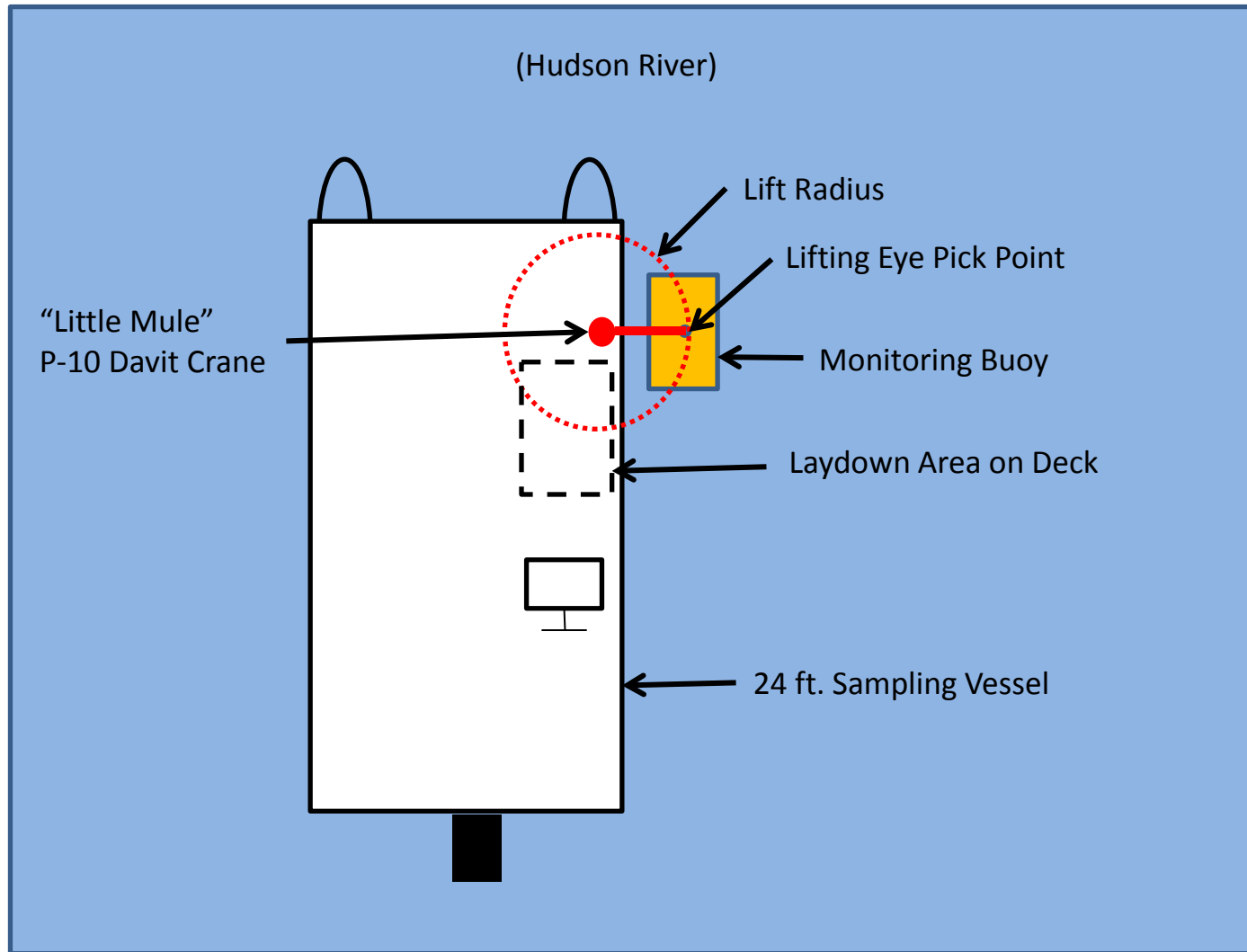
Note: Standard mounting base is included with each crane.



General Electric Company
Hudson River Project
Anchor QEA Lift Plan – May 21, 2014
Step by Step Procedure

1. Navigate vessel alongside monitoring buoy and secure with anchors or spuds.
2. Disconnect anchors from buoy.
3. Clear lay down area on vessel deck.
4. Designate one person as crane operator and another person as the rigger.
5. Raise crane boom up into upright position at 60 degrees and secure in place with pin.
6. Inspect winch cable, pulley, and crane mountings for signs of wear; if any mechanical deficiencies are observed, stop work and perform necessary maintenance before continuing.
7. The operator will activate the winch to provide enough slack in the cable to reach the lifting eye on the top of the buoy. The rigger will maintain tension on the cable to prevent binding until sufficient slack is available.
8. The rigger will place the crane hook through the lifting eye, and keep upward tension on the cable and hook while the crane operator tightens the cable. As soon as tension is placed on the hook by the crane, the rigger will release the cable and hold the buoy from the edge.
9. The operator will engage the winch and raise the buoy approximately 2 ft., or to a level that will provide a few inches of clearance between the bottom of the buoy and the deck of the vessel.
10. The rigger will then swing the buoy and crane boom over the laydown area on the deck.
11. Lower the buoy until it rests on the deck and there is sufficient slack in the cable to release the crane hook from the lifting eye on the buoy.
12. While keeping tension on the cable to prevent binding, raise the cable to remove excess slack. Secure the buoy, cable and crane boom for travel.

General Electric Company
Hudson River Project
Anchor QEA Lift Plan



Plan View – Not to Scale

ATTACHMENT 5
MANAGEMENT/WORKER SAFETY
OBSERVATION FORM



MANAGEMENT AND WORKER SAFETY OBSERVATION FORM

Date: _____ Observer: _____ Employees on site: _____ Weather: _____

Description of task being observed: _____

JSA Information	Task Information	Tools/Equipment/Vehicle Checks
1. What is the JSA title for this Task? _____ _____	1. What PPE is being worn? _____ _____	1. Have all vehicles, trailers, and boats been checked? _____ _____
2. Overall Risk Assessment Code (RAC) _____ _____	2. Does the work and PPE coincide with the JSA? _____ _____	2. What tools are being used? _____ _____
3. Is the JSA present in the work area? _____ _____	3. What is the worker experience with the task? (new / occasional / routine) _____ _____	3. What is the condition of the equipment? _____ _____
4. What is the PPE required by the JSA? _____ _____	Comments: _____ _____	

Hazard mitigation: Circle all that Apply



What are the hazards?	What are the controls?	Is this Hazard/Control identified in the JSA? (if not, what needs to be added / changed)?

ATTACHMENT 6
WEEKLY RISK MITIGATION FOUR-WEEK
LOOK-AHEAD FORM



Risk Mitigation 2-Week Look-Ahead Form

Safety plan for week ending: _____

Subcontractor: _____

Project/location: _____

Meeting date: _____

Plan prepared by: _____

Dated: _____

Scope of work for next 2 weeks:

Identified risks/exposures/hazards:

Control measures:

Additional activity hazards analysis required:

Subcontractors mobilizing/demobilizing:

Audits/inspections scheduled:

Competent person changes:

Planned orientation/training:

Recommendations/comments/concerns:

Note: This information should be incorporated into the meeting minutes.

ATTACHMENT 7

FLOAT PLAN



www.cgaux.org

FLOAT PLAN

INSTRUCTIONS: Complete this plan before you go boating and leave it with a reliable person who can be depended upon to notify the Coast Guard, or other rescue organization, should you not return or check-in as scheduled. If you have a **change of plans** after leaving, be sure to notify the person holding your Float Plan.

Do NOT file this plan with the Coast Guard.



www.uscgboating.org

VESSEL

IDENTIFICATION:

Name & Home Port _____
 Doc. / Registration No. _____
 Year & Make _____
 Length _____ Type **PWR** Draft _____ (Inch/CM) Hull Mat. **Fiber**
 Hull Color(s) _____
 Prominent Feature(s) _____

TELECOMMUNICATIONS:

Radio Call Sign _____
 DSC MMSI Number _____
 Radio-1: Type **VHF-FM** Ch / Freq. Monitored _____
 Radio-2: Type _____ Ch / Freq. Monitored _____
 Cell Phone _____
 Pager _____

PROPULSION:

Primary - Type **Gas IO** No. Eng. _____ Fuel Capacity _____
 Auxiliary - Type **none** No. Eng. _____ Fuel Capacity _____

NAVIGATION: (Check all on board)

☐ Maps ☐ Charts ☐ Compass ☐ GPS / DGPS
☐ Radar ☐ Loran C ☐ Sounder ☐ _____

SAFETY & SURVIVAL

VISUAL DISTRESS SIGNALS:

☐ Day Only type
☐ Night Only type
☐ Day & Night type

AUDIBLE DISTRESS SIGNALS:

☐ Horn / Whistle
☐ Bell
☐ _____

OTHER GEAR / SUPPLIES:

☐ Lifeboat / Life Raft ☐ Flashlight / Searchlight
☐ Dinghy / Skiff ☐ Signal Mirror
☐ Food / Water ☐ Drogue / Sea Anchor
☐ EPIRB **none** ☐ _____
☐ Foul Weather Gear ☐ _____

PFDs: (Do not count Type IV devices)

_____ Quantity on board

GROUND TACKLE:

☐ Anchor - line length _____ ft.

PERSONS ON BOARD

OPERATOR:

Name _____
 Address _____
 City _____ State _____ Zip code _____
 Vehicle (Year, Make & Model) _____
 Where will trailer be parked? _____

Age M/F Notes (Special medical condition, Can't swim, etc.)

Experience: w/Boat ☐ w/Area ☐
 Home Phone _____
 Vehicle License No. _____
 Trailer License No. _____

PASSENGERS:

Name & Home Phone

1. _____
 2. _____
 3. _____
 4. _____
 5. _____

Age M/F Notes (Special medical condition, Can't swim, etc.)

Attach Supplemental Passenger List if additional passengers on board.

ITINERARY

	DATE	TIME	LOCATION	MODE OF TRAVEL	REASON FOR STOP	CHECK-IN TIME
Depart						
Arrive						
Depart						
Arrive						
Depart						
Arrive						
Depart						
Arrive						
Depart						
Arrive						
Depart						
Arrive						

Attach Supplemental Itinerary if additional space required.

Contact 1 _____ Phone Number _____
 Contact 2 _____ Phone Number _____

If you have a genuine concern for the safety or welfare of any persons on board this vessel, who have not returned or checked-in within a reasonable amount of time, then follow the step-by-step instructions on the **Boating Emergency Guide** included with this plan, or on the World Wide Web at:

<http://www.uscgaux.org/~floatplan/BoatingEmergencyGuide.htm>

BOATING EMERGENCY GUIDE

You will need the following items before you begin: 1) The **Float Plan**, if one was given to you; 2) **Pen or Pencil**; 3) Clean sheet of **paper or writing tablet**; and 4) **Telephone Directory**.

Step 1

Is there a genuine concern for the safety or welfare of any persons on board the vessel, who have not returned or checked-in within a reasonable amount of time?

If YES, continue with **Step 2**. If NO, then **Stop**. No further action is required at this time.

Step 2

Were you given a prepared Float Plan by anyone onboard the vessel?

If YES, continue with **Step 3**. If NO, then go to **Step 5**.

Step 3

On the Float Plan, locate the two contact lines, below the "Itinerary" at the bottom of the Float Plan. Call the telephone number of Contact-1.

IF:	THEN:						
A person answered the phone...	<p>Take notes during your conversation.</p> <ol style="list-style-type: none"> Let the person know that you are responding to a late return or check-in by the individuals designated on the Float Plan. Determine if the person you are talking to, or anyone else at that location, has recently had contact with anyone on the vessel, and when and where that contact occurred. Are you still concerned about the safety or welfare of any persons on board the vessel? <table border="1"> <tr> <th>IF:</th><th>THEN:</th></tr> <tr> <td>Yes</td><td>Continue with Step 4.</td></tr> <tr> <td>No</td><td>Stop. No further action is necessary at this time.</td></tr> </table>	IF:	THEN:	Yes	Continue with Step 4 .	No	Stop . No further action is necessary at this time.
IF:	THEN:						
Yes	Continue with Step 4 .						
No	Stop . No further action is necessary at this time.						
Otherwise...	Continue with Step 4 .						

Step 4

Call the telephone number for Contact-2.

IF:	THEN:						
A person answered the phone...	<p>Take notes during your conversation.</p> <ol style="list-style-type: none"> Let the person know that you are responding to a late return or check-in by the individuals designated on the Float Plan. Determine if the person you are talking to, or anyone else at that location, has recently had contact with anyone on the vessel, and when and where that contact occurred. Are you still concerned about the safety or welfare of any persons on board? <table border="1"> <tr> <th>IF:</th><th>THEN:</th></tr> <tr> <td>Yes</td><td>Continue with Step 6.</td></tr> <tr> <td>No</td><td>Stop. No further action is necessary at this time.</td></tr> </table>	IF:	THEN:	Yes	Continue with Step 6 .	No	Stop . No further action is necessary at this time.
IF:	THEN:						
Yes	Continue with Step 6 .						
No	Stop . No further action is necessary at this time.						
Otherwise...	Continue with Step 6 .						

Step 5

Take a moment to jot down the facts you know about each item in the checklist below:

Do not speculate! Speculation of a fact may mislead search and rescue personnel and add to the overall search and rescue time, adversely affecting the outcome.

- ☐ Period of time the vessel has been overdue.
- ☐ Purpose of the trip or voyage.
- ☐ Description of vessel (color, size, shape, etc.)
- ☐ Vessel's departure point and destination.
- ☐ Places the vessel planned to stop during transit.
- ☐ Navigation equipment on board (such as GPS, Compass, Maps, Charts, LORAN C, etc.)
- ☐ Survival equipment on board (life jackets, EPIRB, flares, etc.)
- ☐ Number of people on board the vessel, as well as personal habits e.g. dependability, reliability, etc.
- ☐ Was the vessel already moored, or did a vehicle tow it to the location?
- ☐ License plate number and description of the vehicle of the towing and/or crew transport vehicle.
- ☐ Communications equipment on board including radio frequencies monitored, cellular telephone numbers of people aboard.
- ☐ Additional points of contact in the area.
- ☐ Were there any pending commitments (work, appointments, etc.)?

Continue with **Step 6**.

Step 6

- Contact your local Law Enforcement agency.
 - Let the dispatcher know that you are responding to a late return or check-in by the persons on board.
 - The dispatcher will guide you from there. The dispatcher will provide you with the necessary contact or agency connection (if one was not given on the Float Plan) to get a Search And Rescue (SAR) mission started. This is usually handled this way because it puts you closest to the agency conducting the rescue mission, eliminating an unnecessary middleman.
 - The dispatcher will let you know if they would like a follow-up call from you on the outcome.
 - The dispatcher will instruct you from there.
- Continue with **Step 7**.

Step 7

Be patient... you've done everything you can possibly do for now. Stay off of the phone, so emergency personnel can contact you with additional information and/or questions concerning the Search And Rescue (SAR) effort.

End of Guide

ATTACHMENT 8
ANCHOR QEA MONITORING VESSEL
HIGH FLOW OPERATION ASSESSMENT

**General Electric Company Hudson River Dredging Project
Anchor QEA Monitoring Vessel Operation Assessment
May 6, 2015**

This assessment has been performed to review Anchor QEA, LLC's vessel capabilities and work task limitations associated with river flow velocity in accordance with the Work Restrictions specified in Section 01140 (Part 1.05 A) of Work Release number 2015-05 (Project 10009, Task 023, Subtask C EPS Monitoring). Each of Anchor QEA's monitoring vessels and the work tasks typically performed from them have been evaluated, and maximum water velocity criteria for each have been developed. The results of this evaluation are summarized in Table 1. These criteria are based on actual experience on the Hudson River as well as input from other contractors working on the Hudson River dredging project.

Part 1.05 D and E of Section 01140 places limitations for vessel use on the river at threshold velocities of 1 nautical mile/hour (NM/hr) and 2 NM/hr. In compliance with these limitations, Anchor QEA reviewed maps provided by the Construction Manager (CM) that depict estimated river flow velocities throughout the work area. These maps indicate that velocities are generally below 1 NM/hr when flows are less than 10,000 cubic feet per second (cfs; at the U.S. Geological Survey Fort Edward gaging station); however, there are a few areas where Anchor QEA's sampling activities occur where velocities are between 1.0 and 1.5 NM/hr. These include the Rogers Island sampling location in the upper portion of the Thompson Island Pool, and immediately downstream of Lock 5. Both of these areas are greater than 7 miles upstream of the nearest dam and the river velocity decreases below 1 NM/hr shortly downstream of these higher velocity areas. These areas of higher velocity are not anticipated to impact the ability of Anchor QEA to safely operate vessels conducting sampling activities.

Based on the results of this assessment and the river flow velocities anticipated in the work area, Anchor QEA vessels will operate in accordance with the following criteria:

1. Every Anchor QEA boat captain may choose not to operate a vessel in any area of the Hudson River at any flow at which he/she may feel is unsafe.

-
2. When flow rates are less than 10,000 cfs at Fort Edward, Anchor QEA will operate any of the vessels described in Table 1 and Figure 1 in a manner that is consistent with flow velocity being 1 NM/hr, as specified in Section 01140 (Part 1.05 B). These operational procedures will apply to the isolated areas where velocities may be greater than 1.0 NM/hr, but less than 1.5 NM/hr (identified above).
 3. When flow rates range from approximately 10,000 cfs to 15,000 cfs at Fort Edward, Anchor QEA vessels will operate in a manner that is consistent with flow velocities being between 1 NM/hr and 2 NM/hr (vessel equipped with two similar sized engines), as specified in in Section 01140 (Parts 1.05 C and E).
 4. When flow rates exceed approximately 15,000 cfs, Anchor QEA will not operate vessels on the upper Hudson River, as specified in Section 01140 (Part 1.05 D).
 5. The criteria specified in criteria 2, 3, and 4 will not apply downstream of the federal dam in Troy as the river is tidal and there are no dams in that area.
 6. Anchor QEA will not operate vessels on the Hudson River downstream of any dam safety warning cable or signage, or within 1,000 feet of the upstream side of any dam.

Table 1
Anchor QEA Monitoring Vessel Flow Velocity Assessment

Vessel	Specifications	Activities	Max. Water Velocity	
			Feet/Second	Knots/Hour
AQ-1	24 ft Custom Built Aluminum Pontoon Boat, 30 inches circular pontoons, twin 90 HP outboard engines, extendable power operated spuds on bow and stern, additional danforth anchor w/100 ft of line, 2 paddles	General navigation Water sample collection	4	2.4
		Deploying monitoring buoys Servicing monitoring buoys Underwater video	4	2.4
		Servicing FF station pump intakes	3 ft/sec at water depths <6 ft, 2 ft/sec at water depths 6 - 10 ft, 1 ft/sec at water depths >10 ft	0.6 - 1.8
		Sediment trap sampling Surface sediment sampling Sediment core collection	3 ft/sec at water depths <6 ft, 2 ft/sec at water depths 6 - 10 ft, 1 ft/sec at water depths >10 ft	0.6 - 1.8
			2 ft/sec at water depths <5 ft, 1.5 ft/sec at water depths 5 - 10 ft, 1.0 ft/per sec at water depths 10 - 15 ft	0.3 - 1.2
			3 ft/sec at water depths <6 ft, 2 ft/sec at water depths 6 - 10 ft, 1 ft/sec at water depths >10 ft	0.6 - 1.8
			3 ft/sec at water depths <6 ft, 2 ft/sec at water depths 6 - 10 ft, 1 ft/sec at water depths >10 ft	0.6 - 1.8
			3 ft/sec at water depths <6 ft, 2 ft/sec at water depths 6 - 10 ft, 1 ft/sec at water depths >10 ft	0.6 - 1.8
AQ-2	18 ft Aluminum heavy duty Starcraft Work Boat, 75 HP outboard engine, bow and aft river anchors, additional danforth anchor w/100 ft of line, 2 paddles	General navigation Water sample collection	4	2.4
		Deploying monitoring buoys Servicing monitoring buoys Underwater video	4	2.4
		Servicing FF station pump intakes	2	1.2
			3	1.8
			2 ft/sec at water depths <5 ft, 1 ft/sec at water depths 5 - 10 ft, 0.5 ft/sec at water depths 10 - 15 ft	0.3 - 1.2
AQ-5	14 feet Aluminum heavy duty Work Boat, 15 HP outboard engine, bow and aft river anchors, additional danforth anchor w/100 ft of line, 2 paddles	General navigation	3	1.8
		Water sample collection	3	1.8
AQ6	24 ft.Aluminum Pontoon Boat, 24 in. rectangular pontoons, single 75 HP outboard engine, extendable power operated spuds on bow and stern, additional danforth anchor w/100 ft of line, 2 paddles	General navigation Water sample collection	3	1.8
		Deploying monitoring buoys Servicing monitoring buoys Underwater video	3	1.8
		Servicing FF station pump intakes	3 ft/sec at water depths <6 ft, 2 ft/sec at water depths 6 - 10 ft, 1 ft/sec at water depths >10 ft	0.6 - 1.8
		Sediment trap sampling Surface sediment sampling Sediment core collection	3 ft/sec at water depths <6 ft, 2 ft/sec at water depths 6 - 10 ft, 1 ft/sec at water depths >10 ft	0.6 - 1.8
			2 ft/sec at water depths <5 ft, 1.5 ft/sec at water depths 5 - 10 ft, 1.0 ft/per sec at water depths 10 - 15 ft	0.3 - 1.2
			3 ft/sec at water depths <6 ft, 2 ft/sec at water depths 6 - 10 ft, 1 ft/sec at water depths >10 ft	0.6 - 1.8
			3 ft/sec at water depths <6 ft, 2 ft/sec at water depths 6 - 10 ft, 1 ft/sec at water depths >10 ft	0.6 - 1.8
			3 ft/sec at water depths <6 ft, 2 ft/sec at water depths 6 - 10 ft, 1 ft/sec at water depths >10 ft	0.6 - 1.8
AQ-9	20 ft Custom Built Lifeyme aluminum heavy duty work boat, twin 90 HP outboard engines, bow and aft river anchors, additional danforth anchor w/100 ft of line, 2 paddles	General navigation Water sample collection	4	2.4
		Deploying monitoring buoys Servicing monitoring buoys Underwater video	4	2.4
		Servicing FF station pump intakes	3 ft/sec at water depths <6 ft, 2 ft/sec at water depths 6 - 10 ft, 1 ft/sec at water depths >10 ft	0.6 - 1.8
		Sediment trap sampling Surface sediment sampling Sediment core collection	3 ft/sec at water depths <6 ft, 2 ft/sec at water depths 6 - 10 ft, 1 ft/sec at water depths >10 ft	0.6 - 1.8
			2 ft/sec at water depths <5 ft, 1.5 ft/sec at water depths 5 - 10 ft, 1.0 ft. per sec at water depths 10 - 15 ft	0.3 - 1.2
			3 ft/sec at water depths <6 ft, 2 ft/sec at water depths 6 - 10 ft, 1 ft/sec at water depths >10 ft	0.6 - 1.8
			3 ft/sec at water depths <6 ft, 2 ft/sec at water depths 6 - 10 ft, 1 ft/sec at water depths >10 ft	0.6 - 1.8
			3 ft/sec at water depths <6 ft, 2 ft/sec at water depths 6 - 10 ft, 1 ft/sec at water depths >10 ft	0.6 - 1.8



AQ-1
24-foot Pontoon Coring Boat with hard cabin and twin engines



AQ-2
18-foot Work Boat



AQ-5
14-foot Work Boat



AQ-6
24-foot Pontoon Coring Boat



AQ-9
20-foot Work Boat

ATTACHMENT 9
EMPLOYEE EXPOSURE/INJURY/
INCIDENT/SPILL/NEAR-MISS FORM



EMPLOYEE EXPOSURE/INJURY INCIDENT/SPILL/ NEAR MISS REPORT

EMPLOYEE NAME: _____ DATE: _____

PROJECT NAME/NO: _____ TIME: _____

TYPE OF OCCURRENCE: ☐ employee exposure ☐ injury incident ☐ spill ☐ near miss

SITE NAME AND LOCATION: _____

SITE WEATHER (clear, rain, snow, etc.): _____

NATURE OF ILLNESS/INJURY: _____

SYMPTOMS: _____

ACTION TAKEN: ☐ rest ☐ first aid ☐ medical

TRANSPORTED BY: _____

WITNESSED BY: _____

HOSPITAL NAME: _____ TREATMENT: _____

DESCRIBE IN DETAIL HOW THIS EXPOSURE/INJURY INCIDENT/SPILL OCCURRED

(if a spill, list the name of the compounds, quantities, and method of clean-up/containment): _____

WHAT WAS THE PERSON DOING AT THE TIME OF THE ACCIDENT/INCIDENT?: _____

LIST PERSONAL PROTECTIVE EQUIPMENT WORN: _____

WHAT IMMEDIATE ACTION WAS TAKEN TO PREVENT RECURRENCE?: _____

Employee:

Printed Name Signature Date

Supervisor:

Printed Name Signature Date

Site Safety Representative:

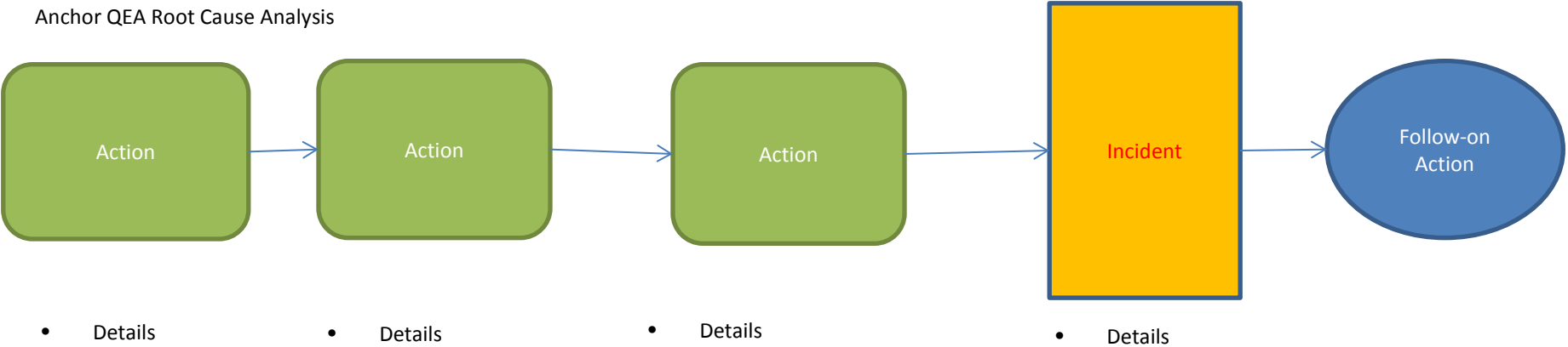
Printed Name Signature Date

NOTE: Use additional page(s) if necessary.

ATTACHMENT 10

ROOT CAUSE ANALYSIS FORM

Anchor QEA Root Cause Analysis



Root Cause:
- Details

Action Items:

1. Details

ATTACHMENT 11

FIRE PREVENTION AND PROTECTION PLAN

FIRE PREVENTION AND PROTECTION PLAN

Prepared for

Hudson River PCBs Superfund Site

Prepared by

Anchor QEA, LLC

80 Glen Street, Suite 2

Glens Falls, New York 12801

September 2010

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LIST OF ACRONYMS AND ABBREVIATIONS

Anchor QEA	Anchor QEA, LLC
CFR	Code of Federal Regulations
HASP	Health and Safety Plan
MSDS	Material Safety Data Sheet
NFPA	National Fire Protection Association
OSHA	Occupational Safety and Health Administration

1 INTRODUCTION

Anchor QEA, LLC (Anchor QEA) employees will comply with all Fire Safety rules and regulations established on this project. Applicable Occupational Safety and Health Administration (OSHA) standards are presented in Subpart F – Fire Protection and Prevention; Code of Federal Regulations (CFR) 1926.150, 152, 153, 154, and 155 and Subpart H - Flammable and combustible liquids CFR.1910.106. Additionally, and as applicable, the project Health and Safety Plan (HASP) will be consulted for fire prevention procedures.

2 GENERAL REQUIREMENTS

- Anchor QEA and its subcontractors are responsible for the development of a fire protection program to be followed throughout all phases of the project and shall provide the firefighting equipment as specified in this document.
- All firefighting equipment must be easily accessible and conspicuously located.
- Good housekeeping will be practiced. Combustible scrap and debris will be removed regularly, before they are allowed to accumulate.
- Tanks and containers holding flammable materials shall be conspicuously marked with the name of the product they contain and "Flammable - Keep Fire Away."
- All compounds stored on the site will be kept in their original containers, unless damaged. Materials with damaged containers will not be stored on site.
- All containers will meet or exceed the National Fire Protection Association (NFPA) or New York State Department of Transportation standards for storage.
- Labels on containers will be visible and readable.
- Storage areas will be inspected and maintained periodically by Site Safety Representatives.
- All employees will be instructed to routinely check for the presence of potentially combustible materials or conditions on the project site that could create a fire.
- MSDS's will be available for each compound on site.
- No smoking in or around work areas.

3 FIRE EXTINGUISHERS

- Fire extinguishers will be mounted in readily accessible locations on all Anchor QEA vessels in a manner that meets or exceeds U.S. Coast Guard regulations. At least one ABC type U.S. Coast Guard approved hand portable fire extinguisher will be on each

boat.

- Anchor QEA vehicles that are used to transport fuel will be equipped with at least one ABC type portable fire extinguisher.
- Extinguishers must be clearly accessible, conspicuously located and be periodically inspected and maintained in operating condition.

4 IGNITION HAZARDS

- Keep exhaust from engines away from combustible materials.
- Smoking will be prohibited in the vicinity of operation that may be a potential fire hazard. No smoking will be allowed on Anchor QEA vessels.

5 OUTDOOR STORAGE AREAS

- The entire storage site must be kept clean of combustible debris, also an access way of at least 15 feet width maintained.
- Store materials in an orderly fashion, in no case higher than 20 feet, and not within 10 feet of any building or structure.
- A fire extinguisher of at least 2A rating must be provided no less than 25 feet and no more than 75 feet from any storage area.

6 INDOOR STORAGE AREAS

- Storage shall not obstruct exits.
- Keep materials piled neatly and with regard to the possibility of fire, maintain an open access way for firefighting.
- Material must be kept at least 36 inches away from fire doors.

7 FLAMMABLE AND COMBUSTIBLE LIQUIDS

- Only approved metal safety cans shall be used for the handling and use of flammable liquids.
- Flammable and combustible liquids shall not be stored in areas of exits, stairways, or other areas used for the safe passage of people.
- No more than 20 gallons of flammable and combustible liquids shall be stored in a designated storage area.

7.1 Dispensing Flammable Liquids

- Use only approved metal safety cans (equipped with a spring-closing lid and spout cover and so designed that it will safely relieve internal pressure when subjected to fire exposure) for equipment refueling. All cans must be marked with contents (gasoline).

ATTACHMENT 12

HAZARD COMMUNICATION PROGRAM



ANCHOR QEA, LLC

HAZARD COMMUNICATION PROGRAM

February 28, 2014

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LIST OF ACRONYMS AND ABBREVIATIONS

29 CFR 1910.1200	Standard 29 of the Code of Federal Regulations, Part 1910.1200
ACGIH	American Conference of Governmental Industrial Hygienists
Anchor QEA	Anchor QEA, LLC
CHSO	Corporate Health and Safety Officer
FL	Field Lead
GHS	United Nations Globally Harmonized System of Classification and Labelling of Chemicals
HASP	Health and Safety Plan
HCS	Hazard Communication Standard
IARC	International Agency for Research on Cancer
OSHA	Occupational Safety and Health Administration
PPE	personal protective equipment
Program	Hazard Communication Program
SDS	Safety Data Sheet

1 HAZARD COMMUNICATION PROGRAM

1.1 Introduction

This Hazard Communication Program (Program) has been developed to protect the right of Anchor QEA, LLC (Anchor QEA) employees and subcontractors to access information on chemical and physical hazards of materials they use in the workplace. This Program was prepared in accordance with the requirements of Standard 29 of the Code of Federal Regulations, Part 1910.1200 (29 CFR 1910.1200), the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (HCS). The HCS has been updated to align with the United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS), Revision 3, issued in the Federal Register, March 26, 2012. The revision to 29 CFR 1910.1200 became effective on May 25, 2012.

The purpose of this Program is to inform employees of the HCS and define the measures to communicate the hazards of materials used in the workplace and the safe handling procedures and measures to take to protect them from these materials. This Program applies to all work operations where personnel may be occupationally exposed to hazardous chemicals under normal working conditions or during an emergency situation. This HCP shall be available to all Anchor QEA employees, Anchor QEA's subcontractors, and their representatives. Material hazards associated with non-routine tasks are communicated using site-specific Health and Safety Plans (HASPs).

This HCP does not apply to hazardous wastes but does apply to all hazardous materials, such as acids and caustics used in sample preparation and cleaning solvents brought onto and used at a work site. The responsibilities and elements associated with this HCP are discussed in the following sections.

1.2 Program Responsibilities

Corporate Health and Safety Officer (CHSO). The CHSO is the Program coordinator, with overall responsibility for the Program, including reviewing and updating this document as necessary. The CHSO shall ensure compliance with the requirements identified in this HCP by conducting annual audits.

Project Manager. Project Managers shall ensure that all HCP requirements have been identified and addressed within site-specific HASPs for their projects. This task may include but is not limited to the following:

- Identification of work tasks (routine and non-routine) and performance of an associated hazard analysis
- Completion of a chemical inventory for the project
- Procurement of Safety Data Sheets (SDSs) for chemicals used exclusively for the project
- Labeling of containers used on site for hazardous materials
- Identification of any additional hazard communication training requirements

Field Lead (FL). The FL shall be the main point of contact for this HCP compliance during on-site phases of project operations. The FL shall have the following duties:

- Maintain current chemical inventories and SDS files for the project
- Ensure compliance with container labeling requirements, including inspection of newly acquired materials for proper labels
- Identify new chemicals brought on site that present new hazards requiring additional training, and add information to chemical inventory and SDS files

1.3 Hazard Communication Program Elements

The HCP elements include the following:

- Hazard classification
- Hazardous chemical inventory
- Container labeling
- SDSs
- Employee training
- Subcontractors

These elements are described in more detail in the following subsections.

1.3.1 Hazard Classification

In most cases, the classification of chemical hazards will be based on the information (i.e., SDS) provided by the manufacturer. In situations where this is not possible, a hazard classification will be completed by Anchor QEA based on criteria established in Appendices A and B of 29 CFR 1910.1200.

1.3.2 Hazardous Chemical Inventory

For each field project, the Project Manager will develop and maintain a current list of hazardous materials (hazardous chemical inventory) brought on site by Anchor QEA personnel. This list will be contained within or attached to the HASP. The existence and location of these documents will be communicated to all employees and subcontractors prior to the start of the project.

Small quantities of hazardous chemicals may also be present at Anchor QEA offices and storage areas. For purposes of this Program as required by the HCS, chemicals and consumer products not used by consumers in the same manner, duration, or frequency intended by the manufacturer shall be included on the hazardous chemical inventory. A list of such chemicals present in each office or storage area will be maintained by the CHSO.

1.3.3 Container Labeling

When a chemical is received from a manufacturer or distributor, the employee responsible for its receipt will verify that the container is properly labeled with the following information, with these headings and in this order:

- Introduction
- Hazard(s) identification
- Composition/information on ingredients
- First-aid measures
- Fire-fighting measures
- Accidental release response measures
- Handling and storage
- Exposure controls/personal protection
- Physical and chemical properties

-
- Stability and reactivity properties
 - Toxicological properties
 - Ecological properties
 - Disposal considerations
 - Transport considerations
 - Regulatory information
 - Other information, including at a minimum, label preparation or last revision date

All chemicals associated with a project should be stored, dispensed from, or otherwise used in their original containers with a proper label attached, except small quantities for immediate use by the employee that made the transfer. However, the use of secondary containers should be avoided. Container labeling is not required for secondary immediate uses. Any chemical left after work is completed must be returned to the original container. No unmarked containers of any size are to be left in the work area unattended.

All original labels, warnings, and other printed information must be maintained intact and plainly visible at all times. Hazardous materials will not be allowed on a project site if they are not in the original or approved containers or if the containers are unlabeled or improperly labeled.

All subcontractors will be advised of and required to comply with these procedures.

1.3.4 *Safety Data Sheets*

All chemicals brought on or used at a project site must be accompanied by SDSs provided by the manufacturer. Whenever a chemical is purchased, the employee responsible for the purchase must obtain a current and complete SDS as part of the order. A written request will be made for an SDS if one is not received. If an SDS is still not received after the original written request, a second request will be made in writing or by telephone. If the supplier refuses to provide an SDS, the local OSHA office will be contacted for further assistance. If a supplier SDS is not readily available, a generic SDS can be used instead.

The SDS will be reviewed and evaluated by the purchaser and the FL for completeness and to determine if the new chemical will pose any new or significant risks that require additional hazard communication training.

A copy of each SDS will be maintained in the project file or readily accessible on Anchor QEA's intranet, included in the site-specific HASP, and accessible at all times.

Prior to beginning work, subcontractors are required to provide a list of all chemicals that they will use and an SDS for each chemical. The CHSO, PM, or FL will evaluate the SDSs and list of chemicals to determine if the chemicals used pose any new or significant risks to Anchor QEA employees. Additional training will be provided, if necessary.

According to the United States Department of Labor, each SDS shall contain, at a minimum, the following information:

- Identification
 - Product identifier
 - Manufacturer or distributor name, address, phone number
 - Emergency phone number
 - Recommended use
 - Restrictions on use
- Hazard(s) identification
 - All hazards regarding the chemical
 - Required label elements
- Composition or information on ingredients
 - Information on chemical ingredients
 - Trade secret claims
- First-aid measures
 - Important symptoms or effects, acute, delayed
 - Required treatment
- Fire-fighting measures

-
- Suitable extinguishing techniques and equipment
 - Chemical hazards from fire
 - Accidental release measures
 - Emergency procedures
 - Protective equipment
 - Proper methods of containment and cleanup
 - Handling and storage
 - Precautions for safe handling and storage including incompatibilities
 - Exposure controls and personal protection
 - OSHA's Permissible Exposure Limits
 - Threshold Limit Values
 - Appropriate engineering controls
 - Personal protective equipment (PPE)
 - Physical and chemical properties
 - The chemical's characteristics
 - Stability and reactivity
 - Chemical stability
 - Possibility of hazardous reactions
 - Toxicological information
 - Routes of exposure
 - Related symptoms and acute and chronic effects
 - Numerical measures of toxicity

If no information is available for any given category on the SDS, the chemical manufacturer is required to mark the SDS to indicate that no applicable information was found. Blanks are not allowed.

1.3.5 Employee Training

The CHSO, FL, or PM will provide information and training to employees upon assignment to a job task involving the use of hazardous materials and whenever a new material posing new physical or health hazards is introduced.

General information and training will be provided in the 40-hour health and safety training class and annual refresher training classes as required under 29 CFR 1910.120, and as required by periodic revisions to 29 CFR 1910.1200. Employee training will include the following:

- Requirements of the HCS in 29 CFR 1910.1200
- The types of operations or job tasks that involve hazardous materials
- The location and details of this HCP, SDSs, and the chemical inventory
- Methods and observations that may be used to detect the presence or release of hazardous chemicals in the workplace
- Recognition of signs and symptoms that may indicate exposure to hazards such as dizziness, nausea, skin rash, and other symptoms
- Physical and health hazards associated with chemicals in the workplace
- Protective measures, including specific procedures such as work practices, emergency procedures, and the use of PPE, that Anchor QEA has implemented to protect employees from exposure to hazardous materials
- How to read and use SDSs

1.3.6 Subcontractors

Anchor QEA will provide subcontractors at a project site with a copy of the site-specific HASP. The HASP will include the following hazard communication information:

- Hazard analysis of work tasks
- Chemical hazards anticipated at the site
- Recommended PPE
- Air monitoring instruments to be used for site hazards
- Information on the major chemical hazards in the form of SDSs or a chemical hazard information table

Anchor QEA will provide subcontractors with copies of SDSs, by including them in the HASP, for each hazardous chemical brought on site by Anchor QEA. Subcontractors will be informed of any precautionary measures that need to be taken to protect their employees using hazardous materials brought on site by Anchor QEA during the site's normal operation conditions and during potential emergency situations.

Each subcontractor will be required to have its own HCP in accordance with 29 CFR 1910.1200 and applicable state and local regulations. An SDS is also required for each hazardous material a subcontractor brings to the site.

ATTACHMENT 13

SITE-SPECIFIC SAFETY DATA SHEETS (SDS)

Safety Data Sheets (SDS) for all products/chemicals planned to be brought to the Project Site must be submitted for approval by the CM as part of submittals made in accordance with the Contract documents and prior to being brought onto or used on the site. All SDSs for products used and/or stored on site must be uploaded to the GE SDS on-line tool via Gensuite.

ATTACHMENT 13
SITE-SPECIFIC SAFETY DATA SHEETS
(SDS)

1. Product and Company Identification

Material name	ACETONE
Version #	05
Revision date	08-25-2011
CAS #	67-64-1
Product Codes	J.T.Baker: 5008, 5018, 5356, 5580, 5965, 5975, 9001, 9002, 9003, 9004, 9005, 9006, 9007, 9008, 9009, 9010, 9015, 9036, 9254, 9271, 9422, A134 Macron: 0018, 10654, 2432, 2435, 2437, 2440, 2443, 70444, H451, H580
Synonym(s)	dimethylketal * 2-Propanone * Dimethyl ketone
Manufacturer	Avantor Performance Materials, Inc.
Address	3477 Corporate Parkway Suite #200 Center Valley, PA 18034 US
Customer Service	855-282-6867
24 Hour Emergency	908-859-2151
Chemtrec	800-424-9300

2. Hazards Identification

Emergency overview	DANGER
	Extremely flammable liquid and vapor - vapor may cause flash fire. Will be easily ignited by heat, spark or flames.
	Causes eye irritation. Harmful if swallowed - may enter lungs if swallowed or vomited. Prolonged or repeated skin contact may cause drying, cracking, or irritation. High vapor concentrations may cause drowsiness and irritation of the eyes or respiratory tract.
OSHA regulatory status	This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
Potential health effects	
Routes of exposure	Inhalation. Ingestion. Skin contact. Eye contact.
Eyes	Causes eye irritation. High vapor/aerosol concentrations may be irritating.
Skin	Prolonged or repeated contact with skin may cause redness, itching, irritation and eczema/chapping.
Inhalation	May cause irritation to the mucous membranes and upper respiratory tract. In high concentrations, vapors and aerosol mists have a narcotic effect and may cause headache, fatigue, dizziness and nausea.
Ingestion	Irritating. May cause nausea, stomach pain and vomiting. Ingestion may result in vomiting; aspiration (breathing) of vomitus into lungs must be avoided as even small quantities may result in aspiration pneumonitis.
Target organs	Eyes. Skin. Respiratory system. Central nervous system.
Chronic effects	Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.
Potential environmental effects	The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

3. Composition / Information on Ingredients

Components	CAS #	Percent
ACETONE	67-64-1	99 - 100

4. First Aid Measures

First aid procedures

Eye contact	Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention.
Skin contact	Wash off with soap and water. Get medical attention if symptoms occur. Remove contaminated clothing and shoes. Wash contaminated clothing before reuse.
Inhalation	Move to fresh air. Treat symptomatically. Get medical attention if symptoms persist.
Ingestion	Call a physician or poison control center immediately. Do not induce vomiting. If vomiting occurs, the head should be kept low so that stomach vomit doesn't enter the lungs.
Notes to physician	Treat symptomatically.
General advice	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire Fighting Measures

Flammable properties	HIGHLY FLAMMABLE! Vapors may cause a flash fire or ignite explosively. Vapors may travel considerable distance to a source of ignition and flash back. Heat may cause the containers to explode.
Extinguishing media	
Suitable extinguishing media	Water spray. Foam. Dry powder. Carbon dioxide (CO ₂).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Protection of firefighters	
Specific hazards arising from the chemical	Can be ignited easily and burns vigorously. Vapor from the solvent may accumulate in container headspace resulting in flammability hazard.
Protective equipment and precautions for firefighters	Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. Move containers from fire area if you can do so without risk. For massive fire in cargo area, use unmanned hose holder or monitor nozzles, if possible. If not, withdraw and let fire burn out. Some of these materials, if spilled, may evaporate leaving a flammable residue. Cool containers exposed to flames with water until well after the fire is out.
Special protective equipment for fire-fighters	As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.
Specific methods	In the event of fire and/or explosion do not breathe fumes. Use water spray to cool unopened containers.
Hazardous combustion products	Carbon monoxide and carbon dioxide.

6. Accidental Release Measures

Personal precautions	Wear appropriate protective equipment and clothing during clean-up. Keep unnecessary personnel away. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering them. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Local authorities should be advised if significant spillages cannot be contained.
Environmental precautions	Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.
Methods for containment	ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop the flow of material, if this is without risk. Prevent entry into waterways, sewer, basements or confined areas. Dike the spilled material, where this is possible.

Methods for cleaning up

Use only non-sparking tools. All equipment used when handling the product must be grounded.

Large Spills: Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Dike far ahead of spill for later disposal.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Collect in a non-combustible container for prompt disposal.

Never return spills in original containers for re-use. Clean surface thoroughly to remove residual contamination. Clean up in accordance with all applicable regulations.

J. T. Baker SOLUSORB® solvent adsorbent is recommended for spills of this product.

7. Handling and Storage

Handling

DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. Wear appropriate personal protective equipment. Avoid breathing high vapor concentrations. Avoid contact with eyes and prolonged skin contact. Do not taste or swallow. Use only with adequate ventilation. Wash thoroughly after handling. See Section 8 of the MSDS for Personal Protective Equipment.

Storage

Keep away from food, drink and animal feedingstuffs. Keep out of the reach of children. Keep container tightly closed in a cool, well-ventilated place. Ground container and transfer equipment to eliminate static electric sparks. Comply with all national, state, and local codes pertaining to the storage, handling, dispensing, and disposal of flammable liquids.

8. Exposure Controls / Personal Protection

ACGIH

Material

Type

Value

ACETONE (67-64-1)

BEL

50.0000 mg/l

STEL

750.0000 ppm

TWA

500.0000 ppm

Occupational exposure limits

U.S. - OSHA

Material

Type

Value

ACETONE (67-64-1)

PEL

1000.0000 ppm

2400.0000

mg/m3

Engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Explosion proof exhaust ventilation should be used.

Personal protective equipment

Eye / face protection

Wear safety glasses with side shields (or goggles) and a face shield.

Skin protection

Wear appropriate chemical resistant clothing. Wear appropriate chemical resistant gloves.

Respiratory protection

Respirator type: Chemical respirator with organic vapor cartridge. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

General hygiene considerations

Provide eyewash station and safety shower. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical & Chemical Properties

Appearance	Clear.
Color	Colorless.
Odor	Sweet. Mint-like.
Odor threshold	Not available.
Physical state	Liquid.
Form	Liquid.
pH	Not available.
Melting point	-139 °F (-94.7 °C)
Freezing point	-139 °F (-94.7 °C)
Boiling point	132.8 °F (56.05 °C) @ 101.325 kPa
Flash point	-4 °F (-20 °C) Closed Cup
Evaporation rate	Not available.
Flammability limits in air, upper, % by volume	12.8
Flammability limits in air, lower, % by volume	2.6
Vapor pressure	30.93 kPa at 25°C at 25°C
Vapor density	2
Specific gravity	0.7899
Relative density	Not available.
Solubility (water)	Miscible
Partition coefficient (n-octanol/water)	-0.24
Auto-ignition temperature	869 °F (465 °C)
Decomposition temperature	Not available.
Molecular weight	58.08 g/mol
Molecular formula	C3-H6-O

10. Chemical Stability & Reactivity Information

Chemical stability	Stable under normal temperature conditions.
Conditions to avoid	Heat, flames and sparks.
Incompatible materials	Strong oxidizing agents. Acids. Alkalies. Peroxides.
Hazardous decomposition products	At thermal decomposition temperatures, carbon monoxide and carbon dioxide.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Toxicological data

Product

ACETONE (67-64-1)

Test Results

Acute Dermal LD50 Rabbit: 20000 mg/kg

Acute Inhalation LC50 Rat: 76 mg/l 4.00 Hours

Acute Oral LD50 Rat: 5800 mg/kg

Sensitization

Not a skin sensitizer.

Acute effects

Harmful if swallowed - may enter lungs if swallowed or vomited.

Local effects

Causes eye irritation. Prolonged or repeated skin contact may cause drying, cracking, or irritation.
High vapor concentrations may cause drowsiness and irritation of the eyes or respiratory tract.

Chronic effects	Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
ACGIH Carcinogens	
ACETONE (CAS 67-64-1)	A4 Not classifiable as a human carcinogen.
Skin corrosion/irritation	Defatting, drying and cracking of skin.
Epidemiology	No epidemiological data is available for this product.
Mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Neurological effects	High vapor/aerosol concentrations (attainable only at elevated temperatures) may cause central nervous system effects such as dizziness, drowsiness or headaches.
Reproductive effects	Contains no ingredient listed as toxic to reproduction
Teratogenicity	No data available to indicate product or any components present at greater than 0.1% may cause birth defects.
Symptoms and target organs	Moderate eye irritation. Upper respiratory tract irritation. Drowsiness and dizziness.

12. Ecological Information

Ecotoxicological data	
Product	Test Results
ACETONE (67-64-1)	EC50 Water flea (Daphnia magna): 10294 mg/l 48.00 hours LC50 Fathead minnow (Pimephales promelas): > 100 mg/l 96.00 hours
Ecotoxicity	The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
Environmental effects	Ecological injuries are not known or expected under normal use.
Persistence and degradability	Expected to be readily biodegradable.
Partition coefficient (n-octanol/water)	-0.24

13. Disposal Considerations

Waste codes	
US RCRA Hazardous Waste U List: Reference	
ACETONE (CAS 67-64-1)	U002
Disposal instructions	Dispose of this material and its container to hazardous or special waste collection point. Incinerate the material under controlled conditions in an approved incinerator. All wastes must be handled in accordance with local, state and federal regulations.
Contaminated packaging	Since emptied containers retain product residue, follow label warnings even after container is emptied. Residual vapors may explode on ignition; do not cut, drill, grind, or weld on or near this container. Offer rinsed packaging material to local recycling facilities.

14. Transport Information

DOT	
Basic shipping requirements:	
UN number	UN1090
Proper shipping name	Acetone
Hazard class Packing group Additional information:	3 II
Special provisions	IB2, T4, TP1

Basic shipping requirements:

Labels required 3

Additional information:

Packaging exceptions 150

Packaging non bulk 202

Packaging bulk 242

Reportable quantity 5000

ERG number 127

IATA

Basic shipping requirements:

UN number 1090

Proper shipping name Acetone

Hazard class Packing 3

group Additional II

information:

ERG code 3H

IMDG

Basic shipping requirements:

UN number 1090

Proper shipping name ACETONE

Hazard class 3

Packing group II



DOT



IATA



IMDG

15. Regulatory Information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

CERCLA (Superfund) reportable quantity

ACETONE: 5000.0000

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - Yes
Pressure Hazard - No
Reactivity Hazard - No

Section 311 hazardous chemical Yes

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

State regulations This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

US - Pennsylvania RTK - Hazardous Substances: Listed substance

ACETONE (CAS 67-64-1) Listed.

Saf-T-Data Health: 2 - Moderate (Life)
Flammability: 3 - Severe (Flammable)
Reactivity: 0 - None
Contact: 2 - Moderate
Lab Protective Equip: DB - GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER
Storage Color Code: R - Red (Flammable)

16. Labeling Info

Label Hazard Warning	DANGER EXTREMELY FLAMMABLE LIQUID AND VAPOR. Will be easily ignited by heat, spark or flames. Causes eye irritation. Harmful if swallowed - may enter lungs if swallowed or vomited. Prolonged or repeated skin contact may cause drying, cracking, or irritation. High vapor concentrations may cause drowsiness and irritation of the eyes or respiratory tract.
Label Precautions	Keep away from heat, sparks and flame. Avoid breathing high vapor concentrations. Avoid contact with eyes, skin, and clothing. Do not taste or swallow. Use only with adequate ventilation. Wash thoroughly after handling. Keep container closed.
Label First Aid	Immediately flush eyes with plenty of water for at least 15 minutes. Flush skin thoroughly with water. If gas/fume/vapor/dust/mist from the material is inhaled, remove the affected person immediately to fresh air. Get medical attention if irritation develops or persists. If ingestion of a large amount does occur, call a poison control center immediately. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

17. Other Information

NFPA ratings	Health: 2 Flammability: 3 Instability: 0
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Disclaimer

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Issue date

08-25-2011

AMERADA HESS CORPORATION

MATERIAL SAFETY DATA SHEET

Gasoline, All Grades

MSDS No. 9950

EMERGENCY OVERVIEW

DANGER!

EXTREMELY FLAMMABLE - EYE AND MUCOUS MEMBRANE IRRITANT
- EFFECTS CENTRAL NERVOUS SYSTEM - HARMFUL OR FATAL IF
SWALLOWED - ASPIRATION HAZARD



NFPA 704 (Section 16)

High fire hazard. Keep away from heat, spark, open flame, and other ignition sources.

If ingested, do NOT induce vomiting, as this may cause chemical pneumonia (fluid in the lungs). Contact may cause eye, skin and mucous membrane irritation. Harmful if absorbed through the skin. Avoid prolonged breathing of vapors or mists. Inhalation may cause irritation, anesthetic effects (dizziness, nausea, headache, intoxication), and respiratory system effects.

Long-term exposure may cause effects to specific organs, such as to the liver, kidneys, blood, nervous system, and skin. Contains benzene, which can cause blood disease, including anemia and leukemia.

1. CHEMICAL PRODUCT and COMPANY INFORMATION (rev. Jan-04)

Amerada Hess Corporation
1 Hess Plaza
Woodbridge, NJ 07095-0961

EMERGENCY TELEPHONE NUMBER (24 hrs):

CHEMTREC (800)424-9300

COMPANY CONTACT (business hours):

Corporate Safety (732)750-6000

MSDS Internet Website

www.hess.com/about/envIRON.html

SYNONYMS: Hess Conventional (Oxygenated and Non-oxygenated) Gasoline; Reformulated Gasoline (RFG); Reformulated Gasoline Blendstock for Oxygenate Blending (RBOB); Unleaded Motor or Automotive Gasoline

See Section 16 for abbreviations and acronyms.

2. COMPOSITION and INFORMATION ON INGREDIENTS * (rev. Jan-04)

INGREDIENT NAME (CAS No.)	CONCENTRATION PERCENT BY WEIGHT
Gasoline (86290-81-5)	100
Benzene (71-43-2)	0.1 - 4.9 (0.1 - 1.3 reformulated gasoline)
n-Butane (106-97-8)	< 10
Ethyl Alcohol (Ethanol) (64-17-5)	0 - 10
Ethyl benzene (100-41-4)	< 3
n-Hexane (110-54-3)	0.5 to 4
Methyl-tertiary butyl ether (MTBE) (1634-04-4)	0 to 15.0
Tertiary-amyl methyl ether (TAME) (994-05-8)	0 to 17.2
Toluene (108-88-3)	1 - 25
1,2,4- Trimethylbenzene (95-63-6)	< 6
Xylene, mixed isomers (1330-20-7)	1 - 15

A complex blend of petroleum-derived normal and branched-chain alkane, cycloalkane, alkene, and aromatic hydrocarbons. May contain antioxidant and multifunctional additives. Non-oxygenated Conventional Gasoline and RBOB do not have oxygenates (Ethanol or MTBE and/or TAME). Oxygenated Conventional and Reformulated Gasoline will have oxygenates for octane enhancement or as legally required.

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Gasoline, All Grades

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3. HAZARDS IDENTIFICATION (rev. Dec-97)

EYES

Moderate irritant. Contact with liquid or vapor may cause irritation.

SKIN

Practically non-toxic if absorbed following acute (single) exposure. May cause skin irritation with prolonged or repeated contact. Liquid may be absorbed through the skin in toxic amounts if large areas of skin are exposed repeatedly.

INGESTION

The major health threat of ingestion occurs from the danger of aspiration (breathing) of liquid drops into the lungs, particularly from vomiting. Aspiration may result in chemical pneumonia (fluid in the lungs), severe lung damage, respiratory failure and even death.

Ingestion may cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous system (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest, and death may occur.

INHALATION

Excessive exposure may cause irritations to the nose, throat, lungs and respiratory tract. Central nervous system (brain) effects may include headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death.

WARNING: the burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation, and death.

CHRONIC EFFECTS and CARCINOGENICITY

Contains benzene, a regulated human carcinogen. Benzene has the potential to cause anemia and other blood diseases, including leukemia, after repeated and prolonged exposure. Exposure to light hydrocarbons in the same boiling range as this product has been associated in animal studies with systemic toxicity. See also Section 11 - Toxicological Information.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Irritation from skin exposure may aggravate existing open wounds, skin disorders, and dermatitis (rash). Chronic respiratory disease, liver or kidney dysfunction, or pre-existing central nervous system disorders may be aggravated by exposure.

4. FIRST AID MEASURES (rev. Dec-97)

EYES

In case of contact with eyes, immediately flush with clean, low-pressure water for at least 15 min. Hold eyelids open to ensure adequate flushing. Seek medical attention.

SKIN

Remove contaminated clothing. Wash contaminated areas thoroughly with soap and water or waterless hand cleanser. Obtain medical attention if irritation or redness develops.

INGESTION

DO NOT INDUCE VOMITING. Do not give liquids. Obtain immediate medical attention. If spontaneous vomiting occurs, lean victim forward to reduce the risk of aspiration. Small amounts of material which enter the mouth should be rinsed out until the taste is dissipated.

INHALATION

Remove person to fresh air. If person is not breathing, ensure an open airway and provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.

AMERAD HESS CORPORATION

MATERIAL SAFETY DATA SHEET

Gasoline, All Grades

MSDS No. 9950

5. FIRE FIGHTING MEASURES (rev. Dec-97)

FLAMMABLE PROPERTIES:

FLASH POINT: -45 °F (-43°C)
AUTOIGNITION TEMPERATURE: highly variable; > 530 °F (>280 °C)
OSHA/NFPA FLAMMABILITY CLASS: 1A (flammable liquid)
LOWER EXPLOSIVE LIMIT (%): 1.4%
UPPER EXPLOSIVE LIMIT (%): 7.6%

FIRE AND EXPLOSION HAZARDS

Vapors may be ignited rapidly when exposed to heat, spark, open flame or other source of ignition. Flowing product may be ignited by self-generated static electricity. When mixed with air and exposed to an ignition source, flammable vapors can burn in the open or explode in confined spaces. Being heavier than air, vapors may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard.

EXTINGUISHING MEDIA

SMALL FIRES: Any extinguisher suitable for Class B fires, dry chemical, CO₂, water spray, fire fighting foam, or Halon.

LARGE FIRES: Water spray, fog or fire fighting foam. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers.

During certain times of the year and/or in certain geographical locations, gasoline may contain MTBE and/or TAME. Firefighting foam suitable for polar solvents is recommended for fuel with greater than 10% oxygenate concentration - refer to NFPA 11 "Low Expansion Foam - 1994 Edition."

FIRE FIGHTING INSTRUCTIONS

Small fires in the incipient (beginning) stage may typically be extinguished using handheld portable fire extinguishers and other fire fighting equipment.

Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH/MSHA- approved pressure-demand self-contained breathing apparatus with full facepiece and full protective clothing.

Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water. For massive fires the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied fire fighting foam.

See Section 16 for the NFPA 704 Hazard Rating.

6. ACCIDENTAL RELEASE MEASURES (rev. Dec-97)

ACTIVATE FACILITY SPILL CONTINGENCY or EMERGENCY PLAN.

Evacuate nonessential personnel and remove or secure all ignition sources. Consider wind direction; stay upwind and uphill, if possible. Evaluate the direction of product travel, diking, sewers, etc. to confirm spill areas. Spills may infiltrate subsurface soil and groundwater; professional assistance may be necessary to determine the extent of subsurface impact.

Carefully contain and stop the source of the spill, if safe to do so. Protect bodies of water by diking, absorbents, or absorbent boom, if possible. Do not flush down sewer or drainage systems, unless system is designed and permitted to handle such material. The use of fire fighting foam may be useful in certain situations to reduce vapors. The proper use of water spray may effectively disperse product

AMERAD HESS CORPORATION

MATERIAL SAFETY DATA SHEET

Gasoline, All Grades

MSDS No. 9950

vapors or the liquid itself, preventing contact with ignition sources or areas/equipment that require protection.

Take up with sand or other oil absorbing materials. Carefully shovel, scoop or sweep up into a waste container for reclamation or disposal - caution, flammable vapors may accumulate in closed containers. Response and clean-up crews must be properly trained and must utilize proper protective equipment (see Section 8).

7. HANDLING and STORAGE (rev. Dec-97)

HANDLING PRECAUTIONS

*****USE ONLY AS A MOTOR FUEL*****

*****DO NOT SIPHON BY MOUTH*****

Handle as a flammable liquid. Keep away from heat, sparks, and open flame! Electrical equipment should be approved for classified area. Bond and ground containers during product transfer to reduce the possibility of static-initiated fire or explosion.

Special slow load procedures for "switch loading" must be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil) is loaded into tanks previously containing low flash point products (such as this product) - see API Publication 2003, "Protection Against Ignitions Arising Out Of Static, Lightning and Stray Currents.

STORAGE PRECAUTIONS

Keep away from flame, sparks, excessive temperatures and open flame. Use approved vented containers. Keep containers closed and clearly labeled. Empty product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition.

Store in a well-ventilated area. This storage area should comply with NFPA 30 "Flammable and Combustible Liquid Code". Avoid storage near incompatible materials. The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 "Cleaning Mobile Tanks In Flammable and Combustible Liquid Service" and API RP 2015 "Cleaning Petroleum Storage Tanks".

WORK/HYGIENIC PRACTICES

Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure. Use good personal hygiene practices. Avoid repeated and/or prolonged skin exposure. Wash hands before eating, drinking, smoking, or using toilet facilities. Do not use as a cleaning solvent on the skin. Do not use solvents or harsh abrasive skin cleaners for washing this product from exposed skin areas. Waterless hand cleaners are effective. Promptly remove contaminated clothing and launder before reuse. Use care when laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves.

8. EXPOSURE CONTROLS and PERSONAL PROTECTION (rev. Jan-04)

EXPOSURE LIMITS

Component (CAS No.)	Source	TWA (ppm)	STEL (ppm)	Exposure Limits	Note
Gasoline (86290-81-5)	ACGIH	300	500	A3	
Benzene (71-43-2)	OSHA	1	5	Carcinogen	
	ACGIH	0.5	2.5	A1, skin	
	USCG	1	5		
n-Butane (106-97-8)	ACGIH	800	--	2003 NOIC: 1000 ppm (TWA) Aliphatic Hydrocarbon Gases Alkane (C1-C4)	
Ethyl Alcohol (ethanol) (64-17-5)	OSHA	1000	--		
	ACGIH	1000	--	A4	
Ethyl benzene (100-41-4)	OSHA	100	--		
	ACGIH	100	125	A3	

AMERADAHESSE CORPORATION

MATERIAL SAFETY DATA SHEET

Gasoline, All Grades

MSDS No. 9950

Component (CAS No.)	Source	TWA (ppm)	STEL (ppm)	Exposure Limits	Note
n-Hexane (110-54-3)	OSHA	500	--		
	ACGIH	50	--	skin	
Methyl-tertiary butyl ether [MTBE] (1634-04-4)	ACGIH	50		A3	
Tertiary-amyl methyl ether [TAME] (994-05-8)				None established	
Toluene (108-88-3)	OSHA	200		Ceiling: 300 ppm; Peak: 500 ppm (10 min.)	
	ACGIH	50	--	A4 (skin)	
1,2,4- Trimethylbenzene (95-63-6)	ACGIH	25	--		
Xylene, mixed isomers (1330-20-7)	OSHA	100	--		
	ACGIH	100	150	A4	

ENGINEERING CONTROLS

Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces.

EYE/FACE PROTECTION

Safety glasses or goggles are recommended where there is a possibility of splashing or spraying.

SKIN PROTECTION

Gloves constructed of nitrile or neoprene are recommended. Chemical protective clothing such as that made of of E.I. DuPont Tychem®, products or equivalent is recommended based on degree of exposure.

Note: The resistance of specific material may vary from product to product as well as with degree of exposure. Consult manufacturer specifications for further information.

RESPIRATORY PROTECTION

A NIOSH-approved air-purifying respirator with organic vapor cartridges or canister may be permissible under certain circumstances where airborne concentrations are or may be expected to exceed exposure limits or for odor or irritation. Protection provided by air-purifying respirators is limited. Refer to OSHA 29 CFR 1910.134, NIOSH Respirator Decision Logic, and the manufacturer for additional guidance on respiratory protection selection and limitations.

Use a positive pressure, air-supplied respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection.

9. PHYSICAL and CHEMICAL PROPERTIES (rev. Jan-04)

APPEARANCE

A translucent, straw-colored or light yellow liquid

ODOR

A strong, characteristic aromatic hydrocarbon odor. Oxygenated gasoline with MTBE and/or TAME may have a sweet, ether-like odor and is detectable at a lower concentration than non-oxygenated gasoline.

ODOR THRESHOLD

	Odor Detection	Odor Recognition
Non-oxygenated gasoline:	0.5 - 0.6 ppm	0.8 - 1.1 ppm
Gasoline with 15% MTBE:	0.2 - 0.3 ppm	0.4 - 0.7 ppm
Gasoline with 15% TAME:	0.1 ppm	0.2 ppm

BASIC PHYSICAL PROPERTIES

BOILING RANGE:	85 to 437 °F (39 to 200 °C)
VAPOR PRESSURE:	6.4 - 15 RVP @ 100 °F (38 °C) (275-475 mm Hg @ 68 °F (20 °C)
VAPOR DENSITY (air = 1):	AP 3 to 4
SPECIFIC GRAVITY (H ₂ O = 1):	0.70 – 0.78
EVAPORATION RATE:	10-11 (n-butyl acetate = 1)
PERCENT VOLATILES:	100 %

AMERADAHESSE CORPORATION

MATERIAL SAFETY DATA SHEET

Gasoline, All Grades

MSDS No. 9950

SOLUBILITY (H₂O): Non-oxygenated gasoline - negligible (< 0.1% @ 77 °F). Gasoline with 15% MTBE - slight (0.1 - 3% @ 77 °F); ethanol is readily soluble in water

10. STABILITY and REACTIVITY (rev. Dec-94)

STABILITY: Stable. Hazardous polymerization will not occur.

CONDITIONS TO AVOID

Avoid high temperatures, open flames, sparks, welding, smoking and other ignition sources

INCOMPATIBLE MATERIALS

Keep away from strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke). Contact with nitric and sulfuric acids will form nitroresols that can decompose violently.

11. TOXICOLOGICAL PROPERTIES (rev. Dec-97)

ACUTE TOXICITY

Acute Dermal LD50 (rabbits): > 5 ml/kg

Acute Oral LD50 (rat): 18.75 ml/kg

Primary dermal irritation (rabbits): slightly irritating

Draize eye irritation (rabbits): non-irritating

Guinea pig sensitization: negative

CHRONIC EFFECTS AND CARCINOGENICITY

Carcinogenicity: OSHA: NO IARC: YES - 2B

NTP: NO

ACGIH: YES (A3)

IARC has determined that gasoline and gasoline exhaust are possibly carcinogenic in humans. Inhalation exposure to completely vaporized unleaded gasoline caused kidney cancers in male rats and liver tumors in female mice. The U.S. EPA has determined that the male kidney tumors are species-specific and are irrelevant for human health risk assessment. The significance of the tumors seen in female mice is not known. Exposure to light hydrocarbons in the same boiling range as this product has been associated in animal studies with effects to the central and peripheral nervous systems, liver, and kidneys. The significance of these animal models to predict similar human response to gasoline is uncertain.

This product contains benzene. Human health studies indicate that prolonged and/or repeated overexposure to benzene may cause damage to the blood-forming system (particularly bone marrow), and serious blood disorders such as aplastic anemia and leukemia. Benzene is listed as a human carcinogen by the NTP, IARC, OSHA and ACGIH.

This product may contain methyl tertiary butyl ether (MTBE): animal and human health effects studies indicate that MTBE may cause eye, skin, and respiratory tract irritation, central nervous system depression and neurotoxicity. MTBE is classified as an animal carcinogen (A3) by the ACGIH.

12. ECOLOGICAL INFORMATION (rev. Jan-04)

Keep out of sewers, drainage areas and waterways. Report spills and releases, as applicable, under Federal and State regulations. If released, oxygenates such as ethers and alcohols will be expected to exhibit fairly high mobility in soil, and therefore may leach into groundwater. The API (www.api.org) provides a number of useful references addressing petroleum and oxygenate contamination of groundwater.

13. DISPOSAL CONSIDERATIONS (rev. Dec-97)

Consult federal, state and local waste regulations to determine appropriate disposal options.

AMERAD HESS CORPORATION

MATERIAL SAFETY DATA SHEET

Gasoline, All Grades

MSDS No. 9950

14. TRANSPORTATION INFORMATION (rev. Jan-04)

DOT PROPER SHIPPING NAME: Gasoline
 DOT HAZARD CLASS and PACKING GROUP: 3, PG II
 DOT IDENTIFICATION NUMBER: UN 1203
 DOT SHIPPING LABEL: FLAMMABLE LIQUID

PLACARD:



15. REGULATORY INFORMATION (rev. Jan-04)

U.S. FEDERAL, STATE, and LOCAL REGULATORY INFORMATION

This product and its constituents listed herein are on the EPA TSCA Inventory. Any spill or uncontrolled release of this product, including any substantial threat of release, may be subject to federal, state and/or local reporting requirements. This product and/or its constituents may also be subject to other federal, state, or local regulations; consult those regulations applicable to your facility/operation.

CLEAN WATER ACT (OIL SPILLS)

Any spill or release of this product to "navigable waters" (essentially any surface water, including certain wetlands) or adjoining shorelines sufficient to cause a visible sheen or deposit of a sludge or emulsion must be reported immediately to the National Response Center (1-800-424-8802) or, if not practical, the U.S. Coast Guard with follow-up to the National Response Center, as required by U.S. Federal Law. Also contact appropriate state and local regulatory agencies as required.

CERCLA SECTION 103 and SARA SECTION 304 (RELEASE TO THE ENVIRONMENT)

The CERCLA definition of hazardous substances contains a "petroleum exclusion" clause which exempts crude oil, refined, and unrefined petroleum products and any indigenous components of such. However, other federal reporting requirements (e.g., SARA Section 304 as well as the Clean Water Act if the spill occurs on navigable waters) may still apply.

SARA SECTION 311/312 - HAZARD CLASSES

<u>ACUTE HEALTH</u>	<u>CHRONIC HEALTH</u>	<u>FIRE</u>	<u>SUDDEN RELEASE OF PRESSURE</u>	<u>REACTIVE</u>
X	X	X	--	--

SARA SECTION 313 - SUPPLIER NOTIFICATION

This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372:

INGREDIENT NAME (CAS NUMBER)	CONCENTRATION WT. PERCENT
Benzene (71-43-2)	0.1 to 4.9 (0.1 to 1.3 for reformulated gasoline)
Ethyl benzene (100-41-4)	< 3
n-Hexane (110-54-3)	0.5 to 4
Methyl-tertiary butyl ether (MTBE) (1634-04-4)	0 to 15.0
Toluene (108-88-3)	1 to 15
1,2,4- Trimethylbenzene (95-63-6)	< 6
Xylene, mixed isomers (1330-20-7)	1 to 15

US EPA guidance documents (www.epa.gov/tri) for reporting Persistent Bioaccumulating Toxics (PBTs) indicate this product may contain the following de minimis levels of toxic chemicals subject to Section 313 reporting:

INGREDIENT NAME (CAS NUMBER)	CONCENTRATION - Parts per million (ppm) by weight
Polycyclic aromatic compounds (PACs)	17
Benzo (g,h,i) perylene (191-24-2)	2.55
Lead (7439-92-1)	0.079

AMERADA HESS CORPORATION

MATERIAL SAFETY DATA SHEET

Gasoline, All Grades

MSDS No. 9950

CANADIAN REGULATORY INFORMATION (WHMIS)

Class B, Division 2 (Flammable Liquid)

Class D, Division 2A (Very toxic by other means) and Class D, Division 2B (Toxic by other means)

16. OTHER INFORMATION (rev. Jan-04)

<u>NFPA® HAZARD RATING</u>	HEALTH:	1	Slight
	FIRE:	3	Serious
	REACTIVITY:	0	Minimal

<u>HMIS® HAZARD RATING</u>	HEALTH:	1 *	Slight
	FIRE:	3	Serious
	REACTIVITY:	0	Minimal
* CHRONIC			

SUPERSEDES MSDS DATED: 12/30/97

ABBREVIATIONS:

AP = Approximately < = Less than > = Greater than
 N/A = Not Applicable N/D = Not Determined ppm = parts per million

ACRONYMS:

ACGIH	American Conference of Governmental Industrial Hygienists	NTP	National Toxicology Program
AIHA	American Industrial Hygiene Association	OPA	Oil Pollution Act of 1990
ANSI	American National Standards Institute (212)642-4900	OSHA	U.S. Occupational Safety & Health Administration
API	American Petroleum Institute (202)682-8000	PEL	Permissible Exposure Limit (OSHA)
CERCLA	Comprehensive Emergency Response, Compensation, and Liability Act	RCRA	Resource Conservation and Recovery Act
DOT	U.S. Department of Transportation [General Info: (800)467-4922]	REL	Recommended Exposure Limit (NIOSH)
EPA	U.S. Environmental Protection Agency	SARA	Superfund Amendments and Reauthorization Act of 1986 Title III
HMIS	Hazardous Materials Information System	SCBA	Self-Contained Breathing Apparatus
IARC	International Agency For Research On Cancer	SPCC	Spill Prevention, Control, and Countermeasures
MSHA	Mine Safety and Health Administration	STEL	Short-Term Exposure Limit (generally 15 minutes)
NFPA	National Fire Protection Association (617)770-3000	TLV	Threshold Limit Value (ACGIH)
NIOSH	National Institute of Occupational Safety and Health	TSCA	Toxic Substances Control Act
NOIC	Notice of Intended Change (proposed change to ACGIH TLV)	TWA	Time Weighted Average (8 hr.)
		WEEL	Workplace Environmental Exposure Level (AIHA)
		WHMIS	Workplace Hazardous Materials Information System (Canada)

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

Information presented herein has been compiled from sources considered to be dependable, and is accurate and reliable to the best of our knowledge and belief, but is not guaranteed to be so. Since conditions of use are beyond our control, we make no warranties, expressed or implied, except those that may be contained in our written contract of sale or acknowledgment.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material, even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in their use of the material.



SAFETY DATA SHEET

Creation Date 26-Oct-2009

Revision Date 09-Nov-2010

Revision Number 2

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier

Product Description:

n-Hexane

Cat No.

232100000; 232100010; 232100025

Synonyms

Hex

Relevant identified uses of the substance or mixture and uses advised against

Recommended Use

Laboratory chemicals

Uses advised against

No Information available

Details of the supplier of the safety data sheet

Company

Acros Organics BVBA
Janssen Pharmaceuticaaan 3a
2440 Geel, Belgium

E-mail address

begel.sdsdesk@thermofisher.com

Emergency Telephone Number

For information in the US, call: 001-800-ACROS-01

For information in Europe, call: +32 14 57 52 11

Emergency Number, Europe: +32 14 57 52 99

Emergency Number, US: 001-201-796-7100

CHEMTREC Phone Number, US: 001-800-424-9300

CHEMTREC Phone Number, Europe: 001-703-527-3887

2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

REGULATION (EC) No 1272/2008

Aspiration Toxicity	Category 1
Skin Corrosion / irritation	Category 2
Reproductive Toxicity	Category 2
Specific target organ systemic toxicity (single exposure)	Category 3
Specific target organ systemic toxicity (repeated exposure)	Category 2
Chronic aquatic toxicity	Category 2
Flammable liquids.	Category 2

Classification according to EU Directives 67/548/EEC or 1999/45/EC

For the full text of the R phrases mentioned in this Section, see Section 16

Symbol(s)

Xn - Harmful

F - Highly flammable

N - Dangerous for the environment

R -phrase(s)

R11 - Highly flammable

R38 - Irritating to skin

R62 - Possible risk of impaired fertility

R65 - Harmful: may cause lung damage if swallowed

R67 - Vapors may cause drowsiness and dizziness

n-Hexane

Revision Date 09-Nov-2010

2. HAZARDS IDENTIFICATION

Risk Combination Phrases

R48/20 - Harmful: danger of serious damage to health by prolonged exposure through inhalation
R51/53 - Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Label Elements



Signal Word

Danger

Hazard Statements

H304 - May be fatal if swallowed and enters airways
H336 - May cause drowsiness or dizziness
H315 - Causes skin irritation
H373 - May cause damage to organs through prolonged or repeated exposure
H411 - Toxic to aquatic life with long lasting effects
H361f - Suspected of damaging fertility
H225 - Highly flammable liquid and vapor

Precautionary Statements - EU (§28, 1272/2008)

P281 - Use personal protective equipment as required
P260 - Do not breathe dust/fume/gas/mist/vapors/spray
P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician
P331 - Do NOT induce vomiting
P273 - Avoid release to the environment
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking

Other Hazards

No information available.

3. COMPOSITION/INFORMATION ON INGREDIENTS

n-Hexane

Revision Date 09-Nov-2010

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	EC No.	Weight %	CAS-No	Classification	GHSCLAS	REACH Reg. No.
Hexane 110-54-3	EEC No. 203-777-6	>95	110-54-3	F;R11 Repr.Cat.3;R62 Xn;R48/20-65 Xi;R38 R67 N;R51/53	Skin Irrit. 2 (H315) Repr. 2 (H361f) STOT SE 3 (H336) STOT RE 2 (H373) Asp. Tox. 1 (H304) Aquatic Chronic 2 (H411) Flam. Liq. 2 (H225)	-

For the full text of the R phrases mentioned in this Section, see Section 16

4. FIRST AID MEASURES

Description of first aid measures

Eye Contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes Obtain medical attention

Skin Contact

Wash off immediately with plenty of water for at least 15 minutes Obtain medical attention

Ingestion

Do not induce vomiting Call a physician or Poison Control Center immediately

Inhalation

Move to fresh air If breathing is difficult, give oxygen Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with a respiratory medical device Obtain medical attention

Notes to Physician

Treat symptomatically

5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable Extinguishing Media

CO₂, dry chemical, dry sand, alcohol-resistant foam Cool closed containers exposed to fire with water spray

Extinguishing media which must not be used for safety reasons

No information available.

Special hazards arising from the substance or mixture

Flammable Risk of ignition Vapors may form explosive mixtures with air Vapors may travel to source of ignition and flash back Containers may explode when heated

Advice for fire-fighters

n-Hexane

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As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear Thermal decomposition can lead to release of irritating gases and vapors

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Remove all sources of ignition. Take precautionary measures against static discharges.

Environmental precautions

Should not be released into the environment.

Methods and material for containment and cleaning up

Soak up with inert absorbent material. Keep in suitable and closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

7. HANDLING AND STORAGE

Precautions for Safe Handling

Use only under a chemical fume hood Wear personal protective equipment Do not get in eyes, on skin, or on clothing Do not breathe vapors or spray mist Keep away from open flames, hot surfaces and sources of ignition Use only non-sparking tools Use explosion-proof equipment Take precautionary measures against static discharges

Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place Keep away from heat and sources of ignition Flammables area

Specific End Uses

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

Exposure limits

Component

Hexane

European Union	The United Kingdom	France	Belgium	Spain
	TWA: 72 mg/m ³ TWA: 20 ppm STEL: 60 ppm STEL: 216 mg/m ³	VME: 20 ppm VME: 72 mg/m ³	TWA: 72 mg/m ³ TWA: 20 ppm	VLA-ED: 20 ppm VLA-ED: 72 mg/m ³

Component

Hexane

Italy	Portugal	The Netherlands	Finland	Denmark
TWA: 72 mg/m ³ TWA: 20 ppm	TWA: 50 ppm	STEL: 144 mg/m ³ TWA: 72 mg/m ³	TWA: 72 mg/m ³ TWA: 20 ppm	TWA: 72 mg/m ³ TWA: 20 ppm

Component

Hexane

Austria	Switzerland	Poland	Norway	Ireland
STEL: 80 ppm STEL: 288 mg/m ³ MAK: 20 ppm MAK: 72 mg/m ³	STEL: 1440 mg/m ³ STEL: 400 ppm MAK: 180 mg/m ³ MAK: 50 ppm	NDS: 72 mg/m ³	TWA: 20 ppm TWA: 72 mg/m ³	TWA: 20 ppm TWA: 70 mg/m ³

n-Hexane

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Derived No Effect Level (DNEL)	No information available.
Predicted No Effect Concentration (PNEC)	No information available.
Exposure controls	
Engineering Measures	Use only under a chemical fume hood Use explosion-proof electrical/ventilating/lighting/equipment Ensure adequate ventilation, especially in confined areas Ensure that eyewash stations and safety showers are close to the workstation location
Personal protective equipment	
Eye Protection	Safety glasses with side-shields
Hand Protection	Protective gloves
Skin and body protection	Wear appropriate protective gloves and clothing to prevent skin exposure
Respiratory Protection	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice
Environmental exposure controls	No information available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Colorless
odor	Petroleum distillates
pH	No information available.
Vapor Pressure	160 mbar @ 20 °C
Vapor Density	2.97 (Air = 1.0)
Viscosity	0.31 mPa s at 20 °C
Boiling Point/Range	69°C / 156.2°F @ 760 mmHg
Melting Point/Range	-95°C / -139°F
Flash Point	-22°C / -7.6°F
Autoignition Temperature	223°C / 433.4°F
Explosion Limits	
Lower	1.1 vol%
Upper	7.5 vol%
Water Solubility	Insoluble
Specific Gravity	0.659
Molecular Formula	C6 H14
Molecular Weight	86.18

10. STABILITY AND REACTIVITY

Reactivity
Chemical Stability
 Stable under normal conditions.

Possibility of Hazardous Reactions
Hazardous Polymerization No information available
Hazardous Reactions . No information available.



n-Hexane

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Conditions to Avoid

Incompatible products, Heat, flames and sparks, Exposure to light.

Incompatible Materials

Strong oxidizing agents, Halogens.

Hazardous Decomposition ProductsCarbon monoxide (CO). Carbon dioxide (CO₂).**11. TOXICOLOGICAL INFORMATION****Information on Toxicological Effects****Acute Toxicity****Component Information****Component**

Hexane

LD50 Oral	LD50 Dermal	LC50 Inhalation
25 g/kg (Rat)	3000 mg/kg (Rabbit)	48000 ppm (Rat) 4 h

Chronic Toxicity**Carcinogenicity**

There are no known carcinogenic chemicals in this product

Sensitization

No information available.

Mutagenic Effects

Mutagenic effects have occurred in experimental animals.

Reproductive Effects

Experiments have shown reproductive toxicity effects on laboratory animals

Developmental Effects

Developmental effects have occurred in experimental animals

Teratogenicity

Teratogenic effects have occurred in experimental animals.

Target Organs

Skin Respiratory system Eyes Central nervous system (CNS) Heart Blood Liver Reproductive System

Other Adverse Effects

Tumorigenic effects have been reported in experimental animals. See actual entry in RTECS for complete information

Endocrine Disruptor Information

None known

12. ECOLOGICAL INFORMATION**Toxicity****Ecotoxicity effects**

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Hexane		2.1-2.98 mg/L LC50 96 h		EC50: 3.87 mg/L/48h

n-Hexane

Revision Date 09-Nov-2010

Persistence and degradability

No information available

Bioaccumulative potential

No information available.

Component	log Pow
Hexane	4.11

Mobility in soil

Results of PBT and vPvB assessment

Other adverse effects

No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from Residues / Unused Products

Dispose of in accordance with local regulations

Contaminated Packaging

Empty containers should be taken for local recycling, recovery or waste disposal

14. TRANSPORT INFORMATION

IMDG/IMO

UN-No	UN1208
Hazard Class	3
Packing Group	II
Proper Shipping Name	Hexanes

ADR

UN-No	UN1208
Hazard Class	3
Packing Group	II
Proper Shipping Name	Hexanes

IATA

UN-No	UN1208
Hazard Class	3
Packing Group	II
Proper Shipping Name	Hexanes

n-Hexane

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15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

International Inventories

Component	EINECS	ELINCS	NLP	TSCA	DSL	NDSL	PICCS	ENCS	CHINA	AICS	KECL
Hexane	203-777-6	-		X	X	-	X	X	X	X	KE-18626 X

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

EINECS/ELINCS - European Inventory Lists

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

PICCS - Philippines Inventory of Chemicals and Chemical Substances

ENCS - Japan Existing and New Chemical Substances

CHINA - China Inventory of Existing Chemical Substances

AICS - Inventory of Chemical Substances

KECL - Existing and Evaluated Chemical Substances

Chemical Safety Assessment

16. OTHER INFORMATION

Text of R phrases mentioned in Section 2-3

R11 - Highly flammable

R38 - Irritating to skin

R62 - Possible risk of impaired fertility

R65 - Harmful: may cause lung damage if swallowed

R67 - Vapors may cause drowsiness and dizziness

R48/20 - Harmful: danger of serious damage to health by prolonged exposure through inhalation

R51/53 - Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Revision Date

09-Nov-2010

Revision Summary

Not applicable

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

Disclaimer

The information provided on this SDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text

End of Safety Data Sheet



MATERIAL SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Catalog Number(s)

00654-00, 05942-21, 05942-22, 05942-24, 05942-25, 05942-26, 05942-27, 35653-01, 35654-00

Product Identity

BUFFER, Standard, pH 4.01; BUFFER, High Accuracy, pH 4.000 (Color Coded Red)

Manufacturer's Name

RICCA CHEMICAL COMPANY

Emergency Telephone Number (24 hr)

CHEMTREC®: 800-424-9300

Address (Number, Street, City, State, and ZIP Code)

P.O. Box 13090

Telephone Number For Information

817-461-5601

Arlington, Texas 76094

Date Prepared

3-7-2000

Section 2. Composition / Information on Ingredients

Component	CAS Registry #	Percent Concentration	Exposure Limits	
			ACGIH TLV	OSHA PEL
Potassium Acid Phthalate	877-24-7	0.95 – 1.05	N/A	N/A
Preservative*	proprietary	<0.5	N/A	N/A
*(No Mercury compounds or Formaldehyde)				
Inert Dye	proprietary	<0.1	N/A	N/A
Water, Deionized	7732-18-5	Balance	N/A	N/A

Section 3. Hazards Identification

EMERGENCY OVERVIEW

Non-flammable, non-toxic, non-corrosive. Does not present any significant health hazards. Wash areas of contact with water.

POTENTIAL HEALTH EFFECTS:

TARGET ORGANS: eyes, skin.

EYE CONTACT: May cause slight irritation.

INHALATION: Not likely to be hazardous by inhalation.

SKIN CONTACT: May cause slight irritation.

INGESTION: Large doses may cause nausea, vomiting, diarrhea and cramps.

CHRONIC EFFECTS / CARCINOGENICITY:

IARC – No

NTP – No

OSHA – No

TERATOLOGY (BIRTH DEFECT) INFORMATION:

No information found in "Registry of Toxic Effects of Chemical Substances" or other information sources.

REPRODUCTION INFORMATION:

No information found in "Registry of Toxic Effects of Chemical Substances" or other information sources.

Section 4. First Aid Measures – In all cases, seek qualified evaluation.

EYE CONTACT: Irrigate immediately with large quantity of water for at least 15 minutes. Call a physician if irritation develops.

INHALATION: Remove to fresh air. Give artificial respiration if necessary. If breathing is difficult, give oxygen.

SKIN CONTACT: Flush with plenty of water for at least 15 minutes. Call a physician if irritation develops.

INGESTION: Dilute with water or milk. Call a physician if necessary.

Section 5. Fire Fighting Measures

FLAMMABLE PROPERTIES:

FLASH POINT: N/A

METHOD USED: N/A

FLAMMABLE LIMITS

LFL: N/A

UFL: N/A

EXTINGUISHING MEDIA: Use any means suitable for extinguishing surrounding fire.

FIRE & EXPLOSION HAZARDS: Not considered to be a fire or explosion hazard.

FIRE FIGHTING INSTRUCTIONS: Use normal procedures/instructions.

FIRE FIGHTING EQUIPMENT: Use protective clothing and breathing equipment appropriate for the surrounding fire.

Section 6. Accidental Release Measures

Absorb with suitable material and dispose of in accordance with local regulations.

Section 7. Handling and Storage

As with all chemicals, wash hands thoroughly after handling. Avoid contact with eyes and skin. Protect from freezing and physical damage. SAFETY STORAGE CODE: GENERAL

Section 8. Exposure Controls / Personal Protection

ENGINEERING CONTROLS: No specific controls are needed. Normal room ventilation is adequate.

RESPIRATORY PROTECTION: Normal room ventilation is adequate.

SKIN PROTECTION: Chemical resistant gloves.

EYE PROTECTION: Safety glasses or goggles.

Section 9. Physical and chemical Properties

APPEARANCE: Clear, red colored liquid

pH: 4

ODOR: odorless

BOILING POINT (°C): approximately 100

SOLUBILITY IN WATER: infinite

MELTING POINT (°C): approximately 0

SPECIFIC GRAVITY: approximately 1

VAPOR PRESSURE: N/A

Section 10. Stability and Reactivity

CHEMICAL STABILITY: Stable under normal conditions of use and storage.

INCOMPATIBILITY: Nitric Acid



MATERIAL SAFETY DATA SHEET

HAZARDOUS DECOMPOSITION PRODUCTS: Oxides of Carbon and Potassium.

HAZARDOUS POLYMERIZATION: Will not occur.

Section 11. Toxicological Information

LD50, Oral, Rat: >3200 mg/kg (Potassium Acid Phthalate), details of toxic effects not reported other than lethal dose value.

Section 12. Ecological Information

ECOTOXICOLOGICAL INFORMATION: No information found.

CHEMICAL FATE INFORMATION: No information found.

Section 13. Disposal Considerations

Dilute with water, neutralize with weak sodium hydroxide solution, and then flush to sewer if local regulations allow. If not allowed, save for recovery or recycling in an approved waste disposal facility. Always dispose of in accordance with local, state and federal regulations.

Section 14. Transport Information (Not meant to be all inclusive)

D.O.T. SHIPPING NAME:	Not regulated
D.O.T. HAZARD CLASS:	None
U.N. / N.A. NUMBER:	None
PACKING GROUP:	None D.O.T.
LABEL:	None

Section 15. Regulatory Information (Not meant to be all inclusive - selected regulation represented)

OSHA STATUS: The above items either do not contain any specifically hazardous material or the potentially hazardous material is present in such low concentration that the items do not present any immediate threat to health and safety. These items do not meet the OSHA Hazard Communication Standard (29 CFR 1910.1200) definition of a hazardous material.

TSCA STATUS: All components of this solution are listed on the TSCA Inventory.

CERCLA REPORTABLE QUANTITY: Not reportable

SARA TITLE III:

SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES: No

SECTION 311/312 HAZARDOUS CATEGORIES: No

SECTION 313 TOXIC CHEMICALS: No

RCRA STATUS: No

CALIFORNIA PROPOSITION 65: Not listed

Section 16. Other Information

NFPA® Ratings:	Health: 1	Flammability: 0	Reactivity: 0	Special Notice Key: None
HMIS® Ratings:	Health: 1	Flammability: 0	Reactivity: 0	Protective Equipment: B (Protective eyewear, gloves)

Rev 1, 10-16-2000: (Section 1) added catalog number 35653-01.

Rev 2, 03-25-2003: Reviewed and approved.

Rev 3, 03-20-2006: Reviewed and approved.

When handled properly by qualified personnel, the product described herein does not present a significant health or safety hazard. Alteration of its characteristics by concentration, evaporation, addition of other substances, or other means may present hazards not specifically addressed herein and which must be evaluated by the user. The information furnished herein is believed to be accurate and represents the best data currently available to us. No warranty, expressed or implied, is made and RICCA CHEMICAL COMPANY assumes no legal responsibility or liability whatsoever resulting from its use.



MATERIAL SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Catalog Number(s)

00654-04, 35654-04, 05942-41, 05942-42, 05942-44, 05942-45, 35653-02

Product Identity

BUFFER, Standard, pH 7.00 (Color Coded Green)

Manufacturer's Name

RICCA CHEMICAL COMPANY

Emergency Telephone Number (24 hr)

CHEMTREC®: 800-424-9300

Address (Number, Street, City, State, and ZIP Code)

P.O. Box 13090

Telephone Number For Information

817-461-5601

Arlington, Texas 76094

Date Prepared

3-8-2000

Section 2. Composition / Information on Ingredients

Component	CAS Registry #	Percent Concentration	Exposure Limits	
			ACGIH TLV	OSHA PEL
Sodium Phosphate, Dibasic	7558-79-4	< 1	N/A	N/A
Potassium Phosphate, Monobasic	7778-77-0	< 1	N/A	N/A
Preservative*	Proprietary	< 0.1	N/A	N/A
*(No Mercury Compounds or Formaldehyde)				
Inert Dye	Proprietary	< 0.1	N/A	N/A
Water, Deionized	7732-18-5	Balance	N/A	N/A

Section 3. Hazards Identification

EMERGENCY OVERVIEW

Non-flammable, non-toxic, non-corrosive. Does not present any significant health hazards. May cause irritation. Wash areas of contact with water

POTENTIAL HEALTH EFFECTS:

TARGET ORGANS: eyes, skin.

EYE CONTACT: May cause slight irritation.

INHALATION: May cause allergic respiratory reaction to those allergic to phosphates.

SKIN CONTACT: May cause slight irritation to those allergic to phosphates.

INGESTION: Large doses may cause stomach upset.

CHRONIC EFFECTS / CARCINOGENICITY:

IARC – No

NTP – No

OSHA – No

TERATOLOGY (BIRTH DEFECT) INFORMATION:

No information found in "Registry of Toxic Effects of Chemical Substances" or other information sources.

REPRODUCTION INFORMATION:

No information found in "Registry of Toxic Effects of Chemical Substances" or other information sources.

Section 4. First Aid Measures – In all cases, seek qualified evaluation.

EYE CONTACT: Irrigate immediately with large quantity of water for at least 15 minutes. Call a physician if irritation develops.

INHALATION: Remove to fresh air. Give artificial respiration if necessary. If breathing is difficult, give oxygen.

SKIN CONTACT: Flush with plenty of water for at least 15 minutes. Call a physician if irritation develops.

INGESTION: Dilute with water or milk. Call a physician if necessary.

Section 5. Fire Fighting Measures

FLAMMABLE PROPERTIES:

FLASH POINT: N/A METHOD USED: N/A

FLAMMABLE LIMITS

LFL: N/A UFL: N/A

EXTINGUISHING MEDIA: Use any means suitable for extinguishing surrounding fire.

FIRE & EXPLOSION HAZARDS: Not considered to be a fire or explosion hazard.

FIRE FIGHTING INSTRUCTIONS: Use normal procedures/instructions.

FIRE FIGHTING EQUIPMENT: Use protective clothing and breathing equipment appropriate for the surrounding fire.

Section 6. Accidental Release Measures

Absorb with suitable material (vermiculite, clay, etc.) and dispose of in accordance with local regulations. Check with local agencies for the proper disposal of phosphate containing solutions.

Section 7. Handling and Storage

As with all chemicals, wash hands thoroughly after handling. Avoid contact with eyes and skin. Protect from freezing and physical damage. SAFETY STORAGE CODE: GENERAL

Section 8. Exposure Controls / Personal Protection

ENGINEERING CONTROLS: No specific controls are needed. Normal room ventilation is adequate.

RESPIRATORY PROTECTION: Normal room ventilation is adequate.

SKIN PROTECTION: Chemical resistant gloves.

EYE PROTECTION: Safety glasses or goggles.

Section 9. Physical and chemical Properties

APPEARANCE:	Clear, green liquid	pH:	7
ODOR:	Odorless	BOILING POINT (°C):	approximately 100
SOLUBILITY IN WATER:	Infinite	MELTING POINT (°C):	approximately 0
SPECIFIC GRAVITY:	approximately 1	VAPOR PRESSURE:	N/A

Section 10. Stability and Reactivity

CHEMICAL STABILITY: Stable under normal conditions of use and storage.

INCOMPATIBILITY: None identified.

HAZARDOUS DECOMPOSITION PRODUCTS: Phosphorus oxides may form when heated to decomposition.



MATERIAL SAFETY DATA SHEET

HAZARDOUS POLYMERIZATION: Will not occur.

Section 11. Toxicological Information

LD50, Oral, Rat: (Sodium Phosphate Dibasic) 17 gm/kg; LD50, Dermal, Rabbit: (Potassium Phosphate Monobasic) >4640 mg/kg; details of toxic effects not reported other than lethal dose value.

Section 12. Ecological Information

ECOTOXICOLOGICAL INFORMATION: No information found.

CHEMICAL FATE INFORMATION: No information found.

Section 13. Disposal Considerations

Dilute with water, then flush to sewer if local regulations allow for the flushing of phosphate containing solutions. If not allowed, save for recovery or recycling in an approved waste disposal facility. Always dispose of in accordance with local, state and federal regulations.

Section 14. Transport Information (Not meant to be all inclusive)

D.O.T. SHIPPING NAME:	Not regulated
D.O.T. HAZARD CLASS:	None
U.N. / N.A. NUMBER:	None
PACKING GROUP:	None
D.O.T. LABEL:	None

Section 15. Regulatory Information (Not meant to be all inclusive - selected regulation represented)

OSHA STATUS: The above items either do not contain any specifically hazardous material or the potentially hazardous material is present in such low concentration that the items do not present any immediate threat to health and safety. These items do not meet the OSHA Hazard Communication Standard (29 CFR 1910.1200) definition of a hazardous material.

TSCA STATUS: All components of this solution are listed on the TSCA Inventory or are mixtures (hydrates) of items listed on the TSCA Inventory.

CERCLA REPORTABLE QUANTITY: Sodium Phosphate, Dibasic - 5,000 pounds.

SARA TITLE III:

SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES: No

SECTION 311/312 HAZARDOUS CATEGORIES: No

SECTION 313 TOXIC CHEMICALS: No

RCRA STATUS: No

CALIFORNIA PROPOSITION 65: Not listed.

PENNSYLVANIA: Sodium Phosphate Dibasic is listed as an environmental hazard on the state Hazardous Substance list.

Section 16. Other Information

NFPA Ratings:	Health: 1	Flammability: 0	Reactivity: 0	Special Notice Key: None
HMIS® Ratings:	Health: 1	Flammability: 0	Reactivity: 0	Protective Equipment: B
				(Protective eyewear, gloves)

Rev 1, 8-25-2000: (Section 2) corrected concentration of preservative from 1 – 2 to < 0.1%. Rev

2, 03-25-2003: Reviewed and approved, (Section 15) added CERCLA reportable quantity. Rev

3, 03-20-2006: Reviewed and approved.

When handled properly by qualified personnel, the product described herein does not present a significant health or safety hazard. Alteration of its characteristics by concentration, evaporation, addition of other substances, or other means may present hazards not specifically addressed herein and which must be evaluated by the user. The information furnished herein is believed to be accurate and represents the best data currently available to us. No warranty, expressed or implied, is made and RICCA CHEMICAL COMPANY assumes no legal responsibility or liability whatsoever resulting from its use.



MATERIAL SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Catalog Number(s)

00654-08, 35654-08, 05942-61, 05942-62, 05942-64, 05942-65, 05942-66, 05942-67, 35653-03

Product Identity

BUFFER, Standard, pH 10.00; BUFFER, High Accuracy, pH 10.000 (Color Coded Blue)

Manufacturer's Name

RICCA CHEMICAL COMPANY

Emergency Telephone Number (24 hr)

CHEMTREC®: 800-424-9300

Address (Number, Street, City, State, and ZIP Code)

P.O. Box 13090

Telephone Number For Information

817-461-5601

Arlington, Texas 76094

Date Prepared

3-8-2000

Section 2. Composition / Information on Ingredients

Component	CAS Registry #	Percent Concentration	Exposure Limits	
			ACGIH TLV	OSHA PEL
Sodium Carbonate	497-19-8	< 1	N/A	N/A
Sodium Bicarbonate	144-55-8	< 1	N/A	N/A
Preservative*	proprietary	< 0.1	N/A	N/A
*(No Mercury compounds or Formaldehyde)				
Inert Dye	proprietary	< 0.1	N/A	N/A
Water, Deionized	7732-18-5	Balance	N/A	N/A

Section 3. Hazards Identification

EMERGENCY OVERVIEW

Non-flammable, non-toxic, non-corrosive. Does not present any significant health hazards. Wash areas of contact with water.

POTENTIAL HEALTH EFFECTS:

TARGET ORGANS: eyes, skin.

EYE CONTACT: May cause slight irritation.

INHALATION: Not likely to be hazardous by inhalation.

SKIN CONTACT: May cause slight irritation.

INGESTION: Large doses may cause nausea, vomiting, diarrhea and cramps.

CHRONIC EFFECTS / CARCINOGENICITY:

IARC – No

NTP – No

OSHA – No

TERATOLOGY (BIRTH DEFECT) INFORMATION:

Mutation data cited in "Registry of Toxic Effects of Chemical Substances" for Sodium Bicarbonate in rats.



MATERIAL SAFETY DATA SHEET

REPRODUCTION INFORMATION:

Reproductive data cited in "Registry of Toxic Effects of Chemical Substances" for Sodium Bicarbonate and Sodium Carbonate in mice.

Section 4. First Aid Measures – In all cases, seek qualified evaluation.

EYE CONTACT: Irrigate immediately with large quantity of water for at least 15 minutes. Call a physician if irritation develops.

INHALATION: Remove to fresh air. Give artificial respiration if necessary. If breathing is difficult, give oxygen.

SKIN CONTACT: Flush with plenty of water for at least 15 minutes. Call a physician if irritation develops.

INGESTION: Dilute with water or milk. Call a physician if necessary.

Section 5. Fire Fighting Measures

FLAMMABLE PROPERTIES:

FLASH POINT: N/A

METHOD USED: N/A

FLAMMABLE LIMITS

LFL: N/A

UFL: N/A

EXTINGUISHING MEDIA: Use any means suitable for extinguishing surrounding fire.

FIRE & EXPLOSION HAZARDS: Not considered to be a fire or explosion hazard.

FIRE FIGHTING INSTRUCTIONS: Use normal procedures/instructions.

FIRE FIGHTING EQUIPMENT: Use protective clothing and breathing equipment appropriate for the surrounding fire.

Section 6. Accidental Release Measures

Absorb with suitable material and treat as normal refuse. Small amounts of the liquid may be flushed to the drain with excess water. Always dispose of in accordance with local regulations.

Section 7. Handling and Storage

As with all chemicals, wash hands thoroughly after handling. Avoid contact with eyes and skin. Protect from freezing and physical damage. SAFETY STORAGE CODE: GENERAL

Section 8. Exposure Controls / Personal Protection

ENGINEERING CONTROLS: No specific controls are needed. Normal room ventilation is adequate.

RESPIRATORY PROTECTION: Normal room ventilation is adequate.

SKIN PROTECTION: Chemical resistant gloves.

EYE PROTECTION: Safety glasses or goggles.

Section 9. Physical and chemical Properties

APPEARANCE:	Clear, blue colored liquid	pH:	10
ODOR:	Odorless	BOILING POINT (°C):	approximately 100
SOLUBILITY IN WATER:	Infinite	MELTING POINT (°C):	approximately 0
SPECIFIC GRAVITY:	approximately 1	VAPOR PRESSURE:	N/A



MATERIAL SAFETY DATA SHEET

Section 10. Stability and Reactivity

CHEMICAL STABILITY: Stable under normal conditions of use and storage.

INCOMPATIBILITY: Acids

HAZARDOUS DECOMPOSITION PRODUCTS: Oxides of Sodium.

HAZARDOUS POLYMERIZATION: Will not occur.

Section 11. Toxicological Information

LD50, Oral, Rat: 4090 mg/kg (Sodium Carbonate), 4220 mg/kg (Sodium Bicarbonate), details of toxic effects not reported other than lethal dose value.

Section 12. Ecological Information

ECOTOXICOLOGICAL INFORMATION: No information found.

CHEMICAL FATE INFORMATION: No information found.

Section 13. Disposal Considerations

Dilute with water, then flush to sewer if local regulations allow. If not allowed, save for recovery or recycling in an approved waste disposal facility. Always dispose of in accordance with local, state and federal regulations.

Section 14. Transport Information (Not meant to be all inclusive)

D.O.T. SHIPPING NAME: Not regulated
D.O.T. HAZARD CLASS: None
U.N. / N.A. NUMBER: None
PACKING GROUP: None D.O.T.
LABEL: None

Section 15. Regulatory Information (Not meant to be all inclusive - selected regulation represented)

OSHA STATUS: The above items either do not contain any specifically hazardous material or the potentially hazardous material is present in such low concentration that the items do not present any immediate threat to health and safety. These items do not meet the OSHA Hazard Communication Standard (29 CFR 1910.1200) definition of a hazardous material.

TSCA STATUS: All components of this solution are listed on the TSCA Inventory.

CERCLA REPORTABLE QUANTITY: Not reportable

SARA TITLE III:

SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES: No

SECTION 311/312 HAZARDOUS CATEGORIES: No

SECTION 313 TOXIC CHEMICALS: No

RCRA STATUS: No

CALIFORNIA PROPOSITION 65: Not listed.

Section 16. Other Information

NFPA® Ratings:	Health: 1	Flammability: 0	Reactivity: 0	Special Notice Key: None
HMIS® Ratings:	Health: 1	Flammability: 0	Reactivity: 0	Protective Equipment: B
				(Protective eyewear, gloves)

Rev 1, 01-15-2003: added catalog number 35653-03.

Rev 2, 03-25-2003: Reviewed and approved.

Rev 3, 03-20-2006: Reviewed and approved.

When handled properly by qualified personnel, the product described herein does not present a significant health or safety hazard. Alteration of its characteristics by concentration, evaporation, addition of other substances, or other means may present hazards not specifically addressed herein and



MATERIAL SAFETY DATA SHEET

which must be evaluated by the user. The information furnished herein is believed to be accurate and represents the best data currently available to us. No warranty, expressed or implied, is made and RICCA CHEMICAL COMPANY assumes no legal responsibility or liability whatsoever resulting from its use.



INTERNATIONAL SALT
SPL GROUP

MATERIAL SAFETY DATA SHEET (MSDS) BLIZZARD WIZARD

SECTION 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name:	Blizzard Wizard		
Chemical Family:	Inorganic Salts (alkali metals – halogens)		
Company:	International Salt Company		
Address:	655 Northern Boulevard Clarks Summit, PA 18411	Contact:	Robert George Phone: (888) 388-4726
Date Issued:	01/02/1999		
Date Revised:	03/04/2010		

SECTION 2 – COMPOSITION AND INGREDIENT INFORMATION

Composition:	CAS #
Sodium chloride	7647-14-5
Magnesium chloride	7786-30-3
Molasses	68476-78-8
Ice-B-Gone II	

SECTION 3 – HAZARDS INFORMATION – HEALTH

Inhalation:	Dust may cause mild irritation of mucous membranes, nose, throat and upper respiratory tract.
Ingestion:	Single dose oral toxicity is low. Ingestion may cause gastrointestinal irritation or ulceration effects.
Skin:	Short single exposure not likely to cause significant skin irritation.
Eyes:	Dust may cause irritation. May cause moderate to severe irritation with corneal injury which may be slow to heal.
Chronic Effects:	Prolonged or repeated exposure may cause skin irritation, even a burn. May cause more severe response if skin is damp and/or abraded, or if material is confined to the skin.
Special remarks:	When dissolving, the heat produced may cause more intense effects as well as thermal burns.
Permissible Concentration:	Air: None established Biological: No TLV established Unusual Chronic Toxicity: None

SECTION 4– FIRST AID MEASURES

Emergency Phone #: (888) 388 – 4726 (toll free)	
Skin:	Wash off in flowing clean water or shower.
Eyes:	Irrigate with flowing water immediately and continuously for 15 minutes. Consult medical personnel.
Inhalation:	If symptoms develop, move to fresh air. Obtain medical attention if irritation continues.
Ingestion:	If swallowed, induce vomiting immediately by giving two glasses of water and sticking finger down throat. Call a physician (Never give anything by mouth or attempt to induce vomiting in an unconscious person.). Remove any particles from mouth, rinse with water, then drink one or two glasses of water. Obtain medical attention. Do not attempt to treat if patient is unconscious or is convulsing.

Note to Physician: If burn is present, treat as any thermal burn, after decontamination. No specific antidote.
Supportive Care: Treatment based on judgment of the physician in response to reaction of patient.

SECTION 5 – HAZARDS INFORMATION – FIRE FIGHTING MEASURES

Flash Point: No
Auto ignition Temp: N/A
Fire Extinguishing Media: Treat for surrounding materials.
NFPA Code: 000
Explosive Limits: Not explosive
Special Remarks on Fire Hazards: When heated to decomposition, it emits toxic fumes.
Flammable Properties: Not flammable by WHMIS/OSHA criteria.
Special Instructions: Store in cool, dry area. Becomes hygroscopic at 75% relative humidity.
Protection of Firefighters: Firefighters should wear full protective clothing including self-contained breathing apparatus.

SECTION 6 – PRECAUTIONS AND ACCIDENTAL RELEASE MEASURES

Spill or Leak: Contain spills to prevent contamination of water supply or sanitary sewer system. Sweep/vacuum up dry material into container for proper disposal. Surface area may then be flushed with water, disposing of the runoff according to local ordinances.
Avoid: Avoid raising dust.

SECTION 7 – HANDLING AND STORAGE

Ventilation: Local exhaust if dusty conditions prevail.
Normal Handling: Avoid eye contact or prolonged skin contact.
Storage: Wet/ damp conditions can cause caking or corrosion of metal contact surfaces. Store under DRY conditions to prevent CAKING. Store pallets under protective cover. Do not store bags directly on damp or concrete floors.

SECTION 8 – EXPOSURE CONTROLS/ PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection: When required, use a respirator approved by NIOSH for product dust.
Eyes and Face: Chemical safety goggles are recommended.
Arms and Body: Protective clothing in dusty areas may be worn, such as long-sleeved shirts and trousers for routine product handling.
Hands: Gloves are recommended. Wash hands after handling.
ACGIH-TLV: Not established.
OSHA-PEL : Not established.
The components of this product are not listed by IARC, NTP or OSHA as a carcinogen for hazard communication purposes.

SECTION 9 – PHYSICAL & CHEMICAL PROPERTIES

Appearance: Crystalline solid
Color: White, or off-white to grey
Odor: Slight
Boiling Point: N/A
Specific Gravity (H₂O = 1): 2.1
Vapor Pressure: N/A

Solubility in Water:	Very soluble
pH: (20% Solution):	6.5 – 9.5
Vapor Pressure:	N/A
Vapor Density:	N/A

SECTION 10 – REACTIVITY DATA

Stability:	Decomposes >350°F
Conditions to avoid:	Will corrode most metals exposed to air; react with sulfuric acid to form hydrogen chloride, which is corrosive, irritating and reactive; give an exothermic reaction with water, reactive materials such as sodium; result in runaway polymerization with methyl vinyl ether; releasing ammoniacal vapors when mixed with some ammonium compounds,
Decomposition products:	May evolve chlorine gas when in contact with strong acids.

SECTION 11 – TOXICOLOGICAL INFORMATION

LC₅₀:	>21000 mg/m ³ rat
Oral LD₅₀:	3000mg/kg rat

Not classified or listed by IARC, NTP, OSHA OR ACGIH for sensitization, chronic effects, carcinogenicity, mutagenicity, reproductive effects, or teratogenicity.

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity:	May be harmful to freshwater aquatic species and plants that are not tolerant to inorganic salts.
Environmental Effects:	Not available
Aquatic Toxicity:	Not available
Persistence/ degradability:	Not available
Bioaccumulation/ accumulation:	Not available

SECTION 13 – DISPOSAL CONSIDERATIONS

Disposal Instructions:	Waste must be disposed of in a manner that meets federal, state, and local environmental control regulations.
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SECTION 14 – TRANSPORT INFORMATION

Department of Transportation (DOT):	Not regulated as dangerous goods.
Transportation of Dangerous Goods (TDG):	Not regulated as dangerous goods.

SECTION 15 – REGULATORY INFORMATION

U.S. Federal Regulations:	This product is not known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. All components are on the U.S. EPA TSCA Inventory List.
CERCLA Reportable Quantity: (Superfund)	None
OSHA Status:	Not listed
TSCA Status:	Not controlled
WHMIS Status:	Not controlled
RCRA Status:	Not listed

SECTION 16 – ADDITIONAL INFORMATION

This product is not for food or drug use.

This material safety data sheet is offered solely for your information, consideration and investigation, and as a guide. While the information contained herein is, to the best of our knowledge, reliable and accurate, International Salt Company provides no warranty, either express or implied, and assumes no responsibility for the accuracy or completeness of the data contained herein. The Company also will not assume any liability for damages resultant from the use of the material described. It is the responsibility of the user to instruct employees in the proper and safe use of the abovementioned chemical, and to maintain a safe work environment.

Material Safety Data Sheet

according to ANSI Z400.1- 2004 and 29 CFR 1910.1200



RAID® WASP & HORNET KILLER 33

Version 1.2

Print Date 04/01/2009

Revision Date 03/26/2009

MSDS Number 350000010777

1. PRODUCT AND COMPANY IDENTIFICATION

Product information

Trade name : RAID® WASP & HORNET KILLER 33

Use of the
Substance/Preparation
Company : Insecticide
: S.C. Johnson & Son, Inc.
1525 Howe Street
Racine WI 53403-2236

Emergency telephone : 24 Hour Transport & Medical Emergency Phone (866) 231-5406
24 Hour International Emergency Phone (952) 852-4647

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance / Odor : clear / aerosol / characteristic

Immediate Concerns

: Caution
FLAMMABLE:
May be harmful if absorbed through skin. Avoid contact with skin, eyes and clothing. CONTENTS UNDER PRESSURE. Do not puncture or incinerate. Do not store at temperatures above 120 Deg. F (50 Deg C), as container may burst. Keep away from heat, sparks and flame.

Potential Health Effects

Routes of exposure : Eye, Skin, Inhalation, Ingestion.

Eyes : May cause:
Mild eye irritation

Skin : May be harmful if absorbed through skin.
May cause skin irritation.

Inhalation : May cause nose, throat, and lung irritation.
Inhalation may cause central nervous system effects.

Ingestion : Aspiration hazard if swallowed - can enter lungs and cause damage.

Aggravated Medical
Condition : Persons with pre-existing skin disorders may be more susceptible to irritating effects.

Material Safety Data Sheet

according to ANSI Z400.1- 2004 and 29 CFR 1910.1200



RAID® WASP & HORNET KILLER 33

Version 1.2

Print Date 04/01/2009

Revision Date 03/26/2009

MSDS Number 350000010777

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Weight %
Distillates (petroleum), hydrotreated light	64742-47-8	60.00 - 100.00
Carbon dioxide	124-38-9	1.00 - 5.00
Isopropanol	67-63-0	1.00 - 5.00
Cis-,Trans-Cypermethrin	52315-07-8	0.05
Prallethrin	23031-36-9	0.02

4. FIRST AID MEASURES

- Eye contact : Flush immediately with plenty of water for at least 15 to 20 minutes. Get medical attention if irritation develops and persists.
- Skin contact : Wash off with soap and water. Get medical attention if irritation develops and persists.
- Inhalation : Remove to fresh air. If breathing is affected, get medical attention.
- Ingestion : If swallowed, DO NOT induce vomiting unless directed to do so by medical personnel. Get medical attention immediately.

5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : Alcohol foam, carbon dioxide, dry chemical, water fog,
- Specific hazards during fire fighting : Do not allow run-off from fire fighting to enter drains or water courses. Aerosol Product - Containers may rocket or explode in heat of fire.
- Further information : Fight fire from maximum distance or protected area. Cool and use caution when approaching or handling fire-exposed containers. Wear full protective clothing and positive pressure self-contained breathing apparatus.
- Flash point : estimated 22 °C
- Flash point : estimated 71 °F
- Lower explosion limit : Note: no data available
- Upper explosion limit : Note: no data available

Material Safety Data Sheet

according to ANSI Z400.1- 2004 and 29 CFR 1910.1200



RAID® WASP & HORNET KILLER 33

Version 1.2

Print Date 04/01/2009

Revision Date 03/26/2009

MSDS Number 350000010777

NFPA Classification : NFPA Level 3 Aerosol

6. ACCIDENTAL RELEASE MEASURES

- Personal precautions : Remove all sources of ignition.
- Environmental precautions : Use appropriate containment to avoid environmental contamination.
- Methods for cleaning up : Soak up with inert absorbent material.
Sweep up and shovel into suitable containers for disposal.

7. HANDLING AND STORAGE

Handling

- Advice on safe handling : KEEP OUT OF REACH OF CHILDREN AND PETS.
Avoid prolonged or repeated breathing of vapor.
Avoid contact with skin, eyes and clothing.
Do not puncture or incinerate.
Use only as directed.

- Advice on protection against fire and explosion : Keep away from heat and sources of ignition.

Storage

- Requirements for storage areas and containers : Keep container closed when not in use.
Keep in a dry, cool and well-ventilated place.
Do not store at temperatures above 120 Deg. F (50 Deg C), as container may burst.

Material Safety Data Sheet

according to ANSI Z400.1- 2004 and 29 CFR 1910.1200



RAID® WASP & HORNET KILLER 33

Version 1.2

Print Date 04/01/2009

Revision Date 03/26/2009

MSDS Number 350000010777

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

Components	CAS-No.	mg/m3	ppm	Basis
Carbon dioxide	124-38-9	-	30,000 ppm	ACGIH STEL
Carbon dioxide	124-38-9	-	5,000 ppm	ACGIH TWA
Carbon dioxide	124-38-9	9,000 mg/m3	5,000 ppm	OSHA TWA
Isopropanol	67-63-0	-	400 ppm	ACGIH STEL
Isopropanol	67-63-0	-	200 ppm	ACGIH TWA
Isopropanol	67-63-0	980 mg/m3	400 ppm	OSHA TWA

Personal protective equipment

Respiratory protection

Industrial setting : Substantial amounts of mist/vapors can be controlled with local exhaust ventilation or respiratory protection.

Household setting : No personal respiratory protective equipment normally required.

Hand protection

Industrial setting : For prolonged or repeated contact use protective gloves.

Household setting : not required under normal use

Eye protection

Industrial setting : If prolonged or repeated contact is possible:
Safety glasses with side-shields

Household setting : No special requirements.

Hygiene measures : Use only with adequate ventilation. Wash thoroughly after handling. Keep away from food, drink and animal feedingstuffs.

Material Safety Data Sheet

according to ANSI Z400.1- 2004 and 29 CFR 1910.1200



RAID® WASP & HORNET KILLER 33

Version 1.2

Print Date 04/01/2009

Revision Date 03/26/2009

MSDS Number 350000010777

9. PHYSICAL AND CHEMICAL PROPERTIES

Form	: aerosol
Color	: clear
Odor	: characteristic
pH	: not applicable
Boiling point	: no data available
Flash point	: estimated 22 °C
Flash point	: estimated 71 °F
Flammability (solid, gas)	: Sustains combustion
Lower explosion limit	: no data available
Upper explosion limit	: no data available
Vapour pressure	: not applicable
Density	: 0.81 g/cm ³ at 21 °C GLP: yes
Water solubility	: insoluble
Viscosity, kinematic	: no data available

10. STABILITY AND REACTIVITY

Conditions to avoid	: Heat, flames and sparks.
Materials to avoid	: Do not mix with oxidizing agents.
Hazardous decomposition products	: When exposed to fire, produces normal products of combustion.
Hazardous reactions	: Stable

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	: LD50 rat Dose: > 5,000 mg/kg
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Material Safety Data Sheet

according to ANSI Z400.1- 2004 and 29 CFR 1910.1200



RAID® WASP & HORNET KILLER 33

Version 1.2

Print Date 04/01/2009

Revision Date 03/26/2009

MSDS Number 350000010777

Acute inhalation toxicity : LC50 rat
Dose: > 5.47 mg/l

Acute dermal toxicity : LD50 rabbit
Dose: > 5,000 mg/kg

Chronic effects

Carcinogenicity : no data available

Mutagenicity : no data available

Reproductive effects : no data available

Teratogenicity : no data available

Sensitisation : Not known to be a sensitizer.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects : Harmful to aquatic organisms; may cause long-term adverse effects in the aquatic environment.

13. DISPOSAL CONSIDERATIONS

Industrial setting : Observe all applicable Federal, Provincial and State regulations and Local/Municipal ordinances regarding disposal.

Household setting : Dispose of in accordance with local regulations.

14. TRANSPORT INFORMATION

Land transport

U.S. DOT and Canadian TDG Surface Transportation:

UN-Number 1950
Proper shipping name Aerosols, flammable
Class: 2.1
Packaging group: None.

Note: SC Johnson ships this product as Consumer Commodity ORM-D (non-bulk packages)

Material Safety Data Sheet

according to ANSI Z400.1- 2004 and 29 CFR 1910.1200



RAID® WASP & HORNET KILLER 33

Version 1.2

Print Date 04/01/2009

Revision Date 03/26/2009

MSDS Number 350000010777

Sea transport

▪ *IMDG:*

Class: 2.1
Packaging group: None.
Proper shipping name: Aerosols, flammable
UN-Number: 1950

Note: SC Johnson ships this product as "Limited Quantity" when the container quantity value is 1 Liter or less.

Air transport

▪ *ICAO/IATA:*

Class: 2.1
Packaging group: None.
Proper shipping name: Aerosols, flammable
UN/ID No.: UN 1950

Note: SC Johnson typically does not ship products via air, therefore it has not been determined if the product container meets current IATA/ICAO package criteria. Refer to IATA/ICAO Dangerous Goods Regulations for detailed instructions when shipping this item by air.

15. REGULATORY INFORMATION

Global Chemical Inventories

Notification status : All ingredients of this product are listed or are excluded from listing on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

California Prop. 65 : This product does not contain any chemicals known to State of California to cause cancer, birth, or any other reproductive defects.

EPA Registration Number : 4822-553

16. OTHER INFORMATION

HMIS Ratings

Material Safety Data Sheet

according to ANSI Z400.1- 2004 and 29 CFR 1910.1200



RAID® WASP & HORNET KILLER 33

Version 1.2

Print Date 04/01/2009

Revision Date 03/26/2009

MSDS Number 350000010777

Health	2
Flammability	3
Reactivity	0

NFPA Ratings

Health	2
Fire	3
Reactivity	0
Special	

Further information

This document has been prepared using data from sources considered to be technically reliable. It does not constitute a warranty, expressed or implied, as to the accuracy of the information contained herein. Actual conditions of use are beyond the seller's control. User is responsible to evaluate all available information when using product for any particular use and to comply with all Federal, State, Provincial and Local laws and regulations.

Prepared by:	SC Johnson Global Safety Assessment & Regulatory Affairs (GSARA)
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by Tyco Fire Suppression & Building Products

MATERIAL SAFETY DATA SHEET

ABC Fire Extinguisher

Issue Date: 04-13-2011

1. Product and Company Identification

Material name	ABC Fire Extinguisher
Version #	02
Revision date	04-13-2011
CAS #	Mixture
Product use	Fire Extinguisher
Manufacturer / Importer / Supplier	
Name	Tyco Fire Protection Products
Address	One Stanton Street Marinette, WI 54143-2542
Phone	715-735-7411
Internet	http://www.ansul.com
Emergency Phone Number	CHEMTREC 800-424-9300 or 703-527-3887

2. Hazards Identification

Emergency overview	WARNING Irritating to eyes and skin.
OSHA regulatory status	This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
Potential health effects	
Routes of exposure	Eye contact. Skin contact. Inhalation. Ingestion.
Eyes	Avoid contact with eyes. Contact with eyes may cause irritation.
Skin	Avoid contact with the skin. May cause skin irritation.
Inhalation	Inhalation of dusts may cause respiratory irritation.
Ingestion	Not a likely route of entry.
Target organs	Eyes. Respiratory system. Skin.
Signs and symptoms	Irritation of eyes and mucous membranes.

3. Composition / Information on Ingredients

Hazardous components	CAS #	Percent
CALCIUM CARBONATE	471-34-1	1 - 2.5
Non-hazardous components	CAS #	Percent
Ammonium Sulfate	7783-20-2	10 - 20
Ammonium Phosphate	7722-76-1	60 - 80
Other components below reportable levels		2.5 - 10

4. First Aid Measures

First aid procedures	
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation persists after washing.
Skin contact	Wash off with warm water and soap. Get medical attention if irritation develops and persists.
Inhalation	Move to fresh air. Get medical attention, if needed.
Ingestion	Rinse mouth. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
Notes to physician	Symptoms may be delayed.

General advice	If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.
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5. Fire Fighting Measures

Flammable properties	No unusual fire or explosion hazards noted.
Extinguishing media	
Suitable extinguishing media	This product is not flammable. Use extinguishing agent suitable for type of surrounding fire.
Protection of firefighters	
Specific hazards arising from the chemical	None known.
Hazardous combustion products	Carbon monoxide and carbon dioxide.

6. Accidental Release Measures

Personal precautions	Local authorities should be advised if significant spillages cannot be contained. Avoid inhalation of dust from the spilled material. Wear a dust mask if dust is generated above exposure limits.
Environmental precautions	Prevent further leakage or spillage if safe to do so. Do not contaminate water.
Methods for containment	If sweeping of a contaminated area is necessary use a dust suppressant agent which does not react with the product. Prevent entry into waterways, sewer, basements or confined areas.
Methods for cleaning up	Should not be released into the environment. Sweep up or vacuum up spillage and collect in suitable container for disposal. Collect dust using a vacuum cleaner equipped with HEPA filter. Avoid dust formation. Following product recovery, flush area with water.
Other information	Clean up in accordance with all applicable regulations.

7. Handling and Storage

Handling	Keep formation of airborne dusts to a minimum. Do not breathe dust. Avoid contact with eyes. Do not use in areas without adequate ventilation. Wear personal protective equipment. Wash thoroughly after handling.
Storage	Keep container tightly closed. Guard against dust accumulation of this material. Use care in handling/storage.

8. Exposure Controls / Personal Protection

Occupational exposure limits

U.S. - OSHA

Components	Type	Value	Form
CALCIUM CARBONATE (471-34-1)	PEL	5.0000 mg/m3	Respirable fraction.
		15.0000 mg/m3	Total dust.
	TWA	5.0000 mg/m3	Respirable fraction.
		15.0000 mg/m3	Total dust.

Engineering controls	Ensure adequate ventilation, especially in confined areas.
Personal protective equipment	
Eye / face protection	Do not get in eyes. Chemical goggles are recommended.
Skin protection	No special protective equipment required.
Respiratory protection	When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
General hygiene considerations	Do not get in eyes.

9. Physical & Chemical Properties

Appearance	
Form	Powder.
Color	Yellow.
Odor	Odorless.
Physical state	Solid.

pH	Not available.
Melting point	Not available.
Freezing point	Not available.
Boiling point	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Specific gravity	Not available.
Relative density	Not available.
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
VOC	Not available.

10. Chemical Stability & Reactivity Information

Chemical stability	Material is stable under normal conditions.
Incompatible materials	Strong acids.
Hazardous decomposition products	Carbon oxides.

11. Toxicological Information

Toxicological information	The toxicity of this product has not been tested.
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Toxicological data

Components	Test Results
CALCIUM CARBONATE (471-34-1)	Acute Oral LD50 Rat: 6450 mg/kg
Local effects	Components of the product may be absorbed into the body through the skin. Contact may irritate or burn eyes.
Chronic effects	Hazardous by OSHA criteria. Prolonged inhalation may be harmful.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

12. Ecological Information

Ecotoxicological data

Components	Test Results
CALCIUM CARBONATE (471-34-1)	LC50 Western mosquitofish (<i>Gambusia affinis</i>): > 56000 mg/l 96.00 Hours
Ammonium Sulfate (7783-20-2)	EC50 Water flea (<i>Ceriodaphnia dubia</i>): 52 - 67 mg/l 48.00 hours LC50 Pink salmon (<i>Oncorhynchus gorbuscha</i>): 0.068 mg/l 96.00 hours
Ecotoxicity	This material is not expected to be harmful to aquatic life.
Environmental effects	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Persistence and degradability	Not available.

13. Disposal Considerations

Disposal instructions	This product, in its present state, when discarded or disposed of, is not a hazardous waste according to Federal regulations (40 CFR 261.4 (b)(4)). Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste. Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations.
Waste from residues / unused products	Dispose of in accordance with local regulations.

14. Transport Information

DOT

Basic shipping requirements:

UN number	UN1044
Proper shipping name	Fire extinguishers
Hazard class	2.2

Additional information:

Special provisions	18, 110
Packaging exceptions	309
Packaging non bulk	309
Packaging bulk	None
ERG number	126



DOT

15. Regulatory Information

US federal regulations	This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. All components are on the U.S. EPA TSCA Inventory List.
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CERCLA/SARA Hazardous Substances - Not applicable.

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration

Ammonium Phosphate (CAS 7722-76-1)	1.0 %
Ammonium Sulfate (CAS 7783-20-2)	1.0 %

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance

Ammonium Phosphate (CAS 7722-76-1)	Listed.
Ammonium Sulfate (CAS 7783-20-2)	Listed.

CERCLA (Superfund) reportable quantity

None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Acute Health - Yes Chronic Health - Yes Fire Hazard - No Pressure Hazard - Yes Reactivity Hazard - No
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Section 302 extremely hazardous substance No

Section 311 hazardous chemical No

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

State regulations

This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

US - Pennsylvania RTK - Hazardous Substances: Listed substance

Ammonium Sulfate (CAS 7783-20-2)	Listed.
CALCIUM CARBONATE (CAS 471-34-1)	Listed.

16. Other Information

Further information	HMIS® is a registered trade and service mark of the NPCA.
HMIS® ratings	Health: 1* Flammability: 0 Physical hazard: 0
NFPA ratings	Health: 1 Flammability: 0 Instability: 0
Disclaimer	The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
Issue date	04-13-2011

Material Safety Data Sheet

Section 1 – Chemical Product and Company Identification

Catalog Numbers: CDSA-1413
Product Identity: Conductivity Std., 1413 umho/cm

Chemical Family: Not Applicable
Synonyms: Not Applicable
Recommended Use: Laboratory chemicals

Issue Date: 04/02/09
Revision Date: 08/10/10

Section 2 – Hazard Identification

Emergency Overview: Non-flammable, non-corrosive, non-toxic. Does not present significant health hazards. Wash areas of contact with water.

Appearance: Clear, colorless liquid **Odor:** Odorless

Target Organs: Eyes, skin

Potential Health Effects/ Routes of Exposure:

Eyes: May cause slight irritation.

Skin: May cause slight irritation.

Ingestion: Large doses may cause upset stomach.

Inhalation: Not likely to be a hazard.

Chronic Effect / Carcinogenicity: None (IARC, NTP, OSHA)

Aggravated Medical Conditions No information available

These chemicals are not considered hazardous by OSHA.

See section 11 for toxicological information. See section 12 for potential environmental effects.

Section 3 – Composition, Information on Ingredients

Potassium Chloride, CAS# 7447-40-7, < 0.08% w/v
Water, purified, CAS# 7732-18-5, >99% w/v

Section 4 – First Aid

Eyes: Immediately flush eyes with water for at least 15 minutes. Immediately get medical assistance.

Skin: Flush with water for 15 minutes. Get medical assistance if irritation develops.

Ingestion: DO NOT induce vomiting. Dilute with water or milk. Get medical assistance.

Inhalation: Remove to fresh air. Give artificial respiration if necessary. If breathing is difficult, give oxygen.

Notes to Physician Treat symptomatically.

Section 5 – Fire Fighting Measures

Flash Point: Not Applicable **Autoignition Temperature** No information available.

Explosion Limits Upper No data available **Lower** No data available

Extinguishing Media: Use means suitable to extinguishing surrounding fire.

Unsuitable Extinguishing Media: No information available

Fire & Explosion Hazards: Not considered to be a fire or explosion hazard.

Fire Fighting Instructions / Equipment: Use normal procedures. Use protective clothing. Use NIOSH-approved breathing equipment.

Hazardous Combustion Products: No information Available

Sensitivity to mechanical impact No information available.

Sensitivity to static discharge No information available.

Specific Hazards Arising from the Chemical: No information available
NFPA Rating: (estimated) Health: 1; Flammable: 0; Reactivity: 0

Section 6 – Accidental Release Measures

Personal Precautions Use personal protective equipment. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing.

Environmental Precautions Not relevant considering the small amounts used.

Methods for Containment and Clean Up Absorb with suitable material. Always obey local regulations. Always obey local regulations.

Section 7 – Handling and Storage

Handling: Wash hands after handling. Avoid contact with skin and eyes.

Storage: Protect from freezing and physical damage.

Section 8 – Exposure Controls, Personal Protection

Potassium Chloride, CAS# 7447-40-7, ACGIH TLV: NA, OSHA PEL: NA
Water, purified, CAS# 7732-18-5, ACGIH TLV: NA, OSHA PEL: NA

Engineering Measures/ General Hygiene: Normal ventilation is adequate. Ensure eyewash and safety showers are available.

Personal Protection Equipment: Skin Protection: Chemical resistant gloves.

Eye/Face Protection: Safety Glasses or goggles. **Respiratory Protection:** Normal ventilation is adequate

Section 9 – Physical and Chemical Properties

Appearance/Physical State: Clear, colorless liquid

Odor: Odorless

Boiling Point: Approx 100.1C

Melting Point: Approx (-6)-0 C

Vapor Density: No Information Available

Evaporation Rate: No Information Available

pH: Not Available

Flammability: No Information Available

Solubility: Infinite

available

Relative Density: No Information Available

% Volatility: No Information Available

Specific Gravity: 1-1.01

Vapor Pressure: No Information Available

Flash Point: Not Applicable

Coefficient of water/oil distribution: Not Available

Odor Threshold: Not Available

Decomposition Temperature: No Information Available

Partition Coefficient n-octanol/water: No data

Molecular Weight: Not available

Section 10 – Stability and Reactivity

Chemical Stability: Stable under normal conditions of use and storage.

Incompatible Materials Strong Oxidizing agents, Lithium, Bromine, Trifluoride.

Conditions to Avoid: No Information Available.

Hazardous Decomposition Products: Oxides of Sodium and fumes of Chloride.

Hazardous Polymerization: Does not occur

Hazardous Reactions: None under normal processing.

Section 11 – Toxicological Information

Routes of Exposure/Symptoms/Corrosiveness – See Section 2

LD50 orl-rat: 3020 mg/kg

LC50 inhalation-rat: Not Available

Irritation: No Information Available

Toxicologically Synergistic: No Information Available

Chronic Exposure

Carcinogenicity No Information Available

Sensitization No information available.

Mutagenic Effects No information available.

Reproductive Effects No information available.

Developmental Effects (Immediate/Delayed) No information available.

Teratogenicity No information available.

Other Adverse Effects No Information Available.

Endocrine Disruptor Information No information available

Section 12 – Ecological Information

Ecotoxicity: Not Available.

Persistence and Degradability: No Information Available

Mobility: No Information Available

Bioaccumulation/ Accumulation: No Information Available

Section 13 – Disposal Considerations

Waste Disposal/Waste Disposal of Packaging: Dilute with water.

All chemical waster generators must determine whether a discarded chemical is classified as hazardous waste. Comply with all local, state, and federal regulations.

Section 14 – Transport Information

DOT - Not Regulated

Section 15 – Regulatory Information (not meant to be all inclusive)

OSHA Status: These chemicals are not considered hazardous by OSHA.

Canada DSL: These chemicals are listed on the Canada DSL list.

TSCA: The components of this solution are listed on the TSCA Inventory

SARA Title III Section 313: Not Applicable

RCRA Status: Not Applicable

CERCLA Reportable Quantity: Not Applicable

WHMIS: Not Applicable.

Section 16 – Additional Information

Disclaimer: The information on this MSDS applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to determine the suitability and completeness of this information for his own particular use. No warranty is implied regarding the accuracy of the data or the results to be obtained from the products use.



Material Safety Data Sheet

1 - Chemical Product and Company Identification

Manufacturer: WD-40 Company Address: 1061 Cudahy Place (92110) P.O. Box 80607 San Diego, California, USA 92138 -0607 Telephone: Emergency only: 1-888-324-7596 (PROSAR) Information: 1-888-324-7596 Chemical Spills: 1-800-424-9300 (Chemtrec) 1-703-527-3887 (International Calls)	Chemical Name: Organic Mixture Trade Name: WD-40 Bulk Liquid Product Use: Lubricant, Penetrant, Drives Out Moisture, Removes and Protects Surfaces From Corrosion MSDS Date Of Preparation: 3/11/10
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2 - Hazards Identification

Emergency Overview: DANGER! Harmful or fatal if swallowed. Combustible Liquid. If swallowed, may be aspirated and cause lung damage. May cause eye irritation. Avoid eye contact. Use with adequate ventilation. Keep away from heat, sparks and all other sources of ignition. Symptoms of Overexposure: Inhalation: High concentrations may cause nasal and respiratory irritation and central nervous system effects such as headache, dizziness and nausea. Intentional abuse may be harmful or fatal. Skin Contact: Prolonged and/or repeated contact may produce mild irritation and defatting with possible dermatitis. Eye Contact: Contact may be irritating to eyes. May cause redness and tearing. Ingestion: This product has low oral toxicity. Swallowing may cause gastrointestinal irritation, nausea, vomiting and diarrhea. This product is an aspiration hazard. If swallowed, can enter the lungs and may cause chemical pneumonitis, severe lung damage and death. Chronic Effects: None expected. Medical Conditions Aggravated by Exposure: Preexisting eye, skin and respiratory conditions may be aggravated by exposure. Suspected Cancer Agent: Yes No X
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3 - Composition/Information on Ingredients

Ingredient	CAS #	Weight Percent
Aliphatic Hydrocarbon	64742-47-8	45-50
Petroleum Base Oil	64742-58-1 64742-53-6 64742-56-9 64742-65-0	<25
LVP Aliphatic Hydrocarbon	64742-47-8	12-18
Surfactant	Proprietary	<2
Non-Hazardous Ingredients	Mixture	<10

See Section 8 for Exposure Limits

4 - First Aid Measures

Ingestion (Swallowed): Aspiration Hazard. DO NOT induce vomiting. Call physician, poison control center or the WD-40 Safety Hotline at 1-888-324-7596 immediately.

Eye Contact: Flush thoroughly with water. Remove contact lenses if present after the first 5 minutes and continue flushing for several more minutes. Get medical attention if irritation persists.
Skin Contact: Wash with soap and water. If irritation develops and persists, get medical attention.
Inhalation (Breathing): If irritation is experienced, move to fresh air. Get medical attention if irritation or other symptoms develop and persist.

5 – Fire Fighting Measures

Extinguishing Media: Use water fog, dry chemical, carbon dioxide or foam. Do not use water jet or flooding amounts of water. Burning product will float on the surface and spread fire.
Special Fire Fighting Procedures: Firefighters should always wear positive pressure self-contained breathing apparatus and full protective clothing. Cool fire-exposed containers with water.
Unusual Fire and Explosion Hazards: Combustible liquid and vapor. Vapors are heavier than air and may travel along surfaces to remote ignition sources and flash back.

6 – Accidental Release Measures

Wear appropriate protective clothing (see Section 8). Eliminate all sources of ignition and ventilate area. Contain and collect liquid with an inert absorbent and place in a container for disposal. Clean spill area thoroughly. Report spills to authorities as required.

7 – Handling and Storage

Handling: Avoid contact with eyes. Avoid prolonged contact with skin. Avoid breathing vapors or aerosols. Use with adequate ventilation. Keep away from heat, sparks, hot surfaces and open flames. Wash thoroughly with soap and water after handling. Keep containers closed when not in use. Keep out of the reach of children.
Storage: Store in a cool, well-ventilated area, away from incompatible materials. NFPA 30 Class II Liquid.

8 – Exposure Controls/Personal Protection

Chemical	Occupational Exposure Limits
Aliphatic Hydrocarbon	1200 mg/m ³ TWA (manufacturer recommended)
Petroleum Base Oil	5 mg/m ³ (inhalable) TWA 5 mg/m ³ TWA OSHA PEL
LVP Aliphatic Hydrocarbon	1200 mg/m ³ TWA (manufacturer recommended)
Surfactant	None Established
Non-Hazardous Ingredients	None Established

The Following Controls are Recommended for Normal Consumer Use of this Product

Engineering Controls: Use in a well-ventilated area.

Personal Protection:

Eye Protection: Avoid eye contact. Safety glasses or goggles recommended.

Skin Protection: Avoid prolonged skin contact. Chemical resistant gloves recommended for operations where skin contact is likely.

Respiratory Protection: None needed for normal use with adequate ventilation.

For Bulk Processing or Workplace Use the Following Controls are Recommended

Engineering Controls: Use adequate general and local exhaust ventilation to maintain exposure levels below that occupational exposure limits.

Personal Protection:

Eye Protection: Safety goggles recommended where eye contact is possible.

Skin Protection: Wear chemical resistant gloves.

Respiratory Protection: None required if ventilation is adequate. If the occupational exposure limits are exceeded, wear a NIOSH approved respirator. Respirator selection and use should be based on contaminant type, form and concentration. Follow OSHA 1910.134, ANSI Z88.2 and good Industrial Hygiene practice.

Work/Hygiene Practices: Wash with soap and water after handling.

9 – Physical and Chemical Properties

Boiling Point:	361 - 369°F (183 - 187°C)	Specific Gravity:	0.8 – 0.82 @ 60°F
Solubility in Water:	Insoluble	pH:	Not Applicable
Vapor Pressure:	1 psi @ 38°C (100°F) ASTM D323	Vapor Density:	Greater than 1
Percent Volatile:	70-75%	VOC:	412 grams/liter (49.5%)
Coefficient of Water/Oil Distribution:	Not Determined	Appearance/Odor	Light amber liquid/mild odor
Flash Point:	122°F (49°C) Tag Open Cup	Flammable Limits: (Solvent Portion)	LEL: 0.6% UEL: 8.0%
Pour Point:	-63°C (-81.4°F) ASTM D-97	Kinematic Viscosity:	2.79-2.96cSt @ 100°F

10 – Stability and Reactivity

Stability: Stable

Hazardous Polymerization: Will not occur.

Conditions to Avoid: Avoid heat, sparks, flames and other sources of ignition.

Incompatibilities: Strong oxidizing agents.

Hazardous Decomposition Products: Carbon monoxide and carbon dioxide.

11 – Toxicological Information

The oral toxicity of this product is estimated to be greater than 5,000 mg/kg based on an assessment of the ingredients. This product is not classified as toxic by established criteria. It is an aspiration hazard. None of the components of this product is listed as a carcinogen or suspected carcinogen or is considered a reproductive hazard.

12 – Ecological Information

No data is currently available.

13 - Disposal Considerations

If this product becomes a waste, it would be expected to meet the criteria of a RCRA ignitable hazardous waste (D001). However, it is the responsibility of the generator to determine at the time of disposal the proper classification and method of disposal. Dispose in accordance with federal, state, and local regulations.

14 – Transportation Information

DOT Surface Shipping Description: Excepted from Hazmat (49CFR 173.150 (F)) in non-bulk packagings. Bulk Packagings: NA1993, Combustible Liquid, n.o.s. (contains Petroleum Distillates), PG III
IMDG Shipping Description: UN1268, Petroleum Distillates, n.o.s. 3, PG III

15 – Regulatory Information

U.S. Federal Regulations:

CERCLA 103 Reportable Quantity: This product is not subject to CERCLA reporting requirements, however, oil spills are reportable to the National Response Center under the Clean Water Act and many states have more stringent release reporting requirements. Report spills required under federal, state and local regulations.

SARA TITLE III:

Hazard Category For Section 311/312: Acute Health, Fire Hazard

Section 313 Toxic Chemicals: This product contains the following chemicals subject to SARA Title III

Section 313 Reporting requirements: None

Section 302 Extremely Hazardous Substances (TPQ): None

EPA Toxic Substances Control Act (TSCA) Status: All of the components of this product are listed on the TSCA inventory

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65): This product does not contain chemicals regulated under California Proposition 65.

VOC Regulations: This product complies with the consumer product VOC limits of CARB, the US EPA and states adopting the OTC VOC rules.

Canadian Environmental Protection Act: One of the components is listed on the NDSL. All of the other ingredients are listed on the Canadian Domestic Substances List or exempt from notification.

Canadian WHMIS Classification: Class B-3 (Combustible Liquid)

This MSDS has been prepared according to the criteria of the Controlled Products Regulation (CPR) and the MSDS contains all of the information required by the CPR.

16 – Other Information:

HMIS Hazard Rating:

Health – 1 (slight hazard), Fire Hazard – 2 (moderate hazard), Reactivity – 0 (minimal hazard)

Revision Date: March 2010

Supersedes: January 2010

SIGNATURE:  _____

TITLE: Director of Global Quality Assurance

REVISION DATE: March 2010

SUPERSEDES: August 2009

GFS CHEMICALS, INC.

P.O. Box 245 Powell, OH 43065
740-881-5501(Tel.) 740-881-5989(Fax)
1-800-424-9300(Chemtrec 24Hr. Info.)

MATERIAL SAFETY DATA SHEET

AmcoClear

AMCO CLEAR® TURBIDITY STANDARD**CHEMICAL NAME & SYNONYMS**

AMCO CLEAR® Turbidity Standard

DOT CLASS

NR

SARA TITLE 313

No

TSCA listed - Yes**FORMULA**

Styrene Divinyl Benzene

Copolymer Beads <1%

H₂O >99%**REPORTABLE QUANTITY**

N/A

N/A

F.W.

N/A

18.02

CAS#

9003-70-7

7732-18-5

PHYSICAL DATA

Boiling point 100°C; Density 1.0; melting point 0°C; pH 6.7

APPEARANCE & ODOR

White powder suspended in clear, colorless liquid. Depending on concentration, solution may be clear, hazy or opaque. Odorless.

REACTIVITY & CONDITIONS TO AVOID

Stable. Incompatible with organic matter (no hazardous reaction). Hazardous polymerization will not occur. Keep from freezing (once frozen, polymer will not remain completely suspended).

FIRE HAZARDS

None. NFPA # 0-0-0.

EXTINGUISHER

Fight surrounding fire.

FLASHPOINT

N/A

LEL

N/A

UEL

N/A

HEALTH HAZARDSNo health hazards by normal means of exposure. LD₅₀ (oral-rabbit) 368 g (water)/kg. OSHA PEL/ACGIH TLV not established. No evidence of carcinogenicity.**SPECIAL PRECAUTIONS**

Always use good laboratory practices. Keep from freezing, avoid contaminating solution.

FIRST AID

Flush eyes with water. Seek medical attention if irritation develops. Wash contacted skin with water. Ingestion is not hazardous. Inhalation is not an expected route of exposure.

SPILLS & LEAKS

Wash up with water. Flush to drain with plenty of water or general trash.

CATALOG #

Amco Clear

PREPARED BY

MDM

DATE

April 22, 2009

ATTACHMENT 14
CORPORATE HEALTH AND SAFETY
PROGRAM

CORPORATE HEALTH AND SAFETY PROGRAM

ANCHOR QEA, LLC

Prepared by

Anchor QEA, LLC

720 Olive Way, Suite 1900

Seattle, Washington 98101

Updated February 2014

This Corporate Health and Safety Program is designed to provide guidelines to ensure that Anchor QEA, LLC (Anchor QEA) provides its employees a place of employment that is free from recognized hazards that may cause death, serious physical harm, or illness. It is not intended to replace direct, ongoing communication. Cooperation and communication from all employees is essential for an effective health and safety program.

David Templeton
Corporate Health and Safety Officer
Anchor QEA, LLC
720 Olive Way, Suite 1900
Seattle, Washington 98101
(206) 287-9130 or (206) 910-4279
dtempleton@anchorqea.com

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1 INTRODUCTION

This Corporate Health and Safety Program is designed to provide guidelines to ensure that Anchor QEA provides its employees a place of employment that is free from recognized hazards that may cause death, serious physical harm, or illness. This program has been prepared in accordance with regulations established by the federal Occupational Safety and Health Administration (OSHA), including the OSHA draft proposed Safety and Health Program Rule (29 CFR 1900.1).

Anchor QEA has set up this Corporate Health and Safety Program to manage workplace health and safety to reduce injuries, illnesses, and fatalities by systematically achieving compliance with OSHA standards. This Corporate Health and Safety Program is designed specifically to address the workplace hazards that Anchor QEA employees may be exposed to. Preventing accidents and injuries and promoting employee health benefits the company and employees both personally and economically. Through this documented Corporate Health and Safety Program, Anchor QEA intends to:

- Establish a safe and healthy working environment.
- Ensure that the design of the working environment accommodates individual employee limitations and capabilities.
- Prevent personal injury, occupational illness, and damage to company assets.
- Comply with all applicable federal, state, and local health, safety, and environmental regulations and guidelines.

Effective leadership is essential at all levels of employment, from staff members to project managers and partners. Cooperation from all employees is essential for an effective health and safety program. All employees will be held accountable for established program responsibilities. Corrective actions for violating company rules and regulations, including safety rules, are discussed in the Anchor QEA Employee Guide.

Applicable federal, state, and local health, safety, and environmental regulations and guidelines are to be followed by all Anchor QEA employees and contractors. The Anchor QEA Corporate Health and Safety Program are designed to comply with the following:

- OSHA
- U.S. Environmental Protection Agency (EPA)

-
- National Institute of Occupational Safety and Health (NIOSH)
 - American National Standards Institute (ANSI)
 - Applicable city, county, and state regulations regarding soil, sediment, water, air, radiation, and hazardous waste

This Corporate Health and Safety Program provides for:

- Evaluation of health and safety for all operations, facilities, and equipment
- Monitoring of the work environment
- Maintenance of records
- Training of employees where applicable
- Project-specific health and safety plans

Effective and practical implementation of Anchor QEA's Corporate Health and Safety Program requires the following elements:

- Planning
- Employee Instruction and Training
- Clarification of Staff Health and Safety Responsibilities
- Work Place Safety and Accident Prevention Program
- Emergency Notifications
- Hazard Communication
- Medical Surveillance
- Respiratory Protection
- Safety Committee

These elements are described below.

2 PLANNING

Anchor QEA's Corporate Health and Safety Program relies on planning to reduce risk to employees. Elements of Anchor QEA's Corporate Health and Safety Program include the following:

- Periodic update of key information on Anchor QEA's intranet.
- Project and Site-Specific Health and Safety Plans – Prepared, as necessary, for individual projects to identify, evaluate, and prevent exposure to hazardous chemicals and site hazards.
- Health and Safety Field Guide – Provides guidance for all field efforts.
- Employee Guide – Includes guidance on accident reporting, fire response, and hazardous chemical right-to-know rules. This information is also included in this Corporate Health and Safety Program.

3 EMPLOYEE INSTRUCTION AND TRAINING

Training employees in safe work practices and hazard recognition is essential to the maintenance of a safe work place. Elements of the health and safety training program include the following:

- 24- or 40-Hour Training – Required of all personnel who will work on designated hazardous waste sites. Waivers may be granted to people who can demonstrate adequate training and experience.
- Annual 8-Hour Refresher Training – Required for all personnel who will work on designated hazardous waste sites.
- 8-Hour Supervisory Training – Required for all personnel who will direct or supervise other personnel at designated hazardous waste sites.
- Hazard Communication Training – Provided to all personnel, regardless of duties, in the Employee Guide.
- Diver Training – Requires all employees engaged in diving operations to be appropriately trained and certified by a nationally recognized organization prior to engaging a given activity.
- First Aid and Cardiopulmonary Resuscitation (CPR) Training – Required of all personnel who will work on designated hazardous waste sites.
- Site Safety Meetings – Conducted by the Site Safety Officer or Field Coordinator at the beginning of each field project, whenever new phase of work is about to begin, whenever new personnel arrive on site, or in response to any health and safety issues that arise. Meeting notes will be placed in the project file.
- Daily Safety Briefings – Conducted by the Site Safety Officer or Field Coordinator prior to initiating field activities for the day.

4 CLARIFICATION OF STAFF HEALTH AND SAFETY RESPONSIBILITIES

An effective Corporate Health and Safety Program relies upon understanding the responsibilities that Anchor QEA employees at all levels are expected to observe. That understanding provides guidance concerning how to implement the program and identifies the key personnel who may be contacted if health and safety issues arise.

Specific responsibilities are discussed below:

- **Corporate Health and Safety Officer** – The Corporate Health and Safety Officer is responsible for:
 - Developing and updating the Corporate Health and Safety Program and related corporate policies necessary to ensure compliance with statutory, contractual, and company health and safety requirements.
 - Advising staff members concerning the requirements, effectiveness, and needs of Anchor QEA's Health and Safety Program.
 - Representing Anchor QEA in relationships with regulatory agencies in policy matters pertaining to health and safety.
 - Reviewing all project and site-specific health and safety plans.
 - Administering the health and safety program.
 - Serving as a resource to Anchor QEA personnel regarding health and safety.
- **Project Manager/Supervisor** – Each project manager or supervisor is responsible for the following duties:
 - Ensuring that site-specific health and safety plans are followed.
 - Notifying the Corporate Health and Safety Officer in advance of all scheduled field operations.
 - Ensuring that employees are adequately informed of work hazards and that they have received appropriate training to minimize the risk of injury or exposure to hazardous materials in performing the tasks required of them.
 - Designating a Site Safety Officer for each field project.
- **All Anchor QEA Staff** – All staff are instrumental in supporting the day-to-day efforts that sustain an effective Corporate Health and Safety Program. Among staff responsibilities are:

-
- To remain aware of the importance of health and safety in the daily functioning of the company.
 - To report any hazardous or potentially-hazardous conditions, concerns, or actual situations immediately.
 - To participate in addressing health and safety issues, whether office- or field-related.
 - To keep in mind that Anchor QEA requires the identification and discussion of health and safety issues and concerns and views that participation as a positive contribution to the company.

5 WORK PLACE SAFETY AND ACCIDENT PREVENTION PROGRAM

Anchor QEA's goal is to provide and maintain safe working conditions, to follow safe operating procedures, and to comply with all safety laws and ordinances. We want to make sure all employees are working in safe work conditions, and we strongly encourage you to report any hazardous situations. If you know of an unsafe condition or occupational health and safety risk, report the matter immediately to your manager or Corporate Health and Safety Officer. If your manager is not readily available, inform another manager so that any dangerous conditions can be corrected promptly.

General Work Performance Guidelines

- Learn your job and how to be safe in the work place.
- Report all injuries to your manager immediately. Workers' compensation law requires a written report of all work-related injuries.
- Use proper lifting procedures and get help when needed.
- Wear safety glasses and protective clothing when necessary. AQ provides all necessary personal protective equipment at no cost to employees.
- Handle hazardous chemicals with care. Refer to the Safety Data Sheets (SDS) whenever there is any question on what safety measures should be taken.
- If you are uneasy about your training or your ability to safely perform a task or job asked of you, contact the Corporate Health and Safety Officer or a member of the Safety Committee and express your concerns. Health and safety are the first concern.

Periodic Inspections – Anchor QEA strongly encourages employees to report any safety issue promptly. In addition, the Corporate Health and Safety Officer will periodically inspect the office to identify and remedy potential safety issues.

Cumulative Trauma Disorder – When you work at a computer, remember the following:

- Adjust the height of your chair and work surface to a level that is comfortable for you. Your chair height should allow your feet to be flat on the floor and your thighs to be parallel to the floor.
- Adjust your keyboard height so that your upper arms are relaxed at your sides, your wrists and hands are straight, and your forearms are parallel to the floor.
- Avoid tilting your head for an extended period.

-
- Avoid tilting your trunk forward for an extended period.
 - Avoid awkward postures of the wrist, elbow, and shoulder.
 - Take periodic rest breaks.
 - Position your monitor so that the top of the screen is at the same level or slightly below the eyes, and at least 20 inches from the eyes. Eliminate as much glare and reflection as possible.

Emergency Procedures – Each Anchor QEA office has established emergency procedures. Please contact your manager for details. In the Seattle office, the B & W Building (1423 3rd Avenue) is equipped with a fire alarm system. Should this alarm sound, you must treat it as a real fire and evacuate through the stairwell to either the east or west sides of the building. **Evacuation is mandatory!** The stairwells are clearly marked; so, please familiarize yourself with their location. Moreover, walk each stairwell at least once per month to familiarize yourself with locations of misleading portals or locked doors that might cause confusion or delay under dim or smoky conditions. When evacuating, go to a safe place outside the building that is far enough away to avoid broken glass and other debris. Once clear of the building, gather on the north side of Pike Street on the sidewalk outside of Walgreen’s Drug Store. The alarm includes a public address system. Should the fire alarm be confirmed as false, you will be notified when it is safe to enter the building. **Note: The elevator is automatically recalled to the lobby when the fire alarm is activated.**

Fire extinguishers are located at the corners of the hallway that runs around the perimeter of the building. Periodically locate the two fire extinguishers nearest your office to avoid delay or confusion if a small fire occurs. The extinguishers are Class A, B, and C and can be used on the type of fire started by paper, wood, cloth, etc. (Class A), flammable liquids (Class B), and small electrical fires (Class C). The fire extinguishers are intended for use in small, controllable blazes such as wastebasket fires. The extinguisher should be held upright with the nozzle pointed at the base of the flames.

Anchor QEA has additional fire extinguishers that are kept in the closet adjacent to the copier room. They are Class A, B, and C extinguishers and can be used for electrical or fuel-induced fires, in addition to paper fires. A first aid kit, flashlights, and other supplies are

provided in the kitchen area, and adjacent to the fire extinguishers. Additional first aid kits are available for field efforts.

Employees are encouraged to arrange for the following, depending on climate, time of year, and their own personal situation:

- Warm clothing, rain gear, and walking shoes.
- Alternative childcare arrangements should weather or other natural disasters prevent them from returning home at their normal time.
- Emergency contacts that would allow other employees to notify family members in the event of an accident.

6 EMERGENCY NOTIFICATIONS

In the event that you become injured while at work, please follow these steps:

- Seek appropriate first aid or medical care. The office first aid kit is located in a cabinet in the kitchen, and adjacent to the fire extinguishers.
- If you seek care from a physician, be sure to indicate that the injury/illness is work-related. The medical professional will initiate a Labor and Industries claim. This is automatic for on-the-job injuries. Specific requirements for each state will vary.
- If you suffer a work-related injury out of state, notify the medical professional of your state of residence so that they can initiate a Labor and Industries claim.
- Complete a state-issued Report of Occupational Injury or Illness. Have your manager sign it and submit it to the partner in charge of Human Resources.

Anchor QEA also has emergency contact information for all employees to allow employees to contact families in case of emergencies.

7 HAZARD COMMUNICATION

It is Anchor QEA's responsibility to notify employees of potentially hazardous conditions or materials that might be associated with specific work on a given project or at a specific site. The Project Manager or Site Supervisor has responsibility to make sure that information is communicated. Information about chemical hazards is available on SDSs for each substance. A worker may request to review the SDS with the Project Manager or Site Supervisor. It is the employee's responsibility to incorporate that information when performing the work. A written record of the communication will be maintained.

For the protection of all, workers must comply with all occupational health and safety standards and regulations established by the Occupational Safety and Health Act (OSHA) of 1970 and all subsequent regulations added by state and federal governments. If a worker believes they are being exposed to a known or suspected hazard when working with toxic chemicals or substances, they have a right to know about such hazards. If a worker has contact with hazardous chemicals or substances, they should consult with their manager about proper handling of any chemicals they may be dealing with in the workplace.

8 MEDICAL SURVEILLANCE PROGRAM

Medical surveillance is necessary if there is potential exposure to a hazardous substance at or above the permissible exposure limits for 30 days or more per year, if a respirator is worn 30 days or more per year, or if an employee is injured or develops signs or symptoms due to possible overexposure involving hazardous substances or health hazards from a hazardous waste operation (29 CFR 1910.120 (f)). The Corporate Health and Safety Officer will review potential project-specific hazards and determine whether to implement a medical surveillance program. Review and determination will be on a project-by-project basis. The Anchor QEA Medical Monitoring Program (MMP) participation, if necessary, will be at no cost to the employee.

9 RESPIRATORY PROTECTION PROGRAM

Use of respiratory protection may be necessary for some projects. The Corporate Health and Safety Officer will review potential project-specific respiratory hazards and determine whether respiratory protection is required. As necessary, Anchor QEA will follow guidance provided by Washington State (WAC 296-62-071) and the federal government through OSHA (29 CFR 1910.134). The respiratory protection program will be coordinated with the medical surveillance program to ensure that pulmonary function testing is performed when applicable for a given individual.

10 SAFETY COMMITTEE

In accordance with Washington State regulations (WAC 296-800-130), Anchor QEA has established a safety committee that meets once per month. The safety committee serves as an action group to provide continuous support of the Corporate Health and Safety Program. Members of the committee discuss health and safety issues and assign individual members responsibility for originating and coordinating any responses that might be necessary. The safety committee also serves as a forum that invites direct communication from all Anchor QEA staff regarding any health and safety problems they identify or any concerns they might have. The chairman of the safety committee is available to serve as a liaison between any individuals in the company.

ATTACHMENT 15
SAFETY MEETING SIGN-IN SHEET

Anchor QEA Health & Safety Plan (HASP)
Remedial Action Monitoring
Hudson River Sediment Remediation
Hudson River PCBs Superfund Site

SAFETY MEETING SIGN-IN SHEET

Safety Meeting Presenter: _____ Date: _____

Current Weather Conditions:

Temperature (°F)= _____ Wind Direction= _____ Wind Speed= _____

Clear – Sunny – Cloudy – Rain – Snow Forecast = _____

Current Site Conditions (circle as appropriate):

Dry - Wet - Muddy - Frozen - Snow Covered - Other (describe) _____

1. Incidents or Injuries to Report from Previous Day Activities (circle one): NO YES
(If Yes – explain below):

2. Safe and/or At-Risk Observations from Previous Day Activities: _____

3. Activities taking Place Today: _____

4. Anticipated Hazards: _____

5. Engineering Controls – Work Practices – PPE to Protect Against Hazards: _____

6. Additional Safety Topics or Comments: _____

Anchor QEA Health & Safety Plan (HASP)
Remedial Action Monitoring
Hudson River Sediment Remediation
Hudson River PCBs Superfund Site

[illegible]

ATTACHMENT 16
SPILL PREVENTION, CONTROL, AND
COUNTERMEASURE PLAN

Spill Prevention, Control, and Countermeasure Plan

Prepared for

Hudson River PCBs Superfund Site

Prepared by

Anchor QEA, LLC

80 Glen Street, Suite 2

Glens Falls, New York 12801

September 2010

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LIST OF ACRONYMS AND ABBREVIATIONS

Anchor QEA	Anchor QEA, LLC
CFR	Code of Federal Regulations
HASP	Health and Safety Plan
SPCC	Spill Prevention, Control and Counter Measure Plan
USEPA	United States Environmental Protection Agency

1 INTRODUCTION

This Spill Prevention, Control and Counter Measure Plan (SPCC) in accordance with U.S. Environmental Protection Agency (USEPA) 40 Code of Federal Regulations (CFR) Part 110 specifies the procedures that Anchor QEA, LLC (Anchor QEA) will follow while performing on water sampling activities for the Hudson River dredging project. The SPCC addresses the potential for spilling potentially hazardous materials into the river. The only material that Anchor QEA anticipates handling during this project that is addressed by the SPCC plan is engine fuel (gasoline) for sampling vessels. Anchor QEA will self-deliver fuel to the Work Support Marina and will follow applicable OSHA standards presented in Subpart - H Flammable and combustible liquids CFR1910.106. Anchor QEA will also adhere to the guidelines presented below to minimize the potential for spilling gasoline during this project.

2 GENERAL

Monitoring vessel engines will be filled using an approved 5-gallon metal safety canister equipped with a spring-closing lid and spout cover and so designed that it will safely relieve internal pressure when subjected to fire exposure. The canisters will be stored as far away from navigable waters as possible at a location determined to be acceptable by the site safety officer. No more than 20 gallons of fuel will be stored on site at any given time.

3 FUELING PROCEDURES

Project monitoring vessels will be fueled when docked at the work support marina. Before fueling monitoring vessels, the following preventive measures will be implemented:

The boat operator will:

- Secure the vessel appropriately to the dock. If the fuel fill location is on the side of the boat, dock the boat in a manner that will allow personnel clear access from the dock to the fuel fill. Tighten lines appropriately to prevent the vessel from drifting away from the dock during fueling (minimize reach distance).
- Turn off engine(s), and electronics.
- Inspect the canister and nozzle to ensure they are in good working order.

-
- Check the fuel gage and determine how much fuel can be added without overfilling the fuel tank.

During fueling, the following preventive measures will be implemented:

- A spill kit, including absorbent pads will be stored on the boat, and will be deployed in the event of an accidental spill to minimize the release of fuel to the environment.
- Fuel slowly, and listen for a change in tone which may indicate that the tank is approaching full.
- Do not top off the fuel tank; stop adding fuel prior to the tank being completely full.
- When fueling is complete, slowly tip the fuel canister down into the upright position and wait for residual fuel in the nozzle to drain back into the canister. Then remove the nozzle from the fuel fill to minimize the potential for spilling any remaining residual fuel.
- Do not turn on any electronics during fueling.

4 SPILL RESPONSE AND REPORTING

Should a spill occur, the procedures for responding and reporting to the spill are specified in Section 18 of Anchor QEA's Health and Safety Plan (July 2010) (HASP). Also consult Section 17 of the HASP for communication procedures.