Final

Construction Work Plan

Installation of Full Scale Treatment System Liquid-Phase Granular Activated Carbon Units

New York American Water Company
Seamans Neck Road Water Plant
NWIRP Bethpage, New York

Contract No. N62470-08-D-1006
Task Order No. WE23

Prepared for:

U.S. Naval Facilities
Engineering Command
Mid-Atlantic Division

Prepared by:

1000 Abernathy Road
Suite 1600
Atlanta, GA 30328

December 2012

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Prepared/Approved By:

Jim Nicotri, Project Manager — December 12, 2012 (Date)

Approved By:

Sam Naik, Deputy Program Manager — December 12, 2012 (Date)

Client Acceptance:

Lora Fly, Navy Technical Representative (NTR) — Date

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Acronyms and Abbreviations

AGVIQ-CH2M HILL	AGVIQ-CH2M HILL Constructors, Inc. Joint Venture III
American Water	New York American Water Company
APP	Accident Prevention Plan
AQUA-NY	Aqua New York, Inc.
C&D	Construction and Demolition Debris
CAD	Computer Aided Design
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CO	Contracting Officer
DIP	ductile iron pipe
DOT	U.S. Department of Transportation
EM	Environmental Manager
EPA	U.S. Environmental Protection Agency
EPP	Environmental Protection Plan
ESCP	Erosion and Sediment Control Plan
GAC	granular activated carbon
GC	General Contractor
gpm	gallons per minute
GPP	Groundwater Pollution Prevention
HAZCOM	hazardous communications
LDR	Land Disposal Restriction
LPGAC	Liquid Phase Granular Activated Carbon
µg/L	micrograms per liter
MIDLANT	Mid-Atlantic Division
MSDS	Material Safety Data Sheet
NaOH	Sodium Hydroxide
NAVFAC	Naval Facilities Engineering Command
NCDOH	Nassau County Department of Health
NPDES	national pollutant discharge elimination system
NTR	Navy Technical Representative
NWIRP	Naval Weapons Industrial Reserve Plant
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OSHA	Occupational Safety and Health Administration
OSR	Offsite Rule
PM	Project Manager
psi	pounds per square inch
PVC	polyvinyl chloride
QC	Quality Control
QCM	Quality Control Manager
RCRA	Resource Conservation and Recovery Act

RQ	reportable quantity
SSC	Site Safety Coordinator
STC	Senior Technical Consultant
TCE	trichloroethylene
TCLP	toxicity characteristic leaching procedure
TOH	Town of Hempstead
TtNUS	Tetra Tech NUS, Inc.
VOC	volatile organic compound

1.0 Introduction

AGVIQ-CH2M HILL Constructors, Inc. Joint Venture III (AGVIQ-CH2M HILL) has been contracted by the United States Navy, Naval Facilities Engineering Command (NAVFAC) Mid-Atlantic Division (MIDLANT) to prepare a work plan for construction activities to install the full scale permanent treatment system, consisting of six (6) liquid-phase granular activated carbon (LPGAC) units and associated equipment at the New York American Water Company (American Water) Seaman's Neck Road Water Plant, in Levittown, New York. This Work Plan was prepared under Response Action Contract No. N62470-08-D-1006, Task Order No. WE23.

1.1 Project Background

This project consists of construction and startup of a full scale permanent well-head treatment system for AMERICAN WATER water supply wells N-8480 (Well No. 3) and N-9338 (Well No. 4) at the Seamans Neck Road Water Plant. Note that the AMERICAN WATER facility has been purchased by New York American Water Company (American Water), and therefore the name of this facility has been changed throughout the remainder of this document.

Trichloroethylene (TCE) has been detected at a maximum concentration of 3.3 micrograms per liter (µg/L) in groundwater. The Navy is currently working with New York State Department of Environmental Conservation (NYSDEC), New York State Department of Health (NYSDOH), Nassau County Department of Health (NCDOH), and Town of Hempstead (TOH) to construct a long-term system to remove volatile organic compounds (VOCs) from Well Nos. 3S and 4S. These activities are authorized under the 2001 NYSDEC and 2003 Navy Record of Decision. A Basis of Design Report for the full-scale long-term system was prepared in December 2010, and approval from the NCDOH was received in August 2011 (NCDH 3325-10). In September 2011, a design package was submitted for NCDOH review. Comments were received in October and November 2011 and April 2012. Responses to those comments and revised drawings showing the changes made were submitted to the NCDOH on September 4, 2012. Construction of the full-scale long-term system is tentatively planned to start in early winter 2013 or early spring 2013 and be completed by the end of 2013. This Work Plan covers the full scale permanent treatment system.

AGVIQ-CH2M HILL is proceeding as directed by the Navy on the full scale permanent LPGAC system. AGVIQ-CH2M HILL awarded subcontracts for the activated carbon vessels and installation of the full scale permanent system. The construction subcontractor, Philip Ross Industries, Inc. (PRI) is a New York Licensed General Contractor (GC). PRI and all lower tier subcontractors will be fully licensed in the State of New York for the construction and overall installation of the LPGAC system at the AMERICAN WATER Seaman's Neck Road Water Plant.

1.2 Work Plan Organization

This Work Plan is organized to provide descriptions of the key elements of the project. It consists of the following sections:

- Section 1—Introduction
- Section 2—Objectives and Scope of Work
- Section 3—Project Organization
- Section 4—Description of Activities
- Section 5—Accident Prevention and Quality Control (QC) Plans
- Section 6—Environmental Protection Plan (EPP)
- Section 7—Waste Management Plan
- Section 8—References

Appendixes to the Work Plan consist of the following:

- Appendix A — Accident Prevention Plan (APP)
- Appendix B — QC Plan

2.0 Objectives and Scope of Work

The Construction Work Plan provides a summary description of activities that make up the construction sequence, and describes the means and methods of construction covering architectural, civil, electrical, HVAC, mechanical, structural, plumbing, fire safety, instrumentation and control, and QC during the construction process. The overall project schedule is presented in the preliminary construction schedule on Figure 2-1. The sequencing of construction activities may change as the delivery dates of equipment and materials are refined and finalized. AGVIQ-CH2M HILL will notify the Navy's Contracting Officer (CO) or designated representative and submit a revised schedule prior to the execution of specific construction activities if this occurs.

2.1 Objectives

The key objectives of the Implementation of Remedial Action Wellhead Treatment at the American Water Facility project are summarized below:

- Procure, install, and startup the Full Scale Permanent LPGAC Wellhead Treatment System per the TtNUS design documents (TtNUS, 2012). The final design specifications and drawings will be issued by TtNUS after final DOH approval.
- Minimize the disturbance to plant operation and staff during construction.

2.2 Scope of Work

The scope of work is to implement the Full Scale Permanent 100% Design Document (TtNUS, 2012). The 100% Design Document includes the design drawings, and specifications.

The following lists the DFOWs and some of the tasks under each along with the Section number of the Scope of Work (Specification 01 01 00) (Division #01) listed where applicable.

The definable features of work associated with the construction activities to implement the Full Scale Permanent LPGAC System design are as follows:

1. Construction Preparation (Coordination with outside firms)
    a. Coordination with LIPA (Transformer & Electrical Connection)
    b. Coordination with National GRID (Gas line Connection)
    c. Coordination with AMERICAN WATER (Water line Connection)
2. Mobilization (Section 1 and 2)
    a. Mobilization and site set up
    b. Utility Survey
    c. Clearing & Grubbing (one tree to be removed)
    d. Site Survey and construction stake-out (General area layout)
    e. Install Erosion and Sediment Control (ESC) Measures

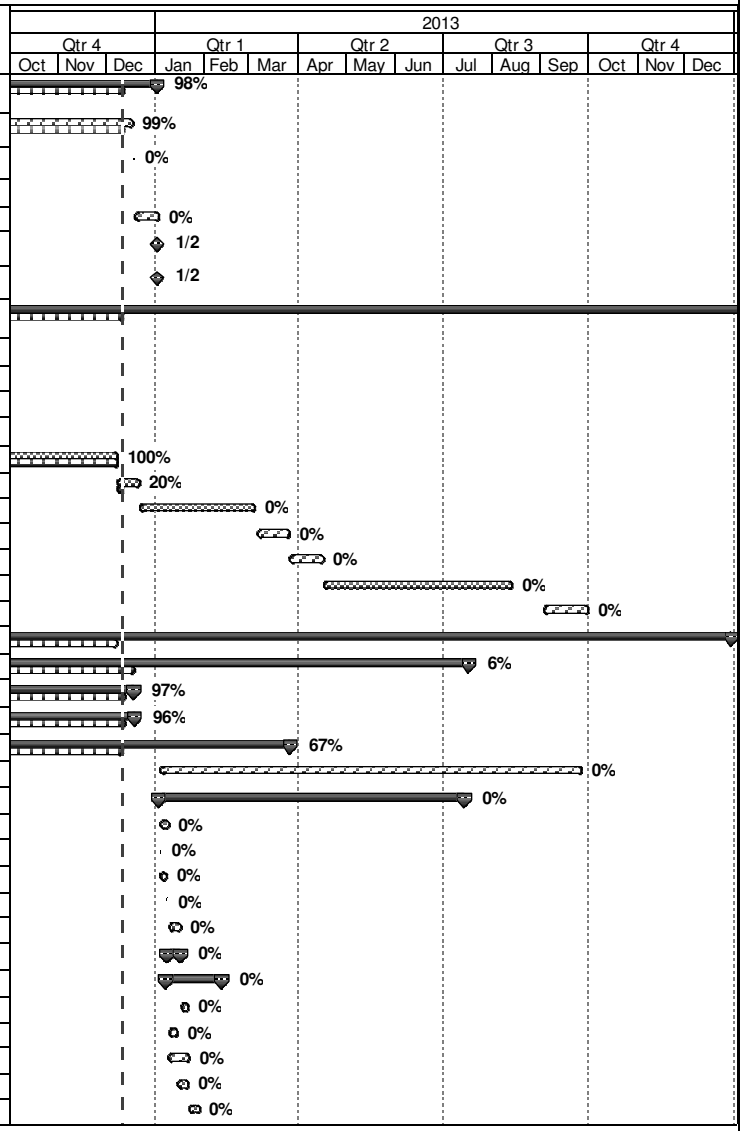
3. Demolition (Section 2)
    a. Remove asphalt and curbing as required
    b. Remove Well #2 (Motor and Pump Unit)-Dispose and Cap Well
    c. Remove the Well #2 Shed Structure
4. Underground Piping and Utilities (Section 4/Division-31, 33)
    a. Construction Stake-out (layout foundations, etc)
    b. Trenching/Excavation
    c. Gas and Electric temporary line relocation
    d. Install piping and conduit (including concrete penetrations)
5. Concrete Work (Section 4/Division-03, 31)
    a. Excavation
    b. Subsurface Preparation & Testing (including geotech testing required for foundation)
    c. Footer Installation
    d. Concrete foundation
    e. Concrete Slab for building structure
    f. Interior and exterior Various concrete pads
6. Process Equipment, Piping and Valves (Section/Division-40, 43)
    a. Unload and Install GAC vessels and Backwash Waste Tank
    b. Install process piping and valves
    c. Install GAC System Backwash Pumps
    d. Install Chemical Systems
    e. Other misc piping
    f. Rebuild Plant Well Pumps (Well 3 and 4)
7. Pre-Engineered Building construction and interior work (Section 4/Division-04, 05, 07, 08, 09, 10, 13, 22, 23, 26)
    a. Building structural steel frame and vertical wall units (prefabricated)
    b. Roof Structure
    c. Doors, windows, wall, and roof penetrations, etc
    d. Fire sprinkler system
    e. Concrete Masonry Unit-rooms with bond beams and roof
    f. Mechanical (Heating and AC Units)
    g. Electrical (Lighting)
    h. Finishes (Painting), Signage, and Fire Extinguishers
8. Electrical and Instrumentation (Section 5/Division-26, 28, 40)
    a. Install electrical equipment
    b. Motor Control Centers
    c. Automatic Transfer Switch
    d. Wiring
    e. Instrument Installation
    f. Configure Process Control

9. Final Exterior Work (Section 6/Division-32)
    a. Install and connect Emergency Generator
    b. Connect gas piping (National Grid)
    c. Electrical Connection (LIPA)
10. System Start-Up (Section 3/Division 40, 43)
    a. Flushing piping and vessels
    b. Pressure testing system
    c. Sterilizing the system
    d. Loading carbon and chemicals
    e. Backwash GAC Vessels
    f. Start-Up system and troubleshoot as needed
11. Site Restoration (Section 6/Division 32)
    a. Landscaping
    b. Restore disturbed areas
    c. Repair paving/new asphalt driveways
    d. Site cleanup (Construction Debris Removal)
12. Demobilization (Section 1)
    a. Equipment Removal
    b. Remove Temporary GAC System and Demo Concrete Pad
    c. Site Restoration & Clean-Up
    d. Remove ESC Measures
    e. Temporary Fences/Utilities

Figure 2-1
Project Schedule

WE23 New York American Water
GAC System Construction
NWIRP Beth Page, NY

ID	WBS #	Task Name	Working Days	% Complete	Start	Finish
1		**GAC System Final Design & Permitting (by Others)**	**456.95 dys**	**98%**	**3/1/11**	**1/2/13**
2		**Dept of Health Review & Approval Process (by TetraTech)**	390 dys	99%	3/1/11	12/17/12
3	**X**	**DOH issues Certificate of Construction**	1 dy	0%	12/17/12	12/18/12
4		**Town of Hempstead Bldg Permit Application Process**	**81 dys**	**100%**	**9/27/11**	**1/31/12**
16		TttNUS Prepares 100% Design for Construction	5 dys	0%	12/18/12	1/2/13
17		**Final 100% Design Issued for Construction**	0 dys	0%	1/2/13	1/2/13
18		**Navy & American Water Sign Access Agreement**	0 dys	0%	1/2/13	1/2/13
19		**WE23 GAC System Construction**	**740.95 dys**	**54%**	**3/14/11**	**2/17/14**
20		**NAVY Awards Task Order**	0 dys	100%	3/14/11	3/14/11
21		Schedule Discussions	15 dys	100%	3/14/11	4/1/11
22		HOLD for 100% Design Issued for Construction	61 dys	100%	4/4/11	6/29/11
23		**Interim Emergency Treatment System**	**215 dys**	**100%**	**6/30/11**	**5/11/12**
85	05.11.90.00	Operate Interim Emergency System (6 months)	144 dys	100%	5/14/12	12/7/12
86		Winterize Interim Treatment System	10 dys	20%	12/7/12	12/21/12
87		Interim System Shut Down for Winter	45 dys	0%	12/21/12	3/4/13
88		Restart and Test Interim System (including our bacteria Testing)	15 dys	0%	3/5/13	3/26/13
89		DOH Bacteria Testing & DOH Approval to Operate	15 dys	0%	3/26/13	4/16/13
90		Operate Interim System Until Full Scale System is Available	85 dys	0%	4/16/13	8/13/13
91	04.05.36.00	Remove Emergency System and Restore Site	20 dys	0%	9/2/13	9/30/13
92	**04.02.01.01**	**Project Management**	**682 dys**	**57%**	**4/15/11**	**12/30/13**
126	**04.02.01.03**	**Project Meetings**	**479.5 dys**	**6%**	**8/17/11**	**7/18/13**
162	**04.02.01.02**	**Procurement**	**237 dys**	**97%**	**1/12/12**	**12/18/12**
200	**04.03.01.00**	**Phase 1: Work Plans (Const. Work Plan, APP, QC Plan)**	**147.5 dys**	**96%**	**5/21/12**	**12/19/12**
209	**04.02.08.00**	**Phase 2: Long Lead Items: Submittals & Fabrication**	**182.95 dys**	**67%**	**7/2/12**	**3/27/13**
237	04.05.00.00	**On-Site Construction Management**	**190 dys**	**0%**	**1/3/13**	**9/26/13**
238	**04.05.00.00**	**Phase 3: Field Construction**	**137.45 dys**	**0%**	**1/3/13**	**7/15/13**
239		Mobilization & Site Setup	4 dys	0%	1/3/13	1/9/13
240		Site survey & Stake Foundation Locations	1 dy	0%	1/3/13	1/4/13
241		Install Signs, Erosion & Sedimentation Controls	2 dys	0%	1/3/13	1/7/13
242		Underground Utility Locate	1 dy	0%	1/7/13	1/8/13
243		Coordinate w/ LIPA for new transformer & Relocate Power	5 dys	0%	1/9/13	1/16/13
244		**Demolition: Well #2 & Shed**	**6 dys**	**0%**	**1/9/13**	**1/17/13**
249		**Underground Site Work**	**25 dys**	**0%**	**1/8/13**	**2/12/13**
250		Relocate Main Electrical Line With LIPA	3 dys	0%	1/16/13	1/21/13
251		Nat'l Grid Relocate Gas Line	3 dys	0%	1/9/13	1/14/13
252		Trenching for Electircal & Piping	10 dys	0%	1/8/13	1/22/13
253		Excavate for Foundation & Footings	5 dys	0%	1/14/13	1/21/13
254		Install Conduits & Wires from Well Pump 4 to New Building	4 dys	0%	1/22/13	1/28/13



WE23 Wellhead Treatment System Construction
Date: 12/11/12

Critical
Critical Split
Critical Progress
Task
Split
Task Progress
Baseline
Baseline Split
Baseline Milestone
Milestone
Summary Progress
Summary
Project Summary
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Figure 2-1
Project Schedule

WE23 New York American Water
GAC System Construction
NWIRP Beth Page, NY

ID	WBS #	Task Name	Working Days	% Complete	Start	Finish
255		Install Conduits and Wires from Well Pump 3 to New Building	4 dys	0%	1/28/13	2/1/13
256		Piping Stub-ups Thru Slab	5 dys	0%	1/21/13	1/28/13
257		Install Underground Electrical	15 dys	0%	1/22/13	2/12/13
258		Install Mechanical Underground Piping	15 dys	0%	1/22/13	2/12/13
259		**Concrete Work**	**35 dys**	**0%**	**1/28/13**	**3/18/13**
260		Pour Concrete Foundation	5 dys	0%	1/28/13	2/4/13
261		Prepare Slab Subgrade	1 dy	0%	2/4/13	2/5/13
262		Place Trench Drain	1 dy	0%	2/5/13	2/6/13
263		Pour Slab on Grade and sump	3 dys	0%	2/6/13	2/11/13
264		Concrete Cure	20 dys	0%	2/11/13	3/11/13
265		Pour Generator and Transformer Concrete Pads	5 dys	0%	2/11/13	2/18/13
266		Cure Generator & Transformer Pads	20 dys	0%	2/18/13	3/18/13
267		Exterior Concrete Complete	0 dys	0%	3/18/13	3/18/13
268		**Install Carbon Vessels & Pumps**	**7 dys**	**0%**	**3/4/13**	**3/13/13**
269		Transport & Deliver GAC Vessels	5 dys	0%	3/4/13	3/11/13
270		Rig & Install GAC Vessels & Internal Piping	2 dys	0%	3/11/13	3/13/13
271		GAC Vessel Installation Complete	0 dys	0%	3/13/13	3/13/13
272		**Building Erection**	**43 dys**	**0%**	**3/27/13**	**5/27/13**
273		Erect Prefab Bldg	25 dys	0%	3/27/13	5/1/13
274		Masonry Walls	5 dys	0%	5/1/13	5/8/13
275		Electrical & Chemical Room Ceiling Joists	2 dys	0%	5/8/13	5/10/13
276		Cast Electrical & Chemical Room Concrete Deck	1 dy	0%	5/10/13	5/13/13
277		Cure concrete deck	10 dys	0%	5/13/13	5/27/13
278		Install Ceiling in Rooms	5 dys	0%	5/13/13	5/20/13
279		Install OH and HM Doors	3 dys	0%	5/20/13	5/23/13
280		Pre-Engr'd Bldg Shell Complete	0 dys	0%	5/27/13	5/27/13
281		**Process Equipment & Instrumentation**	**83.45 dys**	**0%**	**3/13/13**	**7/8/13**
282		Install Backwash Tank	1 dy	0%	3/13/13	3/14/13
283		Install Backwash Pump	4 dys	0%	5/1/13	5/7/13
284		Install Chemical Tank & Pumps	5 dys	0%	5/20/13	5/27/13
285		Install Interconnecting Piping and Valves	20 dys	0%	5/27/13	6/24/13
286		Install Instrumentation and Controls	15 dys	0%	6/3/13	6/24/13
287		Install PLC	5 dys	0%	6/24/13	7/1/13
288		Modification Controls	5 dys	0%	6/24/13	7/1/13
289		Conduits and Wires to Equipment & Instruments	10 dys	0%	6/24/13	7/8/13
290		**Electrical**	**29 dys**	**0%**	**5/1/13**	**6/11/13**
291		Install New Emergency Generator	1 dy	0%	5/27/13	5/28/13
292		Generator Wiring	10 dys	0%	5/28/13	6/11/13
293		Install New 1500 KVA T-LPGAC Transformer	2 dys	0%	5/1/13	5/3/13
294		Install Feeder from T-LPGAC Transformer to New Building	5 dys	0%	5/3/13	5/10/13
295		Install Interconnecting Piping and Valves	10 dys	0%	5/10/13	5/24/13

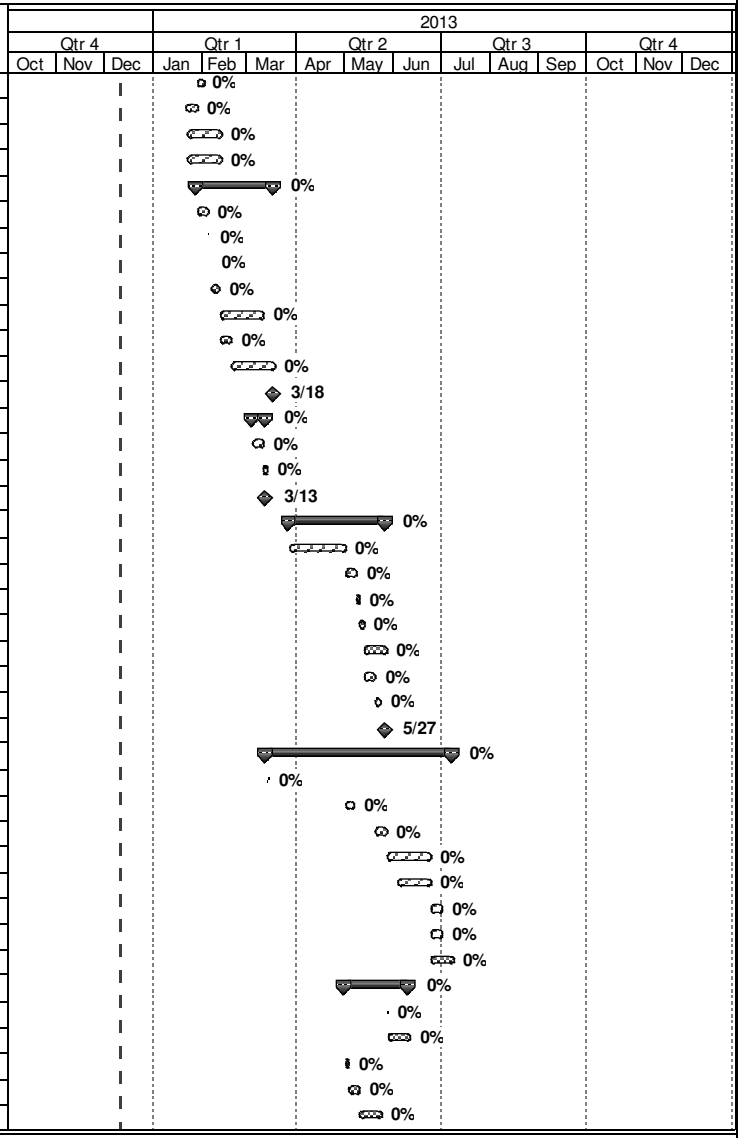

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Figure 2-1
Project Schedule

WE23 New York American Water
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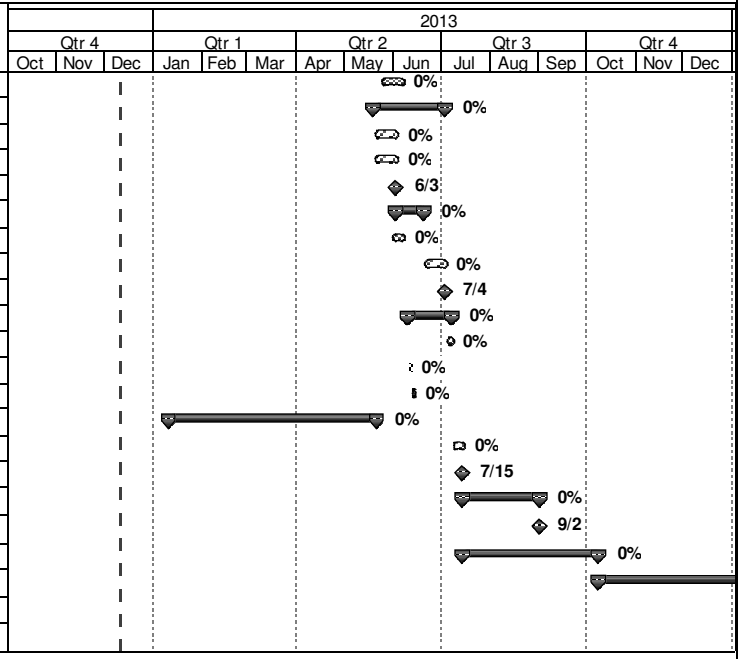
ID	WBS #	Task Name	Working Days	% Complete	Start	Finish
296		Install MCC, ATS, T-TB2 and other Electrical Room Equipment	10 dys	0%	5/24/13	6/7/13
297		**Interior Work**	**33 dys**	**0%**	**5/20/13**	**7/4/13**
298		Fire Protection Piping & Sprinkler Heads	10 dys	0%	5/20/13	6/3/13
299		Fire Alarm/Security Electrical	10 dys	0%	5/20/13	6/3/13
300		Fire Protection System COMPLETE	0 dys	0%	6/3/13	6/3/13
301		**HVAC**	**13 dys**	**0%**	**6/3/13**	**6/20/13**
305		Light Fixtures and Devices	5 dys	0%	5/31/13	6/7/13
306		Interior Finishes	10 dys	0%	6/20/13	7/4/13
307		Interior Work Complete	0 dys	0%	7/4/13	7/4/13
308		**Utility Coordination**	**19 dys**	**0%**	**6/11/13**	**7/8/13**
309		Final Gas Piping and Connections (National Grid)	2 dys	0%	7/4/13	7/8/13
310		LIPA Switch Power from Old Transformer to New Transformer	1 dy	0%	6/11/13	6/12/13
311		TIE-IN To AQUA System (by AQUA NY)	2 dys	0%	6/12/13	6/14/13
312		**Rebuild Well Pumps**	**93 dys**	**0%**	**1/11/13**	**5/22/13**
327		Final Inspection & Punch List	5 dys	0%	7/8/13	7/15/13
328		Construction Complete	0 dys	0%	7/15/13	7/15/13
329	**04.11.13.00**	**System Testing, Prove-Out & Start-Up**	**35 dys**	**0%**	**7/15/13**	**9/2/13**
339		**Turn Over to AQUA - Ready to Operate**	0 dys	0%	9/2/13	9/2/13
340	**04.05.36.00**	**Site Restoration and Demobilization**	**62 dys**	**0%**	**7/15/13**	**10/9/13**
344	**05.02.15.00**	**Post Construction Close-Out Report**	**65 dys**	**0%**	**10/9/13**	**1/8/14**
353		Project Close-Out (if Optional Task NOT Awarded)	5 dys	0%	1/8/14	1/15/14
354		**Base Construction Contract Complete**	0 dys	0%	1/15/14	1/15/14



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Summary Progress
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3.0 Project Organization

This section discusses the key roles and responsibilities of the project field team that will deliver this task order.

3.1 Project Team

- Project Manager – Jim Nicotri
- Senior Construction Manager – Steve Matney
- Senior Technical Consultant – Russell Ford
- Construction Manager (or Site Superintendent) - Randy Grogan
- Project QC Manager/Site Safety Coordinator (SSC) – TBD
- Field Engineer – Graham Sharkey
- GC Superintendant – TBD
- GC Heath and Safety Manager - TBD

3.2 Roles and Responsibilities

3.2.1 Project Manager – Jim Nicotri

The Project Manager (PM) is responsible for the overall execution of the Task Order. He provides the managerial and administrative skills to ensure that resource allocation, planning, execution, and reporting meet contract and Task Order requirements. He is ultimately accountable for all work activities undertaken on this project. The PM may delegate some of these responsibilities to the Senior Construction Manager, Site Superintendent, Quality Control Manager, or others as appropriate who will remain onsite for the duration of project field activities.

3.2.2 Senior Construction Manager – Steve Matney

The Senior Construction Manager (SCM) is responsible for identifying the appropriateness of the construction activities selected for the project, evaluates the current site conditions and construction methods used on the project. The Senior Construction Manager's duties include identifying appropriate short-term and long-term means and methods for constructing the project. The Senior Construction Manager will also review and guide the preparation of project technical work plans and project completion reports and supervise the field construction staff on the project.

3.2.3 Senior Technical Consultant – Russell Ford

The Senior Technical Consultant (STC) is responsible for reviewing the process information for the treatment system and site and for evaluating the performance of the system. The STC is a Professional Engineer registered in New York State and is responsible for overseeing the construction of the project to ensure compliance with design drawings and specifications

and will ultimately certify that the system was installed and operates in accordance with the design drawings and specifications.

3.2.4 Construction Manager/Site Superintendent – Randy Grogan

The Site Superintendent will be responsible for all activities at the project site. The Site Superintendent is responsible to the PM and SCM for efficiently applying the resources of the field team to execute construction. In addition, the Site Superintendent is responsible for ensuring that the construction is conducted in accordance with the work plan and approved design, ensuring appropriate personnel are performing the required tasks, the construction methodology used is correct, and the quality, and safety of the project meet client and AGVIQ-CH2M HILL requirements. The Site Superintendent will assist the PM in ensuring that sufficient resources are allocated to maintain project schedule and budget and will provide daily feedback to the PM and others on project progress, issues requiring resolution, and other project-specific issues, as required.

3.2.5 Project QC Manager/ Site Safety Coordinator – TBD

The Project QC Manager (QCM) / Site Safety Coordinator (SSC) is responsible for administering the provisions of the QC Plan and APP during the fieldwork. The QCM/SSC will ensure that proper Health and Safety precautions are considered and implemented during project implementation. In addition, the QCM/SSC will ensure the execution of the project's construction quality control system meets requirements. He also communicates the onsite QA/QC and Health and Safety program policies, objectives, and procedures to the project team and subcontractors. All documentation related to quality control for the project will be reviewed or prepared by the Project QC Manager or his delegate, including daily QC reports, inspections performed, test reports, and audits.

The Project QCM/SSC will also coordinate with and assist the Navy representatives in the performance of QA and safety audits and inspections.

3.2.6 Field Engineer – Graham Sharkey

The onsite Field Engineer will assist the Project QCM in monitoring, controlling, and documenting the quality and safety of the onsite construction activities. All documentation related to quality control for the project, including vendor submittals, RFI's, redline-markup drawings, analytical test results, inspections, material test results, will be reviewed or prepared by the Project QC Manager or his delegate, the Field Engineer.

4.0 Description of Activities

This section describes the construction activities to be performed for this project. The sequence of construction activities is presented in Figure 2-1 and discussed in detail below.

4.1 Full Scale Permanent LPGAC System

4.1.1 Pre-Mobilization Coordination

The activities described below will be addressed as part of the pre-mobilization coordination efforts.

Procurement

AGVIQ-CH2M HILL will source and procure the following services, materials, and equipment required to conduct the scope of work:

- General Contractor (Construction Services/System Installation/Pre-Fabricated Building Procurement, Geotechnical Testing, Surveying)
- Analytical Laboratory
- Granulated Activated Carbon System Procurement

Regulatory Interaction and Permitting

AGVIQ-CH2M HILL will coordinate regulatory interaction and permitting work with the Navy and regulatory agencies through the Navy.

Onsite remedial actions under CERCLA are exempt from obtaining permits and administrative requirements of federal, state, and local environmental laws and regulations [CERCLA 121(e)]. However, onsite remedial actions must comply with substantive requirements of these regulations. Since this project will be constructed on American Water property, a private commercial property, a certificate for construction permit is being pursued from the Nassau County Department of Health by the Navy and TtNUS, and a building permit has been received from the Town of Hempstead by the Navy and AGVIQ-CH2M HILL. Specialty trade permits for various components for the system installation/ construction (i.e., electrical, fire protection systems, mechanical, and plumbing) will be obtained by each licensed subcontractor performing work at the site.

Submittals

AGVIQ-CH2M HILL will control and review submittals and will document the process in the Submittal Register. All submittals will be supplied to the Navy for review; submittals with a "G" designation will be provided to the Navy for government approval. Submissions shall be made per the design specifications. Specifics on submittal review and control, as well as the submittal register can be found summarized in Section 5.2 of this Work Plan and in the Quality Control Plan (QC Plan) (Appendix B).

4.1.2 Construction Preparation (Coordination with outside firms)

Utility coordination activities are very important to the full scale treatment system construction work plan and include;

- Coordination with LIPA (transformer and electrical connections and permanent electrical utility relocation activities).
- Coordination with National GRID (temporary and permanent gas line relocation activities).
- Coordination with AMERICAN WATER (permanent water main connection activities).

4.1.3 Mobilization

A pre-construction meeting will be held prior to mobilization with all of the necessary Navy and facility personnel, Construction Manager, Project QC Manager, Field Engineer, Subcontractor Superintendant, and other stakeholders to go over specific logistics and facility operations that the construction crew needs to be cognizant of during the construction process.

All necessary equipment and personnel will be mobilized to the site prior to commencement of construction activities. The initial mobilization, before the start of any construction activities, will include setting up the Construction Support and Staging Area.

The staging area, as well as the equipment and material storage area, is located at the Northwest corner of the facility, east of the temporary site office trailer (Figure 4-1). Materials will also be temporarily stored in this area. Equipment can be stored in this location when construction work is idle. Solid waste generated during construction, such as concrete debris, asphalt and other materials, as well as a solid waste receptacle for disposal of trash generated by the field team will be temporarily stored in the north side of the site area (Figure 4-1). Office trailers and restroom facilities were already set up on site for use on the Interim Emergency Treatment System and will stay in place for use on the Full Scale Permanent Treatment System.

4.1.4 Site Preparation

Site preparation activities include underground utility location, clearing and grubbing (one tree to be removed and several trees to have branches trimmed), site survey (and dig safe arrangements prior to excavation or disturbance of grounds) and construction stakeout (general area layout) and the installation of erosion and sediment controls for the Full Scale Permanent Water Treatment System Installation site.

Underground utilities will be located and marked using American Water facility records, local utility companies and a third party utility locator service.

Erosion and sediment control (ESC) measures will be installed for the civil construction of the Full Scale Permanent Water Treatment System equipment pad and building and the grading around the pad, as specified in the Erosion and Sediment Control Plan (ESCP) described in Section 6.0. Inspection of ESC measures and corrective actions will occur as specified in Section 5.0. The primary ESC measures for this project are diversion berms and

silt fences. Permanent vegetation and straw mulch will be used for stabilization/permanent erosion and sediment control.

4.1.5 Demolition

Once site mobilization and site preparation work are complete, demolition activities can begin. This will include removing asphalt and curbing between Well # 2 and Well #3, followed by the removal and disposal of the Well #2 shed and structure. Demolition work will also include removal and disposal of the Well #2 motor and pump unit followed by capping the well.

4.1.6 Underground Piping and Utilities

Underground piping and utilities work will begin with building area stake-out (layout foundations). Trenching and excavation work will begin for footings, gas and electric service exposure (by hand until accurate depth and placement is confirmed as per mark-outs). Coordination will take place with gas and electric utility companies to temporarily relocate their lines to areas that will not be disturbed during construction activities. Work will continue with installation of all underground piping, gas line and electric conduits and stub outs into concrete area (including penetrations for footings and concrete slab) according to design drawings. (Drawing C-2)

Once underground work is complete (placement of all piping) and temporary electric and gas service has been relocated, the trenches will be back filled using the excavated material that will be compacted in 6 inch lifts. All stub-ups will be left in place and cemented in the footings and slab as per drawings and specifications (Drawing C-2) until the LPGAC units are installed and the new piping can be connected to the LPGAC system manifolds (once GAC and Back Wash Tanks are in place). Electrical and gas service can then be connected to the building. All underground piping work will be performed in accordance with specification (Division 33, Section 33 11 00). Once all lines and appurtenances are installed and system is ready for startup procedures, the water lines will be disinfected per specifications.

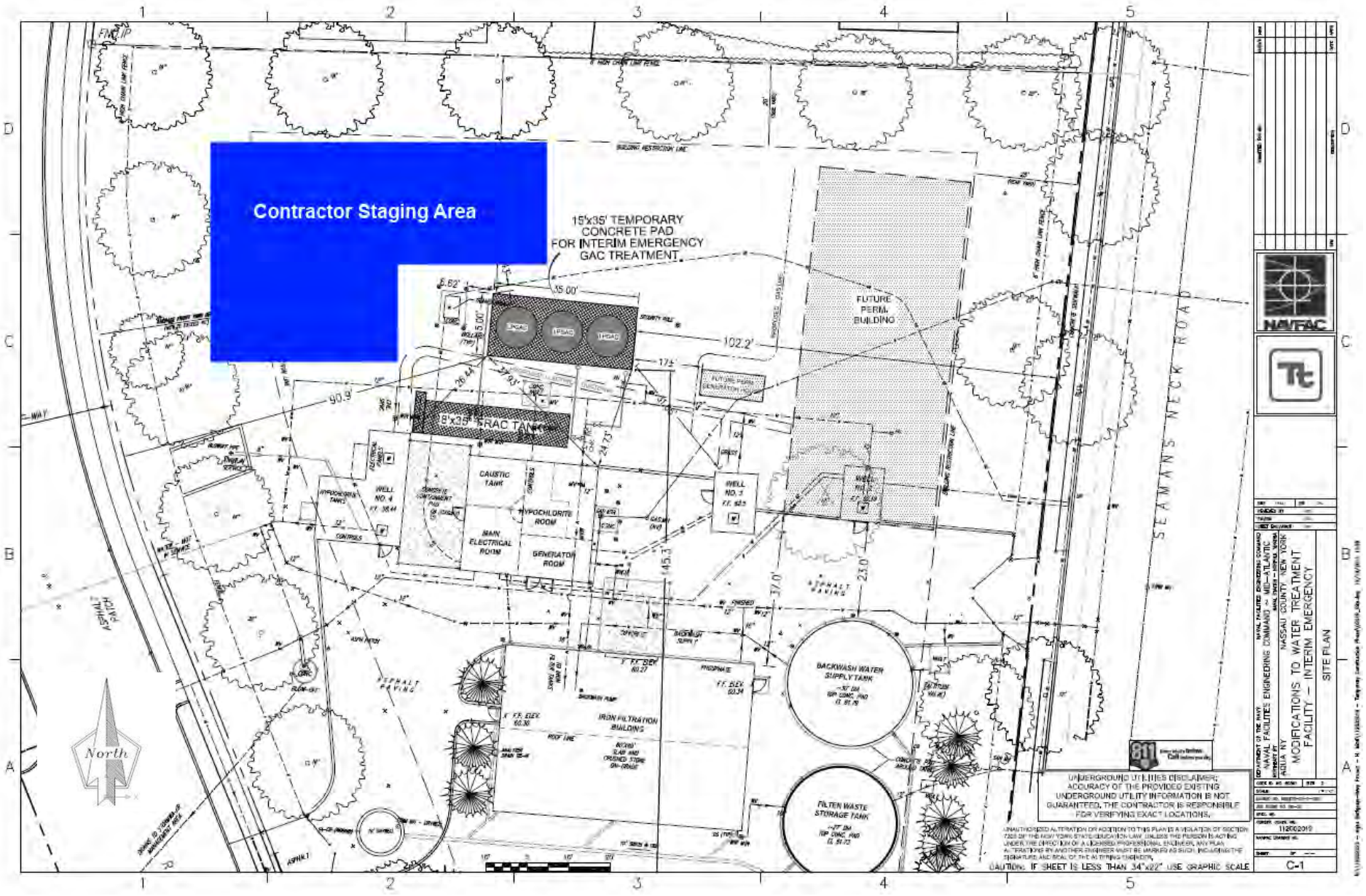


FIGURE 4-1
Contractor Staging Area

4.1.7 Concrete Work

Grading (leveling of the building and equipment pad site), any removal (excavation) and fortifying of the sub grade will be made to the ground surface in preparation for installing the Full Scale Permanent LPGAC equipment pad and buildings.

Installation of the foundation will begin once site preparation and installation of underground piping is completed. Activities will include, but not be limited to, the following.

Excavation for footings, subsurface preparations & testing (including any and all geotech testing required for foundations). Set forms for footings and install rebar, pour concrete for footings for pad as shown in the design drawings to include any penetrations needed. The area will be backfilled with excavated soil materials and crushed gravel per the specifications (section 31-00-00, division 31). Fill beneath both the concrete pad and footings, drawing (S-5), shall be placed in lifts not to exceed 6 inches, and compacted to not less than 95 percent of maximum dry density (ASTM D 698).

Set forms and install rebar for both interior and exterior concrete pads and penetrations and pour concrete pad (slab on grade) as shown in the design drawings. The concrete pads shall be constructed as described in the attached design specifications, section 01 01 00, division 1 and section 03-30-00, division 3 and drawings (S-1 through S-5) and as described below.

During the curing period, the slab and other accessory pads will be protected, covered, and cured per the recommendations of the concrete supplier.

The concrete pads (interior and exterior concrete pads) will be left to cure for at least 14 calendar days prior to placing a load on the pad. The concrete must reach at least 80 percent of its 4,500-pound-per-square-inch (psi), 28-day compressive strength (to be determined by the break test results) before equipment can be placed on the pad. The 14-day curing time may be shortened if the break results indicate that the concrete has reached its specified strength sooner.

4.1.8 Process Equipment, Piping and Valves

AGVIQ-CH2M HILL will receive and unload the LPGAC system. The six adsorber vessels will each be installed (individually) onto the equipment pad per the crane lift plan. The backwash tank will also be installed per the recommendations of the backwash tank manufacturer's recommendations. Delivery of the GAC units, as well as the Backwash Tank, will be through the west side entrance built for the Interim Emergency Treatment System on the far west side of the project site. The crane will off load units from the tractor trailer's west of the permanent pad and place them on the ground in accordance with the crane lift plan. The crane will then tilt each horizontal adsorber vessels and backwash tank to an upright (vertical) position. The back wash tank, and then each adsorber vessel, will be lifted and placed onto the permanent pad one at a time. Working from the west side of the permanent pad will keep the crane away from overhead power lines and away from Seaman's Neck Road as well as away from any tree branches. This plan is subject to change during the review f the crane lift plan and will be adjusted accordingly. The lift will be performed as described in the approved crane lift plan. Once each adsorber and the backwash tank are positioned on the permanent pad, they will be anchored into place as

recommended by the LPGAC equipment supplier and per specifications (section 43-31-13, division 43) and drawings (M-1).

After the LPGAC system is set and secured into place, AGVIQ-CH2M HILL and their subcontractor will use the crane to assist with assembling the process piping, valves, pumps and appurtenances before the permanent building is erected. Additional piping, monitoring equipment, and appurtenances supplied by the LPGAC equipment supplier can be installed after the installation of the permanent building.

Process equipment work will continue once the building is installed (including walls, roofing, bracing and interior utility work). Post building construction work will include; installation of the GAC system backwash pumps, installation of chemical supply, storage systems, other miscellaneous piping, electrical, lighting and control systems. Fire suppression and alarm systems will be installed at this time. All of the equipment will be installed per the recommendations of the equipment supplier, and as designated in the design drawings (M-1 and M-2). Variances with installation parameters will be adjusted and corrected as they are identified during construction. AGVIQ-CH2M HILL's subcontractor will also fabricate and install pipe supports and any other supports needed for system controls, fire suppression and alarm system, chemical piping and chemical tank support, and any and all other appurtenances as indicated on drawing (M-2). At this point well#3 and well#4 existing pumps will be rebuilt.

4.1.9 Building Construction and Interior Work

Building construction will begin after the concrete pad is cured, the adsorbers, backwash tank and other crane lifted equipment is in place and secured to their equipment pads. AGVIQ-CH2M HILL subcontractor crews will begin assembly and installation of prefabricated building structural steel frame and vertical wall units (in accordance with the erection plan and lift plan) for the Full Scale Permanent Water Treatment building in accordance with the specifications (section13-34-19, division 13), and drawings (A-1 through A-4).

Once the roof structure assembly is installed, the prefabricated walls will be installed and secured in place.

The remaining building work will then be performed including:

- Doors, windows, wall and roof penetrations (specifications under division 08)
- Building fire sprinkler system (specifications section 21-13-13, division 21)
- Concrete Masonry Unit-rooms with bond beams and roof (specifications section 04-20-00, division 04)
- Mechanical (Heating and AC units) (specifications section 23-82-23, division 23)
- Electrical (lighting and grounding) (specifications under division 26 and 28)
- Plumbing and other piping and appurtenances (specifications under division 22 and 21)
- Plant controls (specifications section 40-96-00, division 40)

- Finishes (Painting)(specifications section 09-90-00, division 09)
- Signage (specifications sections 10-43-00 and 10-44-00, division 10)
- Fire extinguishers (specifications section 10-44-16, division 10)
- When construction is 50 percent complete, the red zone process will begin.
- When construction is 75 percent complete, or 3 to 6 months before the beneficial occupancy date (BOD), a red zone meeting will be held to confirm remaining work activities. The contractor, client, and NAVFAC will provide a point of contact and due date for each item on the red zone checklist.

4.1.10 Electrical and Instrumentation

AGVIQ-CH2M HILL's subcontractor will install electrical equipment as well as motor control centers, automatic transfer switches, electrical and control wiring, instruments, and switch wiring. All instrument installations and configuration of all process controls will be installed per drawings (E-1 through E-19) and all approved specification sections under divisions (26 and 28).

4.1.11 Final Exterior Work

Install and connect Emergency Generator per specification (section 26-32-13, division 26).

Coordinate with LIPA and National Grid to make electrical connections and gas connections per specifications division (33).

4.1.12 System Startup

Initial commissioning and startup activities will commence upon completion of the installation and flushing and pressure testing of piping and vessels of the LPGAC system, and related components, valves, piping, and monitoring equipment.

AGVIQ-CH2M HILL will conduct equipment testing, prove out, and startup testing in accordance with the design package. Since the finished (plant effluent) water will be used for distribution to the public, maintaining of sterilized equipment in contact with the water is critical.

The activated carbon will be provided and installed by the LPGAC equipment vendor. However, AGVIQ-CH2M HILL will perform the initial disinfection/backwash/flushing of the carbon beds with assistance from the LPGAC equipment supplier, and as described in the specifications, (division 43, section 43 31 13). After backwashing, AGVIQ-CH2M HILL will sterilize the potable water piping as well as the LPGAC units per the LPGAC suppliers' recommendations, and as described in the design specifications (section 33 11 00, division 33), (section 40 05 13, division 40), and (section 43 31 13, division 43).

The process piping shall be disinfected by filling piping systems with a solution containing a minimum of 50 parts per million (ppm) of available chlorine, and allowed to stand for 24 hours. The system will be flushed with clean water from the treated main water feed line tie in from the American Water water treatment supply system. The chlorinated disinfection

water and flush water will be discharged to the Backwash Waste Holding Tank and de-chlorinated with sodium thiosulfate prior to being discharged to the sanitary sewer.

All chemical additions will be performed safely, without risk to worker or operator safety, and in a manner that will prevent a spill or release. All workers handling chemicals shall wear protective clothing, as identified in the APP, to prevent contact. A spill kit will be staged where chemicals are used and/or stored at the project site. The APP/SSHP addresses the use of these chemicals.

Field QC tests to be performed include pipe leakage (pressure) tests and valve testing. AGVIQ-CH2M HILL will confirm that the LPGAC systems and ancillary equipment operate properly and function as intended.

Once the system has been sanitized and backwashed, AGVIQ-CH2M HILL will sample the carbon and water (as described in the next section) for VOCs, metal, and bacterial counts. These samples will be submitted to the testing laboratory. Once the system has passed all testing requirements, the LPGAC system will be ready for testing by the Nassau County Department of Health (DOH). After the DOH testing passes and the DOH issues approval to operate, the system will be placed into full scale operation.

4.1.13 Testing

During the latter part of the startup activities, and initial operations of the LPGAC unit and related equipment, groundwater will be processed. The processing of the groundwater will be documented by conducting influent and effluent sampling to show that the equipment meets the established treatment standards as outlined in the design drawings and specifications.

Samples will be collected in accordance with the Engineer's Report (TtNUS, 2011c) and DOH requirements. The LPGAC units will be tested for bacteria, VOCs (TCE), arsenic, and full metals analysis. Samples of the LPGAC effluent (as well as one influent sample) will be collected at 0, 2, 5, 10, and 30 minutes. Sampling will then take place again 24 hours later. In order for the LPGAC system to pass testing, TCE and arsenic concentrations in the effluent must be present at less than 1 µg/L and 5 µg/L, respectively. In addition, bacteria concentration must be below laboratory detection limits.

Samples will be collected by AGVIQ-CH2M HILL and analyzed by an independent laboratory approved by the EPA, Nassau County Department of Health and the Navy. All sampling and testing will be performed in accordance with the Engineer's Report and QC Plan (Appendix B).

4.1.14 Demobilization

Temporary LPGAC system removal will not take place until the temporary system is no longer needed. AGVIQ-CH2M HILL will perform this work before demobilization from the full scale project.

- Demobilization will involve Removing the Temporary GAC System and Demolition of the Concrete Pad.

- The Subcontractor Entrance Gate that was added for the temporary system will be removed unless AMERICAN WATER requests that it be kept in place.
- Removal of all temporary fencing and temporary utilities.
- Start site restoration and final cleanup.

4.1.15 Site Restoration

Restoration will include landscaping and restoring any and all disturbed areas, specification (section 32-92-19, division 32), drawing (L1 and L2). Repair or add pavement and new asphalt driveways, specifications (section 32-12-17, division 32), drawing (C9). Replace any damaged or removed concrete curbing and sidewalks. Remove all building construction debris as well as any garbage and refuse generated from the construction of this project. General site cleanup of entire site.

Topsoil, seed, compost, and water will be applied to the limits of disturbance requiring vegetation in accordance with the EPP (Section 6).

During site restoration, the following demobilization activities will be conducted:

- Clean temporary facilities and construction equipment, and remove all temporary facilities, equipment and unused materials from the site.
- Upon completion, remove any decontamination support features. Remove all temporary construction features, such as fencing, cones, barricades, flagging.
- Remove ESC measures only after the site has been stabilized and accepted by the Navy and the property owner.
- Conduct a final inspection as specified in the QC Plan (Appendix B).

4.2 Closeout Documentation

At the conclusion of construction and related field activities, AGVIQ-CH2M HILL will prepare the Construction Completion Report, which will summarize project activities associated with the installation of the full scale permanent system. In addition, AGVIQ-CH2M HILL will provide an Operations and Maintenance Plan (described below) to operate the new facility.

4.2.1 Operations and Maintenance Plan

The Operations and Maintenance (O&M) Plan will be prepared. It will mainly consist of O&M Manuals submitted by the various equipment vendors and will include the following:

- Description of the process and operational instruction
- Maintenance requirements
- Backwash instructions
- Carbon change-out instructions
- Health and Safety requirements for operation
- Spare parts list

- A Sampling Plan outling the sampling requirements and schedule.

4.2.2 Construction Completion Report

The Construction Completion Report will include the following:

- Summary description of activities performed during construction and completed
- Construction sequence and completion documentation
- Red-lined Record Drawings: Computer Aided Design (CAD) Record Drawings will be produced by TtNUS)
- Transportation and disposal records as required
- Daily production and QC reports
- Health and Safety summaries
- Analytical and prove-out test results
- Tables and figures depicting relevant data and photographic records

5.0 Accident Prevention Plan and Quality Control Plan

AGVIQ-CH2M HILL strives to establish and maintain a safe, healthy, and accident-free workplace, and ensures that the workplace is maintained in accordance with regulations, guidelines, policies, and standards. AGVIQ-CH2M HILL has adopted responsible, proactive programs to provide appropriate protective measures where specific regulations relating to health and safety do not exist. AGVIQ-CH2M HILL will provide project oversight of field operations throughout the project to ensure the success and safety of the project, and to ensure that the required quality processes and procedures outlined in the APP (Appendix A) and the QC Plan (Appendix B) will be performed.

5.1 Accident Prevention Plan

The APP was prepared in response to the NAVFAC MIDLANT request to perform implementation of Remedial Action to install a Wellhead Treatment at the AMERICAN WATER facility. It is the intent of the APP to address requirements set forth by 29 Code of Federal Regulations (CFR) 1910, 29 CFR 1926 and EM 385 1-1, Appendix A. Site personnel, including AGVIQ-CH2M HILL and subcontractor personnel, who may be covered by the APP, must review the APP or be provided with a detailed briefing on the contents of the document and must sign the APP Acknowledgement Form. A hardcopy of the APP (Appendix A) will be available onsite for reference by site personnel. The APP will be submitted under separate cover for review but will be added as Appendix A once approved.

5.2 Quality Control Plan

The purpose of the QC Plan is to provide the quality process and procedures that will be employed during the installation of the LPGAC system to the AMERICAN WATER drinking water treatment facility to ensure that the new system is installed and operates as designed. The QC Plan is provided in Appendix B.

6.0 Environmental Protection Plan

The EPP provides general procedures that will be implemented to prevent pollution and protect the environment during the construction activities at the AMERICAN WATER Seaman's Neck Road Treatment Plant in Levittown, New York. This plan describes the measures that will be taken to comply with applicable federal, state, and local environmental requirements.

6.1 Specific Environmental Requirements

6.1.1 Erosion and Sediment Control Measures

Erosion and sediment control measures will be implemented as required by the design specifications (Specification 01 35 10) and drawings (drawing C-4 and C-7) and will be based on the New York State Standards and Specifications for Erosion and Sediment Control (NYSDEC, 2005).

6.1.2 Stormwater Management

A General Permit for storm water discharges from construction activities is not required for onsite removal actions under CERCLA 121(e). The project is not subject to the substantive requirements of the General Permit because the project disturbs less than 1 acre. Accordingly, a construction Storm Water Pollution Prevention Plan also is not required. However, erosion control practices will be implemented in accordance with erosion and sediment control measures indicated in the design documents, inspected at a minimum of once per week and after every storm of 0.5 inches or more, and any deficiencies corrected or resolved. When necessary, AGVIQ-CH2M HILL will be discharging to the AMERICAN WATER sewer connection, and therefore will be utilizing its national pollutant discharge elimination system (NPDES) permit. Discharge cannot exceed 200 gallons per minutes (gpm), and therefore will be coordinated with AMERICAN WATER and the County Department of Public Works.

6.1.3 Groundwater Pollution Prevention

Potential for groundwater pollution is not anticipated for the construction activities associated with this project. All proper precautions and procedures will be followed per Section 6.3 Spill Prevention, Response, and Reporting Requirements and the design specifications (specification 01 39 40).

6.1.4 Hazardous Material Management

AGVIQ-CH2M HILL will maintain an inventory of chemicals and hazardous materials brought onsite.

The SSC will request Material Safety Data Sheets (MSDSs) from the subcontractors and the vendors for chemicals delivered to the site by AGVIQ-CH2M HILL and its subcontractors.

The SSC will perform the following activities:

- Train employees on required site-specific hazard communication (HAZCOM).
- Confirm that the inventory of chemicals brought on site by subcontractors is available.
- Obtain an MSDS for each hazardous chemical before or as the chemical arrives onsite.
- Label chemical containers with the identity of the chemical and with hazard warnings, if applicable.

The volume of chemicals and hazardous materials used will be tracked and documented in the daily production or QC reports.

A hazardous material is defined as any material that, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may pose a substantial hazard to human health or the environment. The following is a list of hazardous materials or chemicals that may be brought onsite and incorporated as part of the final completion of the work, generated during the execution of the work for offsite disposal or recycling or otherwise used to facilitate site work, as defined in the APP (Appendix A). These hazardous materials or chemicals require spill prevention, spill control, and countermeasure processes to ensure sensitive environmental receptors are not adversely impacted in the event of a spill or release of these materials (see Section 6.3):

- Gasoline (small metal safety containers for fueling small engine equipment)
- Diesel fuel in heavy equipment or above ground storage tank
- Minor quantities of grease, motor oil and hydraulic oil for heavy equipment maintenance

The handling and storage of hazardous materials will be minimized to the extent possible to limit potential environmental and health impacts. Hazardous materials will be stored in the contractor staging area according to fire safety and environmental regulatory requirements. Incompatible materials will be segregated, and flammable materials will be kept in flammable materials storage lockers when not in use.

Personnel will be responsible for ensuring that these hazardous materials are properly maintained and not spilled. If a spill should occur, the spill procedures in the APP (Appendix A) must be adhered to, including notification requirements.

6.2 Natural Resources Protection

6.2.1 Protection of Fish and Wildlife

Construction operations will be managed in such a manner as to minimize interference with fish and/or wildlife habitat. Care will be taken to ensure that temporary erosion and sediment controls are installed to prevent storm water runoff or discharge.

6.2.2 Protection of Land Resources

The extent of clearing operations to complete the grading and building construction will be limited to stripping the vegetation and topsoil in the area to be graded and where the pre-engineered building and various concrete pads will be installed. As part of site preparation, only one tree between Well #2 and Well #3 will be removed. No other tree removal or

clearing and grubbing are expected to be required to complete these activities; however, several tree branches will be trimmed. Since this activity does not disturb the root zone, tree trimming does not require specific land protection measures. The amount of land disturbed will be minimized, the amount of time bare soil is exposed will also been minimized. Any disturbed land will be stabilized as required.

6.2.3 Protection of Water Resources

No fuel oils, construction wastes, or otherwise harmful materials will be permitted to enter the water resources. The erosion and sediment controls (silt fence or commercial silt dikes) will be installed as specified to protect water resources. Note there are no surface water resources near the project site.

6.2.4 Protection of Air Resources

Surface and air movement of dust will be limited during land-disturbing and construction activities (i.e., excavation and grading). The area will not be monitored with a dust meter, but site conditions will be observed by the site superintendent or his delegate who will take action to suppress dust as needed. Dust control will be performed as the work proceeds and whenever a dust nuisance or hazard occurs.

6.2.5 Protection of Historical and Archaeological Resources

No archaeological features or artifacts are known to be present at the construction site. Therefore, it is assumed that no historical or archaeological resources will be affected by the implementation of the construction activities. If AGVIQ-CH2M HILL suspects discovery of any item or area of historic or archaeological interest during construction activities, the area will be left undistributed and findings will be immediately reported to the Navy.

6.3 Spill Prevention, Response, and Reporting Requirements

The following provisions for spill prevention and response establish minimum site requirements. All spills will be reported by AGVIQ-CH2M HILL as indicated in the APP (Appendix A). Refer to the APP for emergency response procedures and further reporting requirements.

In the event of a release of any potentially hazardous waste, chemical, or material, AGVIQ-CH2M HILL will immediately report any release to the Navy. The definition of release includes any “spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment or discarding of barrels, containers, and other closed containers)” of any potentially hazardous chemical, substance, and/or material.

It is important that the Program Environmental Manager (EM) also be immediately notified of spills/releases and other environmental compliance-related incidents (e.g., permit exceedance, notice of violation, regulatory violation) or near-loss environmental incidents. The Program EM will evaluate the spill or release to determine agency (e.g., National Response Center or state) reporting requirements. **I**mmediate internal spill reporting is

critical to ensure compliance with agency spill reporting requirements (U.S. Environmental Protection Agency [EPA] requires reporting certain spills/releases within 15 minutes).

6.3.1 Spill Prevention

Fuel, chemical, and waste storage areas will be properly protected from onsite and offsite vehicle traffic. If fuel is stored onsite, fuel tanks or containers (including fuel storage and waste storage) will be equipped with secondary containment. These tanks or containers will be inspected weekly for signs of leaks. Accumulated water must be inspected for signs of contamination (e.g., product sheen, discoloration, and odor) before being discarded. Fire protection provisions outlined in the APP (Appendix A) will be adhered to.

Chemical products will be properly stored, transferred, and used. Adequate spill control materials will be maintained at the local work area if chemical product use occurs outside areas equipped with spill control materials.

6.3.2 Spill Containment and Control

The specific spill containment and control processes are identified in the APP (Appendix A). However, in general, spill containment and control materials will be maintained in the support zone, at fuel storage and dispensing locations, and at waste storage areas. Incidental spills will be contained with sorbent and disposed of properly. Spilled materials must be immediately contained and controlled. Spill response procedures include:

- Immediately warn any nearby workers and notify individual responsible for site operations.
- Assess the spill area to ensure that it is safe to respond.
- Evacuate area if spill presents an emergency.
- Ensure all unnecessary persons are removed from the hazard area.
- Put on protective clothing and equipment.
- If a flammable material is involved, remove all ignition sources, and use only spark- and explosion-proof equipment for recovery of material.
- Remove all surrounding materials that could be especially reactive with materials in the waste. Determine the major components in the waste at the time of the spill.
- Stop source of spill.
- Establish site control for spill area.
- If wastes reach a storm sewer, dam the outfall by using sand, earth, sandbags, etc. Pump this material out into a temporary holding tank or drums as soon as possible.
- Place all small quantities of recovered liquid wastes (55 gallons or less) and contaminated soil into drums for incineration or removal to an approved disposal site.
- Spray the spill area with foam, if available, if volatile emissions may occur.

- Apply appropriate spill control media (e.g., clay, sand, lime) to absorb discharged liquids.
- For large spills, establish dikes around leading edge of spill using booms, sand, clay, or other appropriate material. If possible, use diaphragm pump to transfer discharged liquid to drums or holding tank. Follow proper ground and bonding procedures of equipment during recovery efforts. Intrinsically safe equipment must be used in recovery operations.

6.3.3 Spill Cleanup and Removal

All spilled material, contaminated sorbent, and contaminated media will be cleaned up and removed as soon as possible. Contaminated spill material will be drummed, labeled, and properly stored until material is disposed. Contaminated spill material will be managed as waste (see Section 7.0 Waste Management Plan) and disposed of according to applicable, federal, state, and local requirements. Following spill cleanup, the cause of the spill will be investigated and material storage and handling procedures will be reviewed and revised where appropriate.

7.0 Waste Management Plan

This plan addresses the management and disposal requirements for wastes generated during construction activities. It is not anticipated that hazardous waste will be generated during these construction activities. The following procedure and practices, however, are consistent with the requirements for managing waste under the hazardous waste generator rules and implemented as "best management practices" and as a contingency in the event that hazardous wastes are generated.

The following wastes may be generated during these activities:

- Concrete debris
- PVC piping
- GAC system backwash waste water
- Process piping chlorinated disinfection water and flush water
- Spent GAC (GAC change out is not anticipated, but provisions for managing spent GAC are included as contingency).

Excavated soil will be returned to the excavation/trench after underground utility work is complete.

Backwash Waste Water will be discharged to the facility blow down pit with approval from American Water. If not allowed, it will be discharged to the Backwash Waste Holding Tank, prior to being discharged to the sanitary sewer. This shall be performed in accordance with the Engineers Report (TtNUS, 2011c).

Process piping chlorinated disinfection water and flush water shall be discharged to the Backwash Waste Holding Tank, and de-chlorinated prior to being discharged to the sanitary sewer.

7.1 Exemptions and Exclusions

Spent GAC is considered a sludge under the Resource Conservation and Recovery Act (RCRA, 40 CFR 261.10), i.e., "any solid, semi-solid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility exclusive of the treated effluent from a wastewater treatment plant." Because the spent carbon is classified as a sludge, it is exempt from classification as a solid waste when it is reclaimed, pursuant to 40 CFR 261.2(c)(3). Wastes that are exempt from classification as a solid waste, are also exempt as a hazardous waste (i.e., exempt from hazardous waste regulations).

Use of this exemption eliminates the need for future toxicity characteristic leaching procedure (TCLP) testing of the GAC prior to reclamation. However, the regeneration facility may require testing prior to shipment. Also, testing for total VOCs may still be required to determine if the spent carbon is regulated as a hazardous material during transportation, as discussed further later.

It is assumed that spent GAC will be returned to the GAC vendor for reclamation and that the TCE contained in the spent GAC is not a listed hazardous waste. Any spent GAC that will not be reclaimed will be characterized and managed as a waste.

7.2 Waste Characterization

Construction and Demolition (C&D) debris and miscellaneous solid wastes (including concrete, wood pallets, plastic sheeting, miscellaneous metal and PVC piping) will be characterized as nonhazardous using process knowledge. C&D debris will be recycled and reused as much as practically possible. The remainder of the C&D debris will be disposed of as nonhazardous waste. AGVIQ-CH2M HILL shall comply with the solid waste management regulations (40 CFR 258) and hazardous waste regulations (40 CFR 260-262).

7.2.1 Waste Profile

Waste characterization information for wastes will be documented on a waste profile form provided by the designated offsite disposal, or recycling facility as part of the waste acceptance process. The profile will be reviewed, approved, and signed by the Navy's CO or designated representative. Signed profile(s) will then be submitted to the offsite facility for acceptance.

The profile typically requires the following information including but not limited to:

- Generator information including name, address, contact, and phone number
- Site name including street/mailing address
- Process generating waste
- Source of contamination
- Historical use for area
- Waste composition (e.g., 100 percent debris)
- Physical state of waste (e.g., solid)

A copy of the approved waste profile or letter of approval will be received prior to scheduling offsite transportation of the waste.

7.3 General Waste Management Requirements

Wastes will be accumulated in an area identified or approved by AGVIQ-CH2M HILL or designated representative. All containers will be inspected on arrival at the site for signs of disrepair or contamination, and to verify that the containers are empty. If the container does not arrive in good condition, is contaminated, or is not empty, it will be immediately rejected and documented.

Good housekeeping practices will be maintained at all waste accumulation areas.

7.3.1 Containment

Construction and demolition, and general debris will be either placed in storage piles, drums or in roll-off boxes. Process water may be re-circulated onsite or disposed offsite or discharged to the "blow-off" pit, if approved by American Water.

Tanks

- Tanks will be inspected upon arrival onsite for signs of deterioration and contamination. Any tank arriving onsite with contents or in poor condition will be rejected.
- Tanks will be provided with covers and secondary containment.
- Each tank will be labeled as discussed above.
- Tanks will not be located near a storm water inlet or conveyance.

Storage Piles

Storage piles, if used, will be managed in a manner that maintains good housekeeping, prevents the spread of contamination, and minimizes the potential for wildlife entrapment.

Management activities will include the following:

- Liners and covers will be minimum 6-mil reinforced plastic sheeting
- Liners will be selected based on the characteristics of the materials to be stored
- Storage piles will be covered as necessary to prevent storm water run-on and runoff
- Storage piles located in buildings do not require liners or covers
- Non-contaminated materials will be accumulated in unlined storage piles
- Contaminated materials will be accumulated in lined storage piles

Drums/Small Containers

The following guidelines relate to drums and small containers:

- Drums will be inspected and inventoried upon arrival onsite for signs of contamination and/or deterioration.
- Adequate aisle space (e.g., 30 inches) will be provided for containers such as 55-gallon drums to allow the unobstructed movement of personnel and equipment. A row of drums should be no more than two drums wide.
- Each drum will be provided with its own label, and labels will be visible.
- Drums will remain closed except when removing or adding waste to the drum. Covers will be properly secured at the end of each workday. Closed means that the lid and/or bung must be on and securely tightened (except with adding or removing waste).
- Drums will be disposed of with the contents. If the contents are removed from the drums for offsite transportation and treatment or disposal, the drums will be decontaminated prior to re-use or before leaving the site.

Roll-off Boxes

- Roll-off boxes will be inspected upon arrival onsite. Any roll-off containers arriving with contents or deterioration will be rejected.
- Roll-off boxes for contaminated soil will be provided with covers and disposable liners. Liners will be disposed of as contaminated debris.
- When not in use and at the end of each workday, covers will be properly secured.

- Old labels will be removed and each box will be provided with its own label, and labels will be visible.
- Roll-off containers will be inspected by the transporter after removal of the liner and decontaminated in the event of evidence of liner failure.
- Roll-off containers will be monitored to ensure that they will meet U.S. Department of Transportation (DOT) over the road weight restrictions.
- Roll-off boxes may not be located near a storm water inlet or conveyance.

7.3.2 Waste Storage Time Limit

Hazardous wastes are not expected, but if generated will be removed from the site within less than 90 days from date of generation, as required under 40 CFR 262.34(a) for large quantity generators. Other wastes will be removed from the site as soon as possible. The date of generation is the day that a waste is first placed in a container (drum or roll-off box) or stockpile.

7.3.3 Labels

Waste containers will be labeled in accordance with 49 CFR 172, 173, and 178. Labels will include the type of waste, location from which the waste was generated, and accumulation start date. Containers, roll-off boxes, and tanks used to store/accumulate waste will include one of the following labels:

- "Analysis Pending" - Temporary or handwritten label until analytical results are received and reviewed. This label will include the accumulation start date
- "Non-Hazardous Waste" - Preprinted labels with the following information:
  - Accumulation start date
  - Generator name:
  - Waste-specific information (e.g., contaminated soil)

Where applicable, the major hazards (e.g., flammable, oxidizer, and carcinogen) also will be included on the label.

7.3.4 Inspections

Waste accumulation and equipment storage areas will be inspected at least weekly for malfunctions, deterioration, discharges, and leaks that could result in a release.

- Containers, tanks and roll-off containers will be inspected for leaks, signs of corrosion, or signs of general deterioration.
- Stockpiles will be inspected for liner and berm integrity.
- All areas will be inspected to ensure that good housekeeping practices are maintained.

Any deficiencies observed or noted during inspection will be corrected immediately, and corrective measures documented. Appropriate measures may include transfer of waste from a leaking container to a new container, replacement of liner or cover, or repair of

containment berm. Copies of inspection reports and corrective measures will be maintained onsite, and available for review.

7.4 Security/Emergency Response

A barrier, such as barricade tape or temporary fencing, will be provided for hazardous waste accumulation areas, and for other waste storage areas that are accessible to the general public. Hazardous waste storage areas will also have signs that provide 24-hour emergency contacts and telephone numbers.

Waste accumulation areas will contain emergency response equipment appropriate to the wastes' hazards. The APP (Appendix A) identifies the project emergency response procedures and equipment, including emergency response contacts and phone numbers.

In addition to the APP procedures, hazardous waste accumulation areas will be provided with fire extinguishers (for wastes known or suspected to be flammable or ignitable), decontamination equipment, and an alarm system (if radio equipment is not available to all staff working in accumulation area). Spill control equipment (e.g., sorbent pads) will be available in the waste accumulation areas, and where liquids are transferred from one vessel to another.

7.5 Employee Training

Field staff that will manage hazardous or potentially hazardous waste will comply with 40 CFR 265.16 through:

- Occupational Safety and Health Administration (OSHA) 1910.120 HAZWOPER training
- On-the-job training, which includes:
  - Site-specific APP review – requires each site worker, and guests to review and sign the plan
  - Activity hazard analysis and daily "tailgate" meetings
  - Project-specific work plan review; e.g., this Waste Management Plan

7.6 Waste Transportation

7.6.1 Shipping Documentation

Prior to offsite disposal of any waste, a waste approval package for each waste stream will be prepared. This package will include a waste profile naming the Navy as the generator of the waste, analytical summary table(s) applicable to the waste, land disposal restriction (LDR) notification for any hazardous wastes, a completed waste manifest, and any other applicable information necessary for the Navy to complete its review of the disposal package and signature as the generator. The profile will be reviewed, approved, and signed by the Navy's CO or designated representative. The signed profile will then be submitted to the offsite facility for acceptance and approval. Once the approval letter is received from the offsite facility, transportation can be scheduled.

Each load of waste material will be manifested prior to leaving the site. At a minimum, the manifest form will include the following information:

- Generator information including name, address, contact, and phone number, EPA ID number
- Transporter information including name, address, contact and phone number, EPA ID number
- Designated facility information including name, address, phone number, EPA ID number
- Site name including street/mailing address
- DOT Proper Shipping Name (e.g., Hazardous Waste Solid, n.o.s., 9, UN 3077, PG III [D008])
- Type and number of container
- Quantity of waste (volumetric estimate)
- Task order or job number
- Profile number
- 24-hour emergency phone number

Additionally, each shipment of waste will also have a weight ticket.

The generator and the transporter must sign the manifest prior to the load of waste leaving the site. Hazardous and non-hazardous waste manifests will be signed by the Navy's CO or designated representative. The original signed manifest will be returned to the address of the generator.

7.7 Department of Transportation Requirements

Requirements under 49 CFR 171 will apply to all offsite shipments of hazardous materials. The information contained in this section is provided as a general guide. Requirements specific to each hazardous material will be determined in the field. It is the responsibility of a DOT-trained individual to ensure that the requirements of 49 CFR 171 are met.

7.7.1 Shipping Name

Material that exhibits one of the nine DOT hazard class characteristics (e.g., explosive, flammable, poison, combustible) is regulated under DOT rules for the transportation of hazardous material. If material is suspected to be hazardous, it will be shipped under the suspected hazard class.

Each shipment of a suspected hazardous material will be properly classified using the Hazardous Materials Table in 49 CFR 172.101. All determinations will be made by DOT-trained personnel.

7.7.2 Packaging, Marking, and Labeling

The shipping name, hazard class, identification number, technical names (if applicable), EPA markings and waste code numbers, and consignee/consignor designations will be marked on packages for shipment (49 CFR 172.301). Once a waste is characterized, reference will be made to the Hazardous Materials Table in 49 CFR 172.101 to determine the appropriate label.

7.7.3 Placards

Appropriate placards will be determined by DOT-trained personnel. Specific placard descriptions are found starting at 49 CFR 172.521. If a placard is required, it will be affixed on each side and each end of the vehicle.

7.7.4 Shipping Spent GAC

In general, spent GAC is not considered a DOT-regulated hazardous material. The MSDS for spent GAC will be consulted to make the determination prior to shipping this material. Spent GAC, however, may still be a DOT-regulated hazardous material because of the type and quantity of contaminants adsorbed by the carbon. A Class 9 hazardous material is defined in 49 CFR 173.140 to include materials meeting the definition of a hazardous substance.

A hazardous substance is a material listed on the CERCLA hazardous substances list, in a quantity in one package, which equals or exceeds the CERCLA reportable quantity (RQ). If the material is present in a mixture or solution, the concentration must equal or exceed the threshold concentration specified for that material's RQ value. TCE is on the CERCLA hazardous substances list, with an RQ of 100 pounds. The concentration threshold specified for an RQ of 100 pounds in 49 CFR 171.8 is 2,000 ppm. Therefore, in order for the spent carbon containing TCE to be considered a hazardous substance for purposes of transportation it must meet all of the following criteria:

- The total (not TCLP) TCE concentration in the carbon must equal or exceed 2,000 ppm.
- A single package of carbon, as it is transported from the facility, must contain at least 100 pounds of pure TCE. If the carbon is packaged in 55-gallon drums, a single package is one 55-gallon drum. If the carbon is transported in bulk, a single package is the bulk transport vehicle.

If the carbon meets these criteria, it will be a DOT-regulated hazardous material in Class 9. The DOT shipping description that should appear on the hazardous waste manifest will be: "RQ, Environmentally Hazardous Substances Solid N.O.S., 9, UN 3077, PG III (TCE)."

7.8 Transporter Requirements

Each transportation vehicle and load of waste will be inspected before leaving the site and documented. The quantities of waste leaving the site will be recorded on a transportation and disposal log. A contractor licensed for commercial transportation will transport non-hazardous wastes. In the event that wastes are hazardous, the transporter will have a EPA

Identification number, and will comply with transportation requirements outlined in 49 CFR 171-179 (DOT) and 40 CFR 263.11 and 263.31 (Hazardous Waste Transportation).

The transporter will be responsible for weighing loads at a certified scale. For each load of material, weight measurements will be obtained for each full and empty container, dump truck, or tanker truck. Disposal quantities will be based on the difference of weight measurements between the full and empty container or dump truck. Weights will be recorded on the waste manifest.

The transporter will observe the following practices when hauling and transporting wastes offsite:

- Minimize impacts to general public traffic.
- Repair road damage caused by construction and/or hauling traffic.
- Line and cover trucks/trailers used for hauling hazardous or regulated waste to prevent spills or releases.
- Decontaminate vehicles prior to re-use, other than hauling contaminated waste.
- Seal trucks transporting liquids.

Wastes or materials from other projects may not be combined with wastes generated during this project.

All personnel involved in offsite disposal activities will follow safety and spill response procedures outlined in the APP.

7.9 Disposal of Waste Streams

Consistent with the Offsite Rule (OSR), wastes generated from remediation activities at a CERCLA site may only be transferred to offsite facilities that are determined acceptable by the EPA Regional Offsite Contact (40 CFR 300.400(b)). AGVIQ-CH2M HILL will maintain a record of the facility's OSR approval prior to use. It is assumed that OSR applies to any waste or media that contains a contaminant, but does not apply to uncontaminated or decontaminated construction debris (i.e., inert construction materials).

7.9.1 Recordkeeping

The following records and documents will be maintained for material disposed off-site:

- Transportation and offsite disposal records, including:
  - Profiles and associated characterization data
  - Manifests, LDR notifications/certifications, bills of lading, and weight tickets
  - Offsite facility waste receipts, certificates of disposal/destruction
- Training records
- Inspection records

AGVIQ-CH2M HILL will complete and submit a Waste Generation Report form as provided by the Navy, quarterly (at a minimum). The format will be provided by PWD FEAD New London.

8.0 References

New York State Department of Environmental Conservation (NYSDEC). 2005. New York State Standards and Specifications for Erosion and Sediment Control.

Tetra Tech NUS, Inc. (TtNUS). 2012. Modifications to AQUA New York, Inc. Water Treatment Facility Seamans Neck Road Nassau County, New York Design Documents. March.

Tetra Tech NUS, Inc. (TtNUS). 2011. Engineers Report for Interim Emergency Treatment for Wellhead Treatment for Trichloroethene Contamination, Aqua New York's Seamans Neck Road Water Plant, Naval Weapons Industrial Reserve Plant, Bethpage, New York. December 21.

APPENDIX A

Accident Prevention Plan

Final
Accident Prevention Plan

Installation of Full Scale Treatment System
Liquid-Phase Granular Activated Carbon Units

New York American Water Company
Seaman's Neck Road Water Plant
NWIRP Bethpage, New York

Contract No. N62470-08-D-1006
Task Order No. WE23

Submitted to:

NAVFAC
Naval Facilities Engineering Command

Prepared by:

AGVIQ
ENVIRONMENTAL SERVICES
CH2M HILL
JOINT VENTURE

December 2012
Revision No. 00

Contents

Attachments

Figures

Tables

Acronyms and Abbreviations

APP	Accident Prevention Plan
AGVIQ-CH2M HILL	AGVIQ-CH2M HILL Joint Venture III (Small Business Remedial Action Contract)
AHA	Activity Hazard Analysis
APP	Accident Prevention Plan
BBLPS	Behavior Based Loss Prevention System
BLS	United States Bureau of Labor Statistics
CBRNE	Chemical, Biological, Nuclear, Radiological, Explosive
CFR	Code of Federal Regulations
CIF	Controlled Industrial Facility
CIH	Certified Industrial Hygienist
COC	Chemicals of Concern
CPR	Cardiopulmonary Resuscitation
CRZ	Contamination Reduction Zone
CSIR	Contractor Significant Incident Report
DART	Days Away, Restriction, or Transfer
DEET	N, N-diethyl-meta-polyamide
DFOW	Definable Feature of Work
DFWP	Drug Free Workplace Program
DON	Department of the Navy
DOT	U.S. Department of Transportation
EMS	Emergency Medical Services
EPP	Environmental Protection Plan
ER	Emergency Response
ESC	Erosion and Sediment Control
EZ	Exclusion Zone
FA	first aid
ft	feet
FTL	Field Team Leader
GFCI	Ground Fault Circuit Interrupter
GDA	Government Designated Authority
GPR	Ground Penetrating Radar

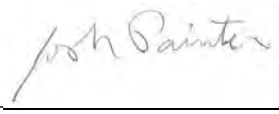
H&S	Health and Safety
HS&E	Health, Safety, and Environment
HITS	Hours and Incident Tracking System
HPP	Hurricane Preparedness Plan
HR	heart rate
HSP	Health and Safety Program
HSPA	Health and Safety Program Administrator
IR	Incident Rate
IRF	Incident Report Form
kV	kilovolt
LLC	Limited Liability Company
LPO	Loss Prevention Observation
mg/m^3	milligrams per cubic meter
MLLW	Mean Lower Low Water
MEC	Munitions and Explosives of Concern
MPPEH	Materials Potentially Presenting an Explosive Hazard
MSDS	Material Safety Data Sheet
NAICS	North American Industry Classification System
NOAA	National Oceanic and Atmospheric
OEL	Occupational Exposure Limit
OSHA	Occupational Safety and Health Administration
PACM	Presumed Asbestos Containing Material
PAHs	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyl
PEL	Permissible Exposure Limit (OSHA)
POC	Point of Contact
PPE	Personal Protective Equipment
ppm	Parts per million
PRGs	Preliminary Remedial Goals
PTSP	Pre-Task Safety Plan
QC	Quality Control Plan
RCRA	Resource Conservation and Recovery Act
RMP	Risk Management Process
RPM	Remedial Project Manager
SAP	Sampling and Analysis Plan
SBRAC	Small Business Remedial Action Contract

SOH	Safety and Occupational Health
SOP	Standard Operating Procedure (CH2M HILL)
SPCCP	Spill prevention, control, and countermeasure plan
SSHO	Site Safety and Health Officer
SSHSP	Site Specific Health and Safety Plan
SWO	Stop Work Order
SZ	Support Zone
TO	Task Order
TSCA	Toxic Substances Control Act
USCG	United States Coast Guard
WMP	Waste Management Plan
WP	Work Plan

1.0 Signature Sheet

Plan Prepared By:

Name: Josh Painter
Title: Health and Safety Manager
Company: CH2M HILL
Telephone: (303) 993-9274
Date: September 18, 2012

Signature: 

Josh Painter, CSP

Approved By:

Name: Angelo Liberatore
Title: Health & Safety Manager
Company: CH2M HILL Constructors, Inc.
Telephone: (678) 530 4210/ (770) 335-2076 (cell)
Date:

Signature: 

Angelo Liberatore, CIH, CSP

Plan Concurrence:

Name: Jim Nicotri
Title: Senior Project Manager
Company: CH2M HILL
Telephone: (617) 626-7042/(857) 272-6614 (cell)
Date:

Signature: 

Jim Nicotri

1.1 Revisions

Revisions Made By: **Date:**

Revisions to Plan:

Revisions Approved By: **Date:**

1.2 Introduction

The AGVIQ-CH2M HILL Joint Venture III (AGVIQ-CH2M HILL) has been contracted by the United States Navy, Naval Facilities Engineering Command (NAVFAC) Atlantic Division (MIDLANT), for the construction and startup of a full scale permanent treatment system, liquid-phase granular activated carbon (LPGAC) units at the Aqua New York, Inc. (AQUA-NY) Seaman's Neck Road Facility. This work will be performed under the terms and conditions of Contract Number N62470-08-D-1006, Task Order (TO) No. WE23. Note that the AQUA-NY facility has been purchased by New York American Water Company (American Water), and therefore the name of this facility has been changed throughout the remainder of this document.

This Accident Prevention Plan (APP) has been developed to address applicable requirements set forth by 29 Code of Federal Regulations (CFR) 1910, 29 CFR 1926 and the U.S. Army Corps of Engineers, EM 385 1-1, "Safety and Health Requirements Manual." It is understood that NAVFAC prime contract # N62470-08-D-1006 issued for the AGVIQ-CH2M HILL Small Business Remedial Action Contract (SBRAC) was issued prior to September 15, 2008, and as such the **3 November 2003 version of the EM 385 1-1** shall be applicable the execution of this TO work. However, AGVIQ-CH2M HILL will endeavor to implement the September 15, 2008 version for this project where ever it is feasibly possible. It should be noted that the content of this APP has been to prepared to address the requirements set forth by EM 385 1-1, Appendix A, September 15, 2008.

This APP must be available on-site for reference by site personnel. Means and methodology for execution of TO tasks which are detailed in the project work plan (WP) which includes this APP, Environmental Protection Plan (EPP), and Quality Control Plan (QCP). The WP and its attached support documents are not intended to be executed as separate documents. Therefore, any means and methods identified within the WP or its support documents will not be significantly elaborated upon herein, in an effort to minimize duplicity or erroneous information.

All site personnel, including AGVIQ-CH2M HILL and subcontractor personnel, who may be covered by this APP must review or be provided a detailed briefing on the contents of this document and sign the Acknowledgement Form (**Attachment 1**).

2.0 Background Information

CONTRACTOR:	AGVIQ-CH2M HILL Constructors, Inc. Joint Venture III Small Business Remedial Action Contract (SBRAC) Contract Administration Office Address 1000 Abernathy Road, Suite 1600 Atlanta, GA 30328 Contact Name: Jim Nicotri Title: Project Manager (overall) Telephone: (617) 626-7042 Cell Phone: (339) 832-4555
CONTRACT#: (PRIME)	Number N62470-08-D-1006 Task Order WE23
PROJECT NAME**:**	Installation of Full Scale Treatment System Liquid-Phase Granular Activated Carbon Units at New York American Water Co, Seaman Neck Road Facility, NWIRP Bethpage, New York

2.1 Facility and Site Background

This project consists of construction and startup of a permanent well-head treatment remedy for American Water water supply wells N-8480 (Well No. 3) and N-9338 (Well No. 4) located at the Seaman's Neck Road Facility.

2.1.1 Site Information

Trichloroethene has been detected at a maximum concentration of 3.3 micrograms per liter (µg/L) in groundwater. The Navy has worked with the New York State Department of Environmental Conservation (NYSDEC), New York State Department of Health (NYSDOH), Nassau County Department of Health (NCDOH), and Town of Hempstead (TOH) to construct a long-term system to remove VOCs from Well Nos. 3S and 4S. These activities are authorized under the 2001 NYSDEC and 2003 Navy Record of Decision. A Basis of Design Report for the full-scale long-term system was prepared for this system in December 2010, and approval from the NCDOH was received in August 2011 (NCDH 3325-10). In September 2011, a design package was submitted for NCDOH review and comments were received in October and November 2011 and April 2012. NCDOH comments on the full-scale system design are currently being addressed. Responses to those comments and revised drawings showing the changes made were submitted to the NCDOH on September 4, 2012. Construction of the full-scale long-term system is tentatively planned to start in early winter or early spring 2013 and be completed by the end of 2013.

2.2 General Task Order Scope of Work

The scope of work (SOW) is to implement both the temporary and full scale 100% Design Document (Tetra Tech NUS December 2011, and Tetra Tech NUS September 2011). The 100% Design Document includes the design drawings, and specifications. For the purposes of developing and executing project Activity Hazard Analyses (AHA) from a health and safety requirements and task hazard control perspective, a summary of the major Definable Features of Work (DFOWs) to complete the execution of this TO are as follows:

1. Mobilization
   - Mobilization and site set up
   - Utility Survey
   - Vegetation Clearing & grubbing
   - Survey and construction stake-out
   - Installation of Erosion and Sediment Controls
2. Demolition
   - Remove asphalt and curbing
   - Remove Well #2 (Motor and Pump Unit)-Dispose/Cap Well
   - Remove the Well #2 Shed Structure
3. Underground Piping and Utilities Installation
   - Trenching/Excavation
   - Gas and Electric temporary line relocation
   - Install piping and conduit
4. Concrete Work
   - Excavation
   - Subsurface Preparation & Testing
   - Footer Installation
   - Concrete foundation
   - Concrete Slab for building structure
   - Interior and exterior Various concrete pads
5. Process Equipment, Piping and Valves
   - Install GAC vessels and Backwash Waste Tank
   - Install process piping and valves
   - Install GAC System Backwash Pumps
   - Install Chemical Systems
   - Other misc piping
   - Rebuild Plant Well Pumps
6. Building construction and interior work
   - Building structural steel frame and vertical wall units
   - Building Structure Installation
   - Roof Structure
   - Doors, windows, wall, and roof penetrations, etc
   - Fire sprinkler system

- Concrete Masonry Unit-rooms with bond beams and roof
- Mechanical (Heating and AC Units)
- Electrical (Lighting)
- Finishes (Painting), Signage, and Fire Extinguishers

7. Electrical and Instrumentation
   - Install electrical equipment
   - Motor Control Centers
   - Automatic Transfer Switch
   - Wiring
   - Instrument Installation
   - Configure Process Control
8. Final Exterior Work
   - Install and connect Emergency Generator
   - Connect gas piping (National Grid)
   - Electrical Connection (LIPA)
9. System Start-Up
   - Flushing piping and vessels
   - Sterilizing the system
   - Loading carbon (fill GAC Vessels)
   - Backwash GAC Vessels
   - Start-Up system
10. Site Restoration
    - Landscaping
    - Restore disturbed areas
    - Repair paving/new asphalt driveways
    - Site cleanup (Building Construction Debris Removal)
11. Demobilization
    - Equipment Removal
    - Remove Temporary GAC System and Demo Concrete Pad
    - Site Restoration & Clean-Up
    - Remove E/SC Features
    - Temporary Fences/Utilities

AHAs associated with the execution of this work are included in section 10.6 Project Specific Activity Hazard Analyses of this APP.

2.3 Health and Safety Plan Assumption Set

The assumption set for the development of this APP is that AGVIQ-CH2M HILL site personnel and subcontractors controlled by AGVIQ-CH2M HILL who may be covered by this APP are based on the following:

- Work to be performed under this TO does not include exposure to potential site contaminates and is not required to be performed under the OSHA HAZWOPER 29 CFR 1910.120 regulations.
- No Chemical, Biological, Nuclear or Radioactive (CBNR) weapon/agent, material potentially presenting an explosive hazard (MPPEH) or munitions and explosives of concern (MEC) or presumed asbestos containing material (PACM) or asbestos containing material (ACM) will be encountered during the execution of this task order. All site work must cease if it is suspected that these items are on-site.
- It is assumed that the performance of Non-Hazwoper regulated tasks in section 2.5 below, that workers will not be exposed to residual/released site Constituents of Concern (COC) during the execution of these tasks. If this is not the case, then these functions will be considered Hazwoper-Regulated under section 2.4 of this APP.
- Where use of personal protective equipment (PPE) equipment is specified, it will be used in accordance with Table 1-1, **Attachment** 1 (SSHSP) of this APP.
- Where the use of air monitoring equipment is specified, it shall be in accordance with Table 1-2, **Attachment** 1 (SSHSP) of this APP. Action levels and action level responses defined by this APP shall be adhered to. Air monitoring data collected during the execution of the task order work phases shall be documented and included for the project file.
- Work is being performed in an open air, well ventilated environment.
- Where content in this APP is marked as (Reserved) or otherwise defined as not applicable, then activities associated with these areas, activities or hazards not specifically covered under this APP and must not be performed unless this APP is amended, as necessary.

In the event that the above assumption set is not verified, the conditions of this APP shall be re-evaluated and amended as necessary to address applicable hazards that maybe associated with newly encountered project conditions or newly defined project tasks. In the event that it is determined that site soil, ground water sediment may be impacted by COCs concentrations in excess of established Occupational Exposure Limits (OELs) or CBRN, MEC/MPPEH or PACM/ACM exposure at any level could occur, work shall cease until such engineering or administrative control measures and/or Personnel Protective Equipment (PPE) are implemented to reduce potential worker exposures to acceptable levels.

Adjustments to this APP to address or mitigate potential OEL/CBRN exposure to workers or involving modifications to worker PPE or worker/site exposure monitoring (air monitoring) requirements will require review and approval by the Program Certified Industrial Hygienist (CIH). All amendments to this APP must be performed by a designated AGVIQ-CH2M HILL Program HSPA, the Program CIH or other duly authorized professional.

2.4 HAZWOPER-Regulated Tasks

Where certain work tasks include the handling, removal, containment, investigation or other physical site management of hazardous waste/material or other regulated materials, execution of such tasks and potential employee exposure to chemical hazards associated with these tasks may be regulated under 29CFR1910.120/29CFR1926.65. For this task order, following activities will be considered Hazardous Waste Operations (HAZWOPER)-regulated tasks because of the potential worker exposure to identified site contaminants.

- None

2.5 Non-HAZWOPER-Regulated Tasks

HAZWOPER regulations under 29CFR1910.120/29CFR1926.65 may be not applicable. Where this is considered, it must be demonstrated that the assigned tasks can be performed without the possibility of exposure to chemical hazards in order to use personnel who do not meet the criteria established by these standards. A determination from the AGVIQ-CH2M HILL Program Certified Industrial Hygienist (CIH) is required before project tasks are conducted by personnel who do not meet the requirements of 29CFR1910.120/ 29CFR1926.65 and where there is question to potential exposure to chemical hazards by site workers. Where it is unlikely or not possible that workers could not be exposed to site chemical hazards during the normal execution of assigned tasks, the task can be considered a Non-Hazwoper Regulated Task. For this project, the following activities can be considered Non-Hazwoper Regulated Tasks.

- Mobilization
- Demolition
- Underground Piping and Utilities Installation
- Concrete Work
- Building construction and interior work
- Process Equipment, Piping and Valves
- Electrical and Instrumentation
- Final Exterior Work
- Site Restoration
- System Start-Up
- Demobilization

3.0 Statement of Safety and Health Policy

The measurement of a successful program includes our ability to execute profitably, on time, without violations and safely. Success can only be achieved when all four components are integrated; therefore, health and safety must be part of every operation, at every responsibility level. It is the intent of the AGVIQ-CH2M HILL Joint Venture (AGVIQ-CH2M HILL) to comply with established standards concerning the health and safety of our employees and create work environments that are free of recognized hazards that may result in an accident, injury or illness. To do this, we must be vigilant in the identification and elimination of acts and conditions that can produce or lead to accidents, injuries, and illnesses in our workplace.

Knowledge of an unsafe act or condition does not make the work "safe". When an act or work area condition is identified that is not consistent with the established practices of the AGVIQ-CH2M HILL Health and Safety Program (HSP), it is the inherent responsibility of each employee to report such inconsistencies to a supervisor so the act or condition may be evaluated, corrected, controlled, or engineered to a status that does not pose a significant threat. Where an act or condition in the workplace is determined to be Immediately Dangerous to Life and Health of AGVIQ-CH2M HILL employees, work must stop until the condition has been abated.

Management, supervisory, and worker personnel are all entrusted with implementing the policies and procedures of the AGVIQ-CH2M HILL HSP and prepared site specific health and safety documents. Prevention of accidents, injury, and illness is an achievable objective for all employees, at all responsibility levels, for all program operations. It is a basic requirement that each manager and supervisor make the safety of employees under their tenure an integral component of his or her regular management practices. Additionally, it is the duty of each employee to accept and follow established safety policies and procedures established by AGVIQ-CH2M HILL.

No employee shall be required to work at a location that would jeopardize their life or health. Employee cooperation in detecting, controlling, and reporting workplace hazards is a condition of participation in the AGVIQ-CH2M HILL Joint Venture Program. It is critical for AGVIQ-CH2M HILL personnel to immediately inform their supervisor of any situation or work area condition that is beyond their ability to correct or control. AGVIQ-CH2M HILL personnel will not be disciplined or suffer any retaliation for reporting acts or conditions that are not consistent with the policies and procedures required by the AGVIQ-CH2M HILL HSP or project specific health and safety documents.

Every effort should be made to provide adequate training to our program participants; however, if an employee is ever in doubt about how to do a job or task safely, it is his or her duty to ask a qualified person for help. Fellow team members that need help should be assisted. Program participants are expected to assist management in accident prevention activities. Everyone is responsible for executing their assigned duties in a safe manner. Every incident (including a near-miss) that occurs in the workplace shall be reported to a first-line supervisor, as soon as possible. Under no circumstances, except in the instance of emergency medical care, should an employee leave the work site without reporting an accident, injury, or illness that occurs in the workplace. When a workplace accident, injury, or illness occurs, everyone is affected. The success and longevity of our program is directly related to maintaining a healthy and safe working environment for everyone.

3.1 Purpose

The purpose of this project APP in conjunction with the project specific or program health and safety documents, is to define the policies, procedures, and requirements that must be implemented for the AGVIQ-CH2M HILL Joint Venture projects and to establish the requirements, responsibilities and expectations for management, supervisors, employees, and subcontractors that may participate in the execution of the program projects. It is the intent of this APP to address applicable requirements set forth by 29 CFR 1910, 29 CFR 1926, EM 385 1-1, and AGVIQ-CH2M HILL policies and procedures incorporated by reference, herein.

3.2 Objectives

The objective of the AGVIQ-CH2M HILL Joint Venture Program is to provide a place of employment free of all recognized hazards that are causing or will likely to death or serious physical harm to our employees. This objective can be facilitated by developing and administering an overall health and safety program, which establishes written policies and procedures to serve as vehicles through which the program requirements will be implemented.

3.3 Accident Goals for this Contract and Program

The health and safety goal for this project and the overall goal for the AGVIQ-CH2M HILL program is to eliminate workplace accidents, gain worker acceptance through cooperation and training, and provide our clients with a responsible, well-trained, safety-oriented work force.

AGVIQ-CH2M HILL considers safety the highest priority during work at all project sites and its business offices and has established a goal of zero incidents. Projects will be conducted in a manner that minimizes the probability of near misses, injury, illness, and equipment/ property damage.

4.0 Responsibilities and Lines of Authorities

4.1 Statement of Ultimate Responsibility for the Implementation of the SOH Program

It is always the ultimate responsibility of the AGVIQ, LLC. and CH2M HILL, Inc. as employers and collective as AGVIQ-CH2M HILL to ensure that the requirements of its safety and health program are properly implemented and that a safe and health work environment is provided. This is done through the guidance and oversight of contract work by key program and project personnel.

4.2 Identification and Accountability of Personnel Responsible for Safety at Both the Corporate and Project Level

The following listed AGVIQ-CH2M HILL key project and program personnel will have the authority to intervene and suspend work in the interest of ensuring adherence to Health and Safety policies and procedures defined by the APP and/or the AGVIQ-CH2M HILL Joint Venture SBRAC Program.

AGVIQ-CH2M HILL SBRAC Program Manager
Sidney Allison: (843) 242-8018/ (843) 813-2672 (cell)

AGVIQ-CH2M HILL SBRAC Deputy Program Manager
Sam Naik: (770) 604- 4248 / (678) 860-9626 (cell)

AGVIQ-CH2M HILL Project Manager (overall)
Jim Nicotri: (617) 626-7042/ (339) 832-4555 (cell)

AGVIQ-CH2M HILL Joint Venture Program CIH
Angelo Liberatore, CIH, CSP: (678) 530-4210/ (770) 335-2076 (cell)

AGVIQ-CH2M HILL Joint Venture Project Superintendent
Randy Grogan: (516) 796-6251/ (907) 441-5814

AGVIQ-CH2M HILL Joint Venture Program SSHO
TBD
AGVIQ-CH2M HILL Joint Venture H&S Program Administrator(s)
Josh Painter, CSP: (303) 993-9274 (cell)
Mark Orman, CSP, CHMM: (414) 847-0597/ (414) 712-4138 (cell)

4.3 Organization and Responsibility for Health and Safety

The safety and protection of employees, clients, and the community is the first priority. If an activity or condition at a location under control of AGVIQ-CH2M HILL is determined to be inconsistent with our health and safety policies and procedures, all efforts shall be made to correct the situation immediately or as soon as feasibly possible. At no time should any AGVIQ-CH2M HILL personnel perform or be allowed to perform duties in a work environment that is immediately dangerous to life and health (IDLH) or in an imminently dangerous situation. In these situations, the task will not proceed until the situation is corrected.

4.3.1 Program Manager

The AGVIQ-CH2M HILL Program Manager is the primary operational and safety official of AGVIQ-CH2M HILL and has overall responsibility for ensuring that AGVIQ-CH2M HILL program participants implement the established health and safety policies and procedures adopted by AGVIQ-CH2M HILL. The deputy program manager supports the execution of all operations required of the Program Manager.

4.3.2 Project Manager

The AGVIQ-CH2M HILL Project Manager is responsible for allocation and coordination of adequate resources (budget and staff) for project-specific implementation of the Health, Safety and Environment (HS&E) management process. The Project Manager has overall management responsibility for the project tasks identified herein and reports to Program Management on all matters and to the Program CIH on matters involving the health and safety of program participants, project incidents or other health and safety related matters. The Project Manager may explicitly delegate specific tasks to other staff, but retains ultimate responsibility for completion of the following in accordance with this APP or other established health and safety requirements. Designated project coordinators, technical leads, engineers and other administrative staff support the execution of all operations required of the Project Manager. In general, the Project Manager's responsibilities include but are not limited to the following:

- Include standard terms and conditions, and contract-specific HS&E roles and responsibilities in contract and subcontract agreements (including flow-down requirements to lower-tier subcontractors).
- Select safe and competent subcontractors by:
  - Ensuring that the review and acceptance/rejection of subcontractor pre-qualification health and safety questionnaires and safety performance documents has been completed.
  - Ensuring that acceptable certificates of insurance, including AGVIQ-CH2M HILL as named additional insured, are secured as a condition of subcontract award.
  - Ensuring subcontractor HS&E submittals required by subcontract agreements are executed, and ensuring that appropriate site-specific safety procedures, training and medical monitoring records are reviewed and accepted prior to the start of subcontractor's field operations.

- Ensure that subcontract agreements and subcontractor certificates of insurance, bond, contractor's license, training and medical monitoring records, and site-specific safety procedures in the project file are accessible to site personnel.
- Provide oversight of AGVIQ-CH2M HILL and subcontractor HS&E practices per the requirements of established safety documents (i.e. APP, SSHS and AHAs).
- Manage the site and interface with third parties in a manner consistent with our contract and subcontract agreements and the applicable standard of reasonable care.
- Monitor project health and safety performance during site operations. Ensure that both the overall and job-specific HS&E goals are fully and consistently implemented.
- Reporting all accidents injuries, illness, property damage cases and near-miss incidents to the Program CIH and Program and Deputy Program Managers.

4.3.3 Certified Industrial Hygienist

The AGVIQ-CH2M HILL Program Certified Industrial Hygienist (CIH) meets the established qualification, training and experience criteria requirements and exhibits sufficient knowledge in health, safety and/or industrial hygiene matters to manage and oversee the AGVIQ-CH2M HILL health and safety program. The CIH acts as the responsible program officer (Health and Safety Manager) to review and approve all developed project specific APP's and provides consultation, recommendations or requirements with regard to project worker protection and exposure issues. The CIH may also be required to perform the project/program roles and responsibilities of the Health and Safety Program Administrator(s) HSPA, where required. The Program Certified Industrial Hygienist (CIH) responsibilities include, but are not limited to the following:

- Shall review and approve the project specific APP for field implementation.
- Also be available for consultation/direction with regard to project Industrial Hygiene and worker exposure matters, as may be required by the project team, SSHO or the AGVIQ-CH2M HILL Health and Safety Program Administrator(s)(HSPA) and review and approve any changes to the APP which alters established requirements for worker exposure or perimeter air monitoring or Personal Protective Equipment (PPE).
- Perform the same roles and responsibilities as the HSPA, where required.
- Coordinates with the Program Manager, Deputy Program Manager and the Project Manager (and HSPA or SSHO, as necessary) on all site or worker health and safety matters.

4.3.4 Health and Safety Program Administrator(s)

The AGVIQ-CH2M HILL Health and Safety Program Administrators (HSPAs) administers the overall health and safety program for the AGVIQ-CH2M HILL program and reports directly to the Program Management and the Program CIH with regard to AGVIQ-CH2M HILL program or significant project health and safety matters. The HSPA provides the day to day implementation of the health and safety program on behalf of the Program CIH. The HSPA is responsible for supporting and assisting the AGVIQ-CH2M HILL program staff in executing the required health and safety policies and procedures adopted by the program, for implementation. The HSPA responsibilities include, but are not limited to the following:

- Develop and/or review the project APP for final approval by the CIH.
- Provide review and comment on subcontractor pre-qualification questionnaires that fall outside the performance range delegated to the Contracts Administrator (KA) and request corrective actions are made, where required.
- Provide review and comment subcontractor training records, site-specific safety procedures or subcontractor safety performance submittals prior to start of subcontractor's field operations and request corrective actions are made, where required.
- Support the SSHO's oversight of subcontractor (and lower-tier subcontractors) Health, Safety, and Environment (HS&E) practices and interfaces with third parties, as necessary.
- Support and assist program staff in executing the HS&E policies and procedures adopted by the program for implementation, including the program Behavior Based Loss Prevention System (BBLPS) and overall Risk Management Process (RMP). Provide consultation and direction to project staff with regard to HS&E project and program requirements and industrial hygiene practices.
- Support the amendment of approved APPs as may be necessary to be new work assigned contract functions or unanticipated site conditions. However, Adjustments to this APP to address or mitigate potential exposure to site constituents of concern (COCs) or involving modifications to worker PPE or worker/site exposure monitoring (air monitoring) requirements will require review and approval by the Program Certified Industrial Hygienist (CIH).

4.3.5 Site Supervisors

Site supervisors are the critical links to the success of our injury and illness prevention and overall implementation of our Risk Management Process (RMP). For this project, the site supervisor reports to the AGVIQ-CH2M HILL overall Project Manager on all project matters. Site supervisor responsibilities include but are not limited to the following:

- Implementing the health and safety aspects of the AGVIQ-CH2M HILL program and ensuring that any on-site AGVIQ-CH2M HILL personnel adhere to the requirements of this (APP), host facility conditions or other applicably health and safety requirements relayed to project personnel as part of the execution of this project;

- Report all accidents injuries, illness, property damage cases and near-miss incidents to the Project Manager (overall).
- Conveying hazard information, to which they are advised of, to subordinate employees at the contract project site or facility locations;
- Investigating AGVIQ-CH2M HILL accidents, injuries and illness, that occur under their supervision at the contract project site, in accordance with the accident investigation procedures identified for the program;
- Coordinating the equipment and material needs to be procured by AGVIQ-CH2M HILL for the proper execution of the project.
- Promotes proper field communication and coordination with the overall project manager, field staff and client, as necessary, to personnel assigned to promote the proper execution of the project.
- Providing adequate pre-project planning to allow for the effective procurement of appropriate equipment, materials, safety related systems or documents to facilitate the execution of individual project tasks in a safe and efficient manner;
- Implementing the components of the AGVIQ-CH2M HILL Behavior Based Loss Prevention System (BBLPS) including the execution of routine pre-job safety overviews at AGVIQ-CH2M HILL contract project locations as the project begins, as new tasks are planned, as new project hazards are identified or when new project team members are assigned to the project site;
- Taking prompt action to correct identified acts or conditions which are personally observed by a supervisor or brought to the attention of a supervisor that are not consistent with the conditions of this APP or AGVIQ-CH2M HILL health and safety program requirements ;
- Promoting and ensuring an appropriate project safety culture for subordinate site personnel by positive example;
- Stopping or correcting questionable acts or identified conditions that are under a supervisor's responsibility and which are inconsistent with established safety standards, AGVIQ-CH2M HILL policies and procedures and requirements established by this APP. The site supervisor shall also have the authority to take prompt corrective measures to eliminate existing and predictable hazards and stop work when required.
- Verify that project files available to site personnel include copies of executed subcontracts and subcontractor certificates of insurance (including named additional insured), bond, contractor's license, training and medical monitoring records, and site-specific safety procedures prior to start of subcontractor's field operations.
- Manage and interface with third parties in a manner consistent with our contract/ subcontract agreements and the applicable standard of reasonable care.

4.3.6 Site Safety and Health Officer

The SSHO is responsible for verifying that the project is conducted in a safe and healthy manner and includes the following specific obligations:

- The SSHO shall have the on-site responsibility and authority to modify or stop work or remove personnel from the site, if working conditions change or may affect on-site or off-site health and safety. The SSHO shall have the authority to immediately stop work when an employee is deemed to be in imminent danger of serious injury or loss of life.
- The SSHO will remain onsite at all times when work is in progress unless properly relieved by a qualified and designated SSHO alternate.
- Report all accidents injuries, illness, property damage cases and near-miss incidents to the Site Supervisor and Program CIH.
- Verify this APP remains current and amended when project activities or conditions change.
- Coordinates with the Site Supervisor and the Project Manager (overall) on all site matters and reports to the Program CIH (or HSPA as an alternate) on all health and safety matters.
- Verify AGVIQ-CH2M HILL site personnel and subcontractor personnel read, or have been briefed on the contents of this APP and SSHSP, and sign **Attachment 2**, APP/SSHSP "Acknowledgement Form" prior to commencing field activities.
- Verify AGVIQ-CH2M HILL site personnel and subcontractor personnel have completed any required specialty training (e.g., fall protection, confined space entry) and medical surveillance as identified in section 6.0 of this APP.
- Verify adherence with the requirements of this APP and where applicable the subcontractor's health and safety plan(s).
- Act as the project "Hazard Communication Coordinator". Deliver or provide hazard communication information to AGVIQ-CH2M HILL site personnel as may be necessary.
- Act as the project "Emergency Coordinator" and perform the responsibilities outlined in this APP or as maybe required to properly coordinate the on-site response of emergencies, as they arise.
- Verify that safety meetings are conducted at least daily or more frequently as project tasks or hazards change and documented for the project record in accordance with the requirements of the BBLPS.
- Verify that project H&S forms and permits, found in **Attachment 4**, are being used as intended.
- Verify that Project Activity Self-Assessment Checklists, found in the CH2M HILL, Inc. SOPs referenced in this APP, are being used as intended.

- Verify that the Drug-Free Workplace Program is being implemented.
- Coordinate with the HSPA(s) or Program CIH regarding AGVIQ-CH2M HILL and subcontractor operational performance, and third-party interfaces.
- Ensure that the overall, job-specific, HS&E goals are fully and continuously implemented.
- The SSHO is responsible for coordinating with the AGVIQ-CH2M HILL individual responsible for site operations (i.e., Site Supervisor/Manager or Field Team Leader) and Project Manager, as necessary. In general, the Project Manager (overall) will contact the client in the event accidents, injuries or property damage occurs on the project site. The Program CIH (or HSPA(s) as necessary), should be contacted by the SSHO as appropriate.

4.3.7 OSHA 30 hr Course

Not Applicable. There is no specific information that must be included in this section. Sections 4.b(1) – 4.b(9) of EM 385 1-1, Appendix A of only establishes what shall be included in the OSHA 30-hour course or equivalent coarse. In order to receive an OSHA sanctioned 30 hr Construction Safety Training card, the coarse and specific training requirements must be included.

4.3.8 AGVIQ-CH2M HILL Program Participants

All AGVIQ-CH2M HILL Program participants (i.e. "employees"), regardless of job title, share the responsibility for executing their assigned tasks in a healthy and safe manner and must report any or acts or conditions that are not consistent with established health and safety procedures and protocols at the project site without fear of reprisal. It is imperative that AGVIQ-CH2M HILL Program participants observe the following minimum requirements in order to achieve a safe and healthy workplace:

- Program participants must familiarize themselves with the contents this APP and the general safety rules herein.
- Program participants must implement all health and safety requirements delivered or provided to them.
- Program participants shall wear the necessary PPE required for the job or task as specified by the APP or other applicable program requirements.
- Program participants must notify their immediate supervisor of any potential workplace hazard, condition, work practice or act that is not consistent with the AGVIQ-CH2M HILL health and safety policies and procedures.
- Program participants must report all accidents, injury, illness or property damage to an immediate supervisor regardless of the severity or cost. This includes all near misses (accidents without injury or damage).

- Program participants shall adhere to the requirements of their employer Drug Free Work Place Program. In addition, each program participant that is taking any prescription or over the counter medications that could alter the manner in which they could be treated in an emergency or effect their job performance/safety or other site personnel shall notify their supervisor of the condition prior to beginning any assigned work.
- Program participants shall be subject to the requirements of their employer's policies and procedures for disciplinary action where it is determined that health and safety requirements are not followed or disregarded.

4.4 Employee Competency

Employee competency, as defined by 29 CFR 1926.32(f) and for areas of executable contract work for which an employee has responsibility, shall be established by the appropriate employer only (i.e. AGVIQ, LLC. or CH2M HILL, Inc.). Employee competency is determined by employee training, total work experience and/or on the job training, professional certification and/or educational degrees.

It is the opinion of AGVIQ-CH2M HILL that the professionals identified in this APP are competent in their areas of expertise with regard to the management, field execution of the specified contract work, or in the implementation of AGVIQ-CH2M HILL site specific or program health and safety requirements, as applicable.

In addition to the above, the AGVIQ-CH2M HILL Health and Safety Program utilizes a team of Health and Safety Professionals who are qualified by experience, training, educational degrees and professional certification (CIH, CSP, CHST, ASP) to act as the responsible program representatives with regard to the overall project specific and program wide implementation of the AGVIQ-CH2M HILL Health and Safety policies and procedures.

4.4.1 Presence of Competent Person On-Site

Executable onsite contract work for which there is a specific requirement for a competent person to oversee (i.e. excavation, scaffolding etc.), will not be conducted unless a competent person is available and present on the job site.

The only potential identified requirement for competent person during the execution of this project is for inspection of rigging (synthetic slings) before use under 29 CFR 1910.184(d) and EM 385 1-1, section 15.A.1.

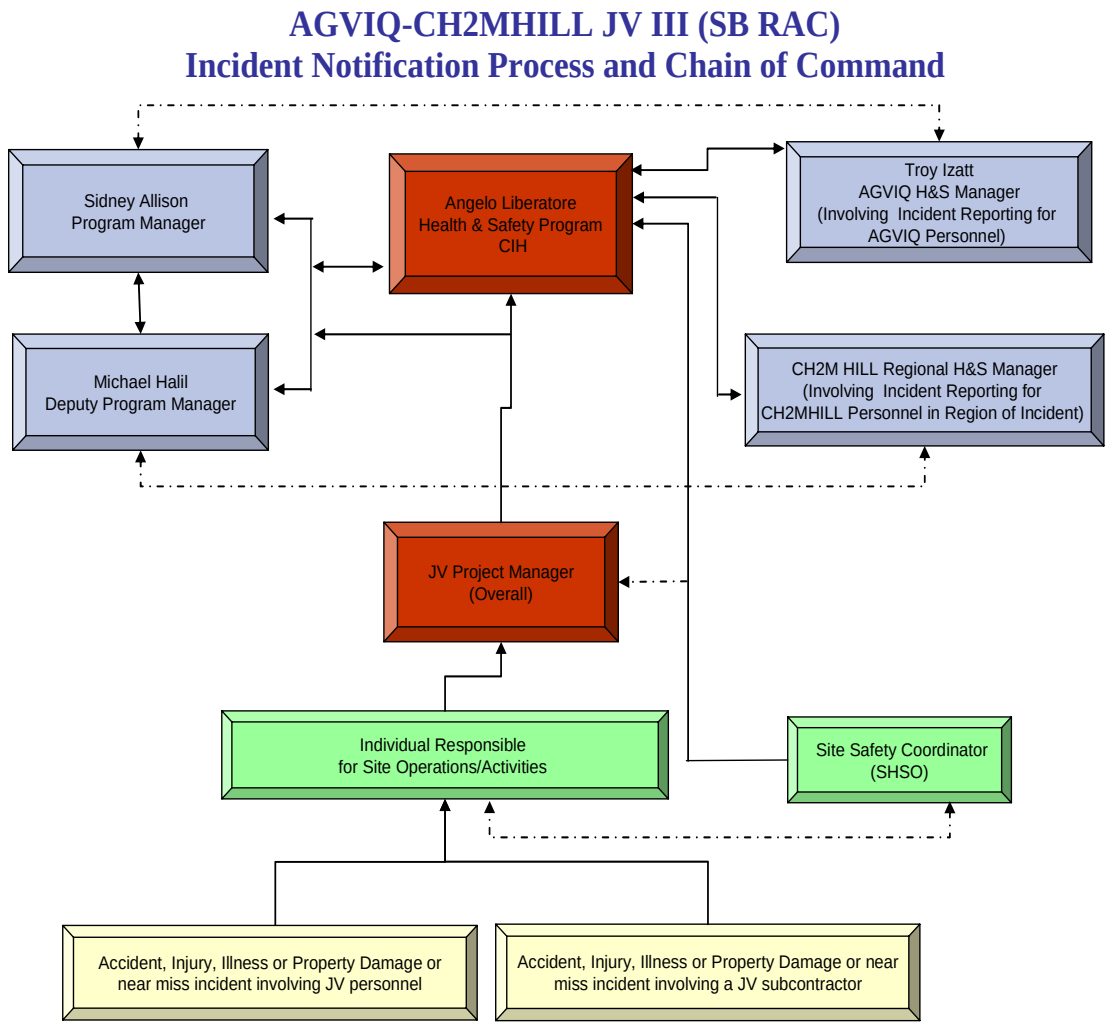
4.5 Requirements for Pre-task Safety and Health Analysis

Requirements for completing Pre-Task Safety and Health Analysis prior to the execution of on-site work must be, at a minimum, in accordance with sections 10.2 Pre-task Safety plans and section 10.1 Activity Hazard Analysis of this APP. Activity Hazard Analysis (AHA) documents applicable to this project are included in section 10.6, project Specific Activity hazard Analyses of this APP.

4.6 Lines of Authority

Safety responsibilities, accountability, and lines of authority for this project are as identified in sections 4.1 through 4.2 of this APP and is as graphically represented in Figure 4-1.

Figure 4-1



1 Bold lines represent AGVIQ-CH2M HILL Primary Lines of Authority for this project.

2 Where the Program CIH is not immediately available for incident reporting contact a designated AGVIQ-CH2M HILL HSPA.

4.7 Non Compliance with Safety Requirements

The duty for employee disciplinary action must be exercised by the employee's company line manager, supervisor, or corporate official only, as appropriate. Verbal or written reprimands, suspensions, or terminations shall be in accordance with the requirements established by the AGVIQ, LLC. or CH2M HILL, Inc. employee's Corporate Employee Handbook**,** or internal policies and procedures and Standard Operating Procedures (SOPs). The content of these documents applies to employees of the specific employer and its authorized subsidiaries.

To ensure seamless project operations and the best possible work environment for AGVIQ-CH2M HILL program participants, both AGVIQ, LLC. and CH2M HILL, Inc. in its business partnership (AGVIQ-CH2M HILL Joint Venture), expects its employees to follow rules of conduct that and established site procedures that will protect the health and safety of all AGVIQ-CH2M HILL personnel.

Where unacceptable employee behavior or workplace actions are identified, it is will be the intent of the employer to administer equitable and consistent disciplinary actions. It is in the best interest of AGVIQ, LLC and CH2M HILL, Inc. to ensure fair treatment of all employees by making certain that disciplinary actions are prompt, uniform, and impartial. The major purpose of any disciplinary action is to correct the problem, prevent recurrence, and prepare the employee for satisfactory service in the future.

Employee disciplinary actions are "typically" exercised in a three (3) steps process;

- verbal warning,
- written warning,
- suspension with or without pay or up to termination of employment, depending on the severity of the problem and re-occurrences of similar unacceptable employee behavior or workplace actions.

By using progressive discipline, most employee problems can be corrected at an early stage, benefiting both the employee, AGVIQ, LLC., CH2M HILL, Inc. and the AGVIQ-CH2M HILL Joint Venture Program.

Both AGVIQ, LLC. and CH2M HILL, Inc. recognize that there are certain types of employee problems that are serious enough to justify either a suspension, or, in extreme situations, termination of employment, without going through the usual progressive discipline steps, but this decision shall be solely determined by the employee's respective employer and not the AGVIQ-CH2M HILL Joint Venture.

4.8 Procedures for Holding Managers and Supervisors Accountable for Safety

It is the duty of first managers and supervisors to motivate employees and promote the adherence of AGVIQ-CH2M HILL's established health and safety policy and procedures and established hazard control measures identified for each work environment under their supervision.

When in doubt, they should seek the assistance of the Program CIH or designated HSPA, or other authorized program level representative, prior to initiating a task. If the task cannot be accomplished in a manner that is consistent with established AGVIQ-CH2M HILL program, regulatory or contract health and safety requirements, it will not be attempted.

Managers and supervisors must:

- Confirm subcontractor safety performance records/information and pre-mobilization contractual obligations (insurance, bonding, work plans, training documentation etc.) have been met prior to initiating on-site work.
- Allocate sufficient time for the training/orientation of AGVIQ-CH2M HILL personnel to ensure that everyone knows the appropriate requirements (health, safety procedural) for completing assigned tasks.
- Ensure that the AGVIQ-CH2M HILL program participants are outfitted with and wear PPE as specified by this APP other AGVIQ-CH2M HILL procedures, or as directed by the Program CIH, HSPA, Project Manager, or SSHO.
- Prevent new site personnel from performing any tasks until required training/orientation is completed.
- Verify program participants and subcontract personnel are completing assigned tasks in a manner that is consistent with established health and safety policies and as instructed.
- Immediately correct acts or conditions that are not consistent with AGVIQ-CH2M HILL Joint Venture policies and procedures, or OSHA and EM 385 1-1 requirements.
- Lead by setting a "good example".
- Promote the creation of a healthy and safe work environment for site personnel in which program participants and subcontractors support the achievement of our safety goals.
- Monitor subcontractor performance during operations to ensure contractual requirements are met.
- Report all accidents, near misses, and property damage in accordance with the Incident Management and Reporting Procedure.

Section 4.7, 4g. Non Compliance with Safety Requirements of this APP identifies the procedures holding managers and supervisors and all other program participants accountable regarding non-compliance of safety requirements.

5.0 Subcontractors and Suppliers

5.1 Identification of Subcontractors and Suppliers (if known)

All subcontractors who may be required to support the execution of this TO are either not identified or have not been issued a subcontract award at time this APP has been prepared for submission, and therefore cannot be included, herein at this time. Because of the potentially dynamic and evolving nature of contract requirements and resultant project scheduling at many points during the project evolution, only partial identification of potential subcontractors who may support this TO is available. To this end, continuously updating and amending this APP with potentially identified or newly selected subcontractors would not be practical or cost effective for all parties concerned. If, prior to the start of this TO, the Government Designated Authority (GDA) requires a list of awarded subcontractor entity information, then such information shall be prepared and provided by the AGVIQ-CH2M HILL project manager (overall) identified in this APP.

The AGVIQ-CH2M HILL procurement/contracting team maintains an extensive and detailed process for subcontractor procurement with the Federal Acquisition Regulations (FAR) as the primary driver. Subcontractor selection is based on scope of work pricing, qualifications, current and historical safety performance data and best value evaluations.

5.2 Safety Responsibilities of Subcontractor/Supplier

AGVIQ-CH2M HILL subcontractor safety performance and adherence to established industry standards and project policies and procedures will be reviewed prior to being issued a contract for Site work. AGVIQ-CH2M HILL subcontractors must be required to comply with the most stringent requirement defined by the Subcontractor's own policies and procedures, or requirements outlined in this APP, regulations or other requirements applicable to a project, such as contract flow-down requirements.

Typically, the subcontractor reports directly to the AGVIQ-CH2M HILL Project Manager. The AGVIQ-CH2M HILL Project Manager will typically designate daily subcontractor on-site reporting requirements to the AGVIQ-CH2M HILL site supervisor (i.e. Superintendent, foreperson, Field Team Leader or other appropriate designee).

AGVIQ-CH2M HILL subcontractors may be required to acknowledge and adhere to the requirements of the AGVIQ-CH2M HILL APP. Where subcontractor personnel are covered by this APP, they must be provided a copy of it to read or be provided a detailed briefing of its contents, and acknowledge the conditions of this APP to initiating work by application of subcontractor employee signatures on the APP/SSHSP Acknowledgement Form (**Attachment 2**).

However, if the AGVIQ-CH2M HILL APP does not address specific hazards associated with specialty tasks and equipment that the subcontractor has expertise in (e.g., electrical, scaffold erection, demolition), a subcontractor must be required to develop or implement their own APP which is equally or more stringent than AGVIQ-CH2M HILL APP or prime contract documents.

All subcontractor personnel shall be subject to the same training (or medical surveillance requirement, where applicable) as AGVIQ-CH2M HILL personnel, depending on job activity and OSHA requirements.

All subcontractor personnel actively engaged in on-site operations should be required to sign in daily at AGVIQ-CH2M HILL controlled project sites (**Attachment 4**) and either attend an AGVIQ-CH2M HILL sponsored daily safety meeting and work phase meeting (or be required to conduct their own) which addresses daily operations, site specific hazard awareness, or other pertinent issues associated with the scheduled work or complete their own meeting of similar intent. The requirements for implementing and documenting daily or periodic work phase meetings are detailed in section 10.0, Risk Management Process (RMP), of this APP and will not be further elaborated upon in this section.

All incidents involving subcontractor personnel must be reported to the AGVIQ-CH2M HILL site supervisor and a copy of the subcontractor's incident or injury/illness report will be submitted to the AGVIQ-CH2M HILL site supervisor, Project Manager, program Manager and Program CIH as soon as possible, but no later than 24 hours.

Subcontractors are responsible for the health and safety procedures specific to the work, but it is critical that subcontractor work be performed in a manner that is consistent with applicable OSHA standards (29CFR1910, 29CFR1926, as applicable), EM 385 1-1 or other applicable health and safety plan(s)/protocols. Identified subcontractor health and safety performance or site conditions that are not consistent with established procedures must be corrected.

AGVIQ-CH2M HILL continuously endeavors to observe a subcontractors' safety performance. This process should be reasonable and include observing site hazards, practices and procedures that are not consistent with established HS& E requirements that are both readily observable and occur in common work areas. However, observance of subcontractor operations by AGVIQ-CH2M HILL does not relieve subcontractors of their responsibility for effective implementation and compliance with the established plan(s), protocols, or established safety regulations or contract conditions.

When apparent conditions or actions are observed that are not consistent with this APP, AGVIQ-CH2M HILL Health and Safety Program protocols or project/regulatory requirements, the designated subcontractor on-site supervisor or safety representative shall be notified of the condition so that the subcontractor can determine and implement the appropriate corrective action(s). When these identified conditions or practices/actions are repeated or persist, notify the designated subcontractor on-site supervisor or safety representative and require the condition be immediately corrected. Contact the Project Manager and evaluate the need to issue a stop work order (SWO) (**Attachment 4**) affected work until adequate corrective measures are implemented.

- When an apparent imminent danger exists, immediately remove all affected AGVIQ-CH2M HILL and subcontractor personnel, notify on-site supervisor or safety representative and stop affected work until adequate corrective measures are implemented and also issue the SWO. Notify the Project Manager (overall) and Program CIH (or HSPA if necessary), as appropriate. Document all standard and imminent danger SWO related communications in project field logbook, daily reports, or other records.

6.0 Training

6.1 New Hire SOH Orientation Training

The overall Safety and Occupational Health (SOH) orientation provided by AGVIQ, LLC. and CH2M HILL, Inc. for their employees, incorporates the information necessary for the employee to perform as expected but also considers assigned job function, experience of the employee, personnel certifications and education level/degrees achieved by the employee completed as related to the employees assigned job function.

Because the AGVIQ-CH2M HILL Joint Venture is composed of two separate and distinct corporations operating together in a business partner arrangement, both corporations separately conduct new hire safety and occupational health (SOH) orientation training in accordance with each employer's (AGVIQ, LLC. or CH2M HILL) established processes. Typically such orientations would be performed by an employee's line supervisor, human resource representative, intranet training or by employee review of information provided by the employer. In general, new hire SOH orientation training would most likely include the following components, depending on the employee's hire category.

1) Completion of hire evaluation new any employer specific Drug Free Work Place (DFWP) requirements
2) Introduction to company/corporate history
3) Organizational Structure
4) Briefing on job functions and employee performance expectations
5) Time keeping and/or expense reporting
6) Provision, review and acknowledgement of Corporate Policies and Procedures Manual (aka Employee Manual) or equivalent
7) Provision, review and acknowledgement of Corporate Health and Safety Program Plan or equivalent
8) Verification and update (as necessary) of prerequisite training and medical surveillance testing, where applicable for field work (Hazwoper/Construction)
9) Management and Supervisor training, as applicable

In order to promote the seamless operation of the AGVIQ-CH2M HILL Joint Venture program as a single entity, orientation to management and supervisory personnel who have not previously participated in the AGVIQ-CH2M HILL programs is provided. This orientation typically would include, but not be limited to the following:

1) Background history of the development and functionality of the AGVIQ-CH2M HILL Joint Venture Programs
2) Organizational Structure
3) Project and Program reporting requirements (incident, financial and chain of command)
4) Fund allocation, cost tracking, forecasting and invoicing procedures
5) Review processes for Client Request For Proposal (RFP) responses and project deliverables

6) Project concurrence or changed conditioned processes
7) Expectations with regard to Client/Customer and project team communications, project performance, Client/Customer expectations, health and safety and quality control performance
8) Resource allocation

All designated AGVIQ-CH2M HILL personnel, regardless of assignment responsibilities, who are engaged in site operations must review or be provided a detailed briefing on the contents of site specific health and plans, APP's, task specific Activity Hazard Analyses (AHAs) and daily safety briefings and must acknowledge such documents by signature.

6.2 Requirements for Mandatory Training and Certificates

AGVIQ-CH2M HILL engages in construction, environmental remediation and other consulting services and endeavors to comply with the health and safety training requirements mandated by governmental agencies, internal policies and client requirements.

Personnel will be provided sufficient training to execute their jobs in a safe and healthy manner. It is the responsibility of each employer (AGVIQ, LLC. and CH2M HILL, Inc.) to ensure that their employees maintain the appropriate training requirements to complete their assigned duties. Direct employee supervisors, with support by the respective employer Senior Management and Health and Safety professionals, are responsible for determining the overall and project specific training requirements to ensure that personnel assigned to AGVIQ-CH2M HILL operations have the necessary requisite.

Designated employer personnel and electronic databases facilitate the maintenance of training records and applicable experience documentation. When an employee training is identified being insufficient to perform an assigned task, every effort will be made to provide the necessary training or to provide a trained and experienced alternate until the employee has achieved the required criteria.

Employee training records are available at corporate offices, by electronic means, and generally maintained on the project site. Depending on the size of the project crew and because of work crew dynamics and scheduling, the provision of hard copy employee training records (and medical surveillance records where applicable) for all anticipated personnel who may be assigned to this project, within the content of this APP is impractical. AGVIQ-CH2M HILL endeavors to maintain these documents on-site for review and will provide them to government officials for verification, upon request.

All AGVIQ-CH2M HILL personnel performing Hazardous Waste Operations and Emergency Response (HAZWOPER) Regulated Tasks are enrolled in a comprehensive health and safety program, which at a minimum, meets the requirements of 29CFR1910.120/29CFR1926.65 or 29CFR1910.134. The medical surveillance and training requirements associated with this project are summarized below.

Training or Medical Surveillance Requirement	Applicability
• 29CFR1910.120(e)(3)/29CFR1926.65(e)(3) Note: 40 hr or 24 training as applicable to employee assigned duties. No periodic refresher performance as long as the requirements of 29CFR1910.120(e)(8)/ 29CFR1926.65(e)(8) are maintained.	• Not anticipated.
• 29CFR1910.120(e)(8)/29CFR1926.65(e)(8) Refresher training required on an annual basis	• Not anticipated.
• 29CFR1910.120(e)(4)/29CFR1926.65(e)(4) No specific recertification requirements.	• Not anticipated.
• First Aid/CPR 1st Aid – typically 3 yr renewal CPR – 1 or 2 yr renewal (depending on sponsor)	• All designated manager, supervisory or SSHO site personnel (2 per site).
• OSHA 10 hour Construction Safety Training	• SSHO
• 29CFR1910.120(f)/29CFR1926.65(f) On an annual basis under the supervision of a licensed physician, preferably one knowledgeable in occupational medicine	• Not anticipated.
• 29CFR1910.134(e) On an annual basis under the supervision of a licensed physician, preferably one knowledgeable in occupational medicine	• All site personnel performing Hazwoper regulated activities identified in section 2.4 of this APP and required to utilize respiratory protection
• 49CFR172.700 Renewal, every 3 years	• Each person who offers for transportation in commerce or transports in commerce hazardous materials

- It is our intent to require site personnel designated with management, site supervisor, or SSHO responsibilities to maintain current American Red Cross or American Heart Association sponsored First Aid and Cardio-Pulmonary Resuscitation (FA-CPR) certifications. At least two employees on each shift shall be trained to administer First Aid and CPR. These individuals have also been provided training in exercising universal precautions against exposure to blood borne pathogens as a component to FA/CPR training which meets the intent of 29CFR1910.1030. This employee training is also regularly complemented by other regularly scheduled employer training curriculums that are typically executed for the HAZWOPER industry, regulated under 29CFR1910.120/29CFR1926.26.

- Certain key project site personnel that may be responsible for packaging, labeling hazardous materials for transportation will have received training in accordance with 49 CFR 172.700

- Employees being exposed to certain air borne chemicals or contaminants may require medical monitoring requirements defined by OSHA standards but outside of the medical monitoring requirements defined by 29CFR1910.120(f) or 29CFR1910.134(e), as applicable to anticipated site conditions.

- Where it is determined that employees will be performing certain assigned tasks (e.g., confined-space entry, scaffold, fall protection, forklift operations etc.), then training,

additional to that identified above, will be applicable and must be provided by the employer.

6.3 Procedures for Periodic Safety & Health Training of Supervisors and Employees

Supervisor and employee training are routinely provided by the employee's employer (AGVIQ, LLC. or CH2M HILL, Inc.) as method of adhering to OSHA, DOT or other requirements. The types and frequency of routine training provided to AGVIQ-CH2M HILL program participants by AGVIQ, LLC. or CH2M HILL, Inc. is identified in section 6.2 of this APP.

Supervisor and employee training is regularly supplemented through the regular implementation of AHA and daily safety meeting processes, which are detailed in section 10.0 Risk Management Process of this APP. Implementation of AHAs and daily safety meetings as a regular component to our RMP provides a routine procedure for conducting additional supervisor and employee "awareness training." The desired result of the implementation of the RMP is to facilitate the identification and control of certain risks (or liabilities) that may be encountered during the execution of the project. Additionally, the implementation of our RMP processes establishes and maintains a level of expectation with regard to overall project and program health and safety performance.

6.4 Requirements for Emergency Response Training

There are no specific requirements for emergency response training for this project other than the following:

- First Aid and CPR training and Blood Bourne pathogen training
- Review and become familiar with the requirements of section 9.2 Emergency Response Planning of this APP.
- Review and become familiar with and site/facility specific evacuation, emergency response or request for medical support procedures that be applicable to the execution of work at the project site.

Note: Confined Space Entry (CSE) rescue training under 29 CFR1910.146(k)(2(iii-iv) for CSE operations is not applicable to this project.

6.5 Medical Surveillance and Qualification

(Reference CH2M HILL SOP HSE-113, *Medical Surveillance*

All site workers participating in hazardous waste operations (HAZWOPER) will maintain an adequate medical surveillance program in accordance with 29 CFR 1910.120 or 29 CFR 1926.65 and other applicable OSHA standards. Documentation of employee medical qualification (e.g., physician's written opinion) will be maintained in the project files and made available for inspection.

6.5.1 Job or Site-Specific Medical Surveillance

None required.

6.5.2 Hearing Conservation

Personnel working in hazardous waste operations or operations that fall under 29 CFR 1910.95 and exposed to noise levels in excess of the 85dBA time-weighted average shall be included in a hearing conservation program that includes annual audiometric testing.

7.0 Safety and Health Inspections

7.1 Specific Assignment of Responsibilities for minimum Daily Job Site Inspections

The AGVIQ-CH2M HILL site supervisor or SSHO are required to perform site inspections using the checklists/forms included herein **Attachment 4** of this APP or contained in the CH2M HILL, Inc. SOPs referenced herein. The forms in included in **Attachment 4**, herein, are not intended to be an all inclusive detail of inspection forms/checklists which may be needed during the execution of this project, but is intended to represent a submittal basis only. Other applicable forms or checklists are contained in CH2M HILL Standards of Practice (SOP), referenced through section 9.0 of this APP, which are available in electronic format for AGVIQ-CH2M HILL program participants.

Site inspections/evaluations will be made by the site supervisor, SSHO or other designated AGVIQ-CH2M HILL representative, depending on assigned job function. Discrepancies or HS&E inconsistencies identified during inspection and evaluation process will be corrected as soon as practicable and documented on the Loss Prevention Observation (LPO) form and/or Deficiency Tracking System form included in **Attachment 9** of this APP. Serious inconsistencies that represent potential immediate harm or danger to an employee will be corrected immediately or controlled to a condition where it does not represent a threat to the employee. Inspections that identify Imminent Danger or Immediately Dangerous to Life and Health (IDLH) situations will require that work be immediately stopped and personnel removed from the work area until the situation is abated, corrected, or controlled to a non-hazardous condition.

The site supervisor or SSHO (when designated by the Project Manager or site supervisor) is responsible for conducting and preparing reports of inspections of work processes, site conditions and maintaining these documents for the project record, as necessary. Corrective actions resulting from discrepancies identified during inspections will be reviewed with the Project Manager and implemented, as necessary. Copies of these reports are maintained on file at the project locations.

A member of AGVIQ-CH2M HILL senior management or their designated representative may periodically conduct site visits and perform additional assessments of project health and safety performance, at their own discretion or at the request of a corporate official employee, site supervisor or manager. Any discrepancies identified as part of these inspection processes will be addressed with the Project Manager by the senior management team and may be corrected in the field if minor in nature.

The following is a typical list of the type and frequency of inspections that may be associated with this project and what individuals should perform such inspections.

Inspection Type	Designated Person	Frequency
Loss Prevention Observation	Any site personnel, but typically the Site Supervisor, SSHO or QCM	Weekly
Deficiency Tracking Log (includes general site inspection)	Any site personnel, but typically the Site Supervisor, SSHO or QCM	Entered Daily
Fire Extinguishers	Any site personnel, but typically the Site Supervisor, SSHO or QCM	Once Monthly Once Annually
Heavy Equipment	Designated Heavy Equipment Operator	Daily when operated
Crane Inspection	Crane Competent Person	Daily
Excavations	Excavation Competent Person	Daily with open excavations
Project Audits	Program level: managers, health and safety professionals or quality control managers	Typically once per project but is dependent upon project complexity and size
First Aid Kits	Any site personnel, but typically the Site Supervisor, SSHO or QCM	Before on-site use and at least every 3 months or more frequently depending on use
Hand and Power Tools	Individual using tool	Before Use
Electric Cords and GFCI's	Individual using electric cord and GFCI	Before Use

7.2 External Inspections/Certifications

The following is a list of potential external inspections that may be or will be required by NAVFAC.

- Issuance of NAVFAC Excavation Permit or CH2M HILL Excavation Permit
- Issuance of Navy Hot Work Permit by the facility Fire Department Inspector or CH2M HILL Hot Work Permit if no Navy Inspector available.
- Annual Crane inspection by independent third party inspector

8.0 Accident Reporting and Investigation

8.1 Exposure Data (man-hours worked)

Because the AGVIQ-CH2M HILL Joint Venture is composed of two separate and distinct corporations operating together in a business partner arrangement, both corporations separately record and report information related to annual labor hours and workplace injuries and illnesses as required by 29 CFR 1904. Where annual summary postings are required under 29 CFR 1904.32(b)(6), they will be posted as separate documents by AGVIQ, LLC, and by CH2M HILL, Inc., in our appropriate workplace environment(s). In addition, because AGVIQ-CH2M HILL operates as a business partnership and not as a single business entity, AGVIQ-CH2M HILL does not maintain a jointly established Experience Modification Rate.

However, designated employee representatives from the AGVIQ-CH2M HILL Joint Venture programs tabulate and track labor hours posted to the AGVIQ-CH2M HILL program and lost work day and recordable incident information attributable to the execution of all AGVIQ-CH2M HILL Joint Venture program contracts and issued contract task orders. This process is executed for the purpose of establishing a safety performance history associated for our business partnership. AGVIQ-CH2M HILL safety performance data is extrapolated from the following:

- Tabulated Employer Labor Hours
- Established Incident Reporting Processes
- Incident Investigation Reports
- Formal Project Audits

To date, the AGVIQ-CH2M HILL Joint Venture programs has expended over 782,054.5 labor hours, from 2003 through November, 2011. During this period, three (3) OSHA other recordable cases and one (1) Days Away, Restriction, or Transfer (DART) or "lost work day" case and zero (0) fatalities have been attributed to completed or ongoing AGVIQ-CH2M HILL Joint Venture program projects. With this information available the following can be determined:

- Days Away, Restriction, or Job Transfer (DART) Incident Rate:

  $$\frac{\text{Number of DART Cases} \times 200{,}000}{\text{Number of Hours Worked}}$$

  $$\text{DART Incident Rate} = \frac{1 \times 200{,}000}{782{,}054.5} = 0.26$$

  AND

- **OSHA Recordable Incident Rate:**

  $$\frac{\text{Number of OSHA Total Recordable Cases} \times 200{,}000}{\text{Number of Hours Worked}}$$

  $$\text{OSHA Total Recordable Case Rate} = \frac{3 \times 200{,}000}{782{,}054.5} = 0.77$$

No DART cases or other recordable cases have been experienced for AGVIQ, LLC. or CH2M HILL, Inc. employees participating in the AGVIQ-CH2M HILL Joint Venture since 2008.

For the Construction (North American Industry Classification System [NAICS] code -23) and Remediation Services (NAICS code – 56291) industries, which is typical of the contract work that AGVIQ-CH2M HILL typically executes, the AGVIQ-CH2M HILL calculated DART and OSHA Recordable Incident Rates for our entire operating period, are currently well below DART Incident Rate (IR) and OSHA Recordable Incident Rate tabulated by the 2008 United States Bureau of Labor Statistics (USBLS) for these industries (see below).

- USBLS IR Construction Benchmark (2009): 4.2 [1]
- USBLS DART Construction Benchmark (2009): 2.3 [1,2]
- USBLS IR Remediation Services Benchmark (2009): 3.2 [3]
- USBLS DART Remediation Services (NAICS Code 56291) Benchmark (2009): 1.5 [2,3]

[1] NAICS Code 23
[2] DART total "all sizes"
[3] NAICS Code 56291

8.2 Accident Investigations, Reports and Logs

Completion of incident and near-miss incident investigation reports for the AGVIQ-CH2M HILL Joint Venture shall be performed using the forms in **Attachment 10** of this APP and generally via the procedures identified herein. The AGVIQ-CH2M HILL Program CIH, HSPA, or their designee (SSHO, site supervisor, project manager), conducts accident/incident investigations and prepares the required incident or near-miss incident investigation reports for the following conditions:

- Near Miss Incidents
- DART or other OSHA recordable cases
- Spills, releases, discharges, or environmental violations
- Property damage incidents resulting in over $1,000 of loss
- A fatal injury *
- A hospitalization of three or more people resulting from a single occurrence *
- A weight-handling equipment incident
- A permanent total disability
- A permanent partial disability

* Within 8 hours after the death of any employee from a work-related incident or the in-patient hospitalization of three or more employees as a result of a work-related incident, you must orally report the fatality/multiple hospitalization by telephone or in person to the Area Office of the Occupational Safety and Health Administration (OSHA), U.S. Department of Labor, that is nearest to the site of the incident. You may also use the OSHA toll-free central telephone number, 1-800-321-OSHA (1-800-321-6742).

Completed incident and near miss incident investigation reports are be reviewed by the CIH/HSPA, Project Manager (overall), site management (SSHO, site Supervisor) team and Program Management team. Incident and near-miss incident reports must be submitted to the Project Manager , Program CIH/HSPA and the Program Management team, as soon as possible, but no longer than 24 hours. At a minimum the Project Manager and Program Management personnel, including the Program CIH must be verbally notified, immediately or in a case where emergency medical treatment is required, as soon as injured personnel have been transported to and received by a medical treatment facility.

Except for rescue and emergency measures, the accident scene shall not be disturbed until it has been released by the investigating official. The Contractor is responsible for obtaining appropriate medical and emergency assistance and for notifying fire, law enforcement, and regulatory agencies. The Contractor shall assist and cooperate with personnel conducting investigations on behalf of NAVFAC.

In addition to the incident and near-miss incident investigation report forms contained in **Attachment 10** of this APP, for all OSHA recordable accidents, property damage in excess of $2,000 a Contractor Significant Incident Report (CSIR) must also be completed. If the CSIR is being used as initial notification of a Fatality or High Visibility Mishap. The initial form is due within 2 hours of a serious accident. A CSIR form marked 'Follow-up' or 'Final' is required within 5 days.

8.2.1 Immediate Accident Notification Criteria

In addition to the above, the Project Manager (or site supervisor when designated by the Project Manager or Program Management team) must also be responsible for reporting all injuries to NAVFAC as soon as reasonably possible but no later than 2 hours. Where an incident has, or appears to have, any of the consequences listed below, these incidents shall be <u>immediately</u> reported to NAVFAC.

a. Fatal injury/illness;
b. Permanent totally disabling injury/illness;
c. Permanent partial disabling injury/illness;
d. The hospitalization of three (3) or more people resulting from a single occurrence;
e. Property damage of $200,000 or more
f. Arc Flash Incident/Accident

One of the following NAVFAC representatives must be notified in the event of a near miss or accident immediately:

- Lora Fly: Direct (860) 694-4556, Cellular (860) 235-2041
- Greg Pearman: Cellular (860) 235-2040
- Jim Besse: Direct (860) 694 4570, Cellular (860) 235-5272

In addition to notifying the Navy in the event of an incident, AGVIQ-CH2M Hill must comply with the ESAMS process within the allowable timeframe.

8.2.2 Best Management Practices for Incident Investigation

The causes of loss and near-loss incidents can be similar, so by identifying and correcting the causes of loss and near-loss incidents, future loss incidents may be prevented. When loss

or near-loss incidents occur, identifying and correcting conditions or acts that create these incidents can be achieved by engaging the following processes:

1. Gathering all relevant facts, focusing on fact-finding, not fault-finding, while answering the "who, what, when, where, and how" questions.
2. Draw conclusions, putting facts together into a probable scenario.
3. Determine the incident root cause(s) and contributing factors of incidents. These are basic factors on why or how conditions or acts are created that result in incidents.
4. Develop and implement solutions, matching all identified root causes and contributing factors with solutions so that future conditions or acts that have attributed to incidents are eliminated in the future.
5. Communicate incident as a lesson learned to all project personnel.
6. File follow-up on implemented corrective action to confirm solution is appropriate.

The purpose of an incident investigation is to understand how the incident happened, analyze the root causes, and prevent recurrence by implementing corrective actions. To conduct an effective investigation, all information must be as detailed and comprehensive as possible. The investigation must be based on facts that clearly identify the sequence of events and the factors that contributed to the incident. The investigation team should not be involved with any punitive actions resulting from the investigation. Fairness and impartiality are essential. The following provides general Best Management Practice guidance in completing incident investigations.

1. An unbiased approach is necessary to obtain objective findings.
2. Visit the accident scene as soon as possible while the facts are fresh and before witnesses forget important details.
3. If possible, interview the injured worker at the scene of the accident and "talk" through re-enactment.
4. Conduct all interviews as privately as possible. Interview witnesses individually and separately. Talk with anyone who has knowledge of the accident/incident, even if he/she did not actually witness it. Only retrieve witness statement from individuals who actually observed the accident/incident. Document witness interviews.
5. Document details graphically. Use the IRF as well as sketches, diagrams, and photographs as needed. Take measurements where appropriate.
6. Focus on the causes and hazards leading to the accident/incident. Develop an analysis of what happened, how it happened and how it could have been prevented. Determine what caused the accident/incident itself, not just the injury.
7. Include a Corrective Action plan in every investigation. Describe how you will prevent such accidents in the future. Completion of the Root Cause Analysis may assist in the formulation of such plans.
8. Save any evidence if a third party or defective product contributed to the accident/incident. It should be critical to the recovery of claims costs.

9.0 Plans Required by the Safety Manual

9.1 Layout Plans (04.A.01)

Site locus maps, layout plans, haul route maps, drawings, or sketches are included in the project WP, for which this APP is an integral component of and need not duplicated in this section of this APP. Site locus maps, layout plans and drawings are identified in the project WP as follows:

9.2 Emergency Response Plans (01.E)

9.2.1 Emergency Planning/Preparedness

(Reference CH2M HILL SOP # HSE&Q 106, Emergency Planning)

The site supervisor and/or SSHO performs the applicable pre-emergency planning tasks before starting field activities and coordinates emergency response with on-site parties, the NAVFAC POCs, and local emergency-service providers as appropriate. These pre-emergency planning activities include the following:

- Review any host facility emergency and contingency plans, where applicable, or determine how host facility emergency and contingency plans effect, or are implemented at the project site location.
- Determine what onsite communication equipment is necessary and available (e.g., two-way radio, air horn, nearest telephone, cell phones etc.).
- Verifying sufficient resources are available so that the "Buddy System" can be used for all assigned work.
- Confirm and post emergency telephone numbers, evacuation routes, assembly areas, and route to hospital; communicate the information to onsite personnel. Posting of emergency contact information shall be posted in a commonly accessed area in clear view of the on-site workers.
- Review changed site conditions, onsite operations, and host facility/outside agency responders accessibility/availability in relation to emergency response conditions.
- Designate one vehicle as the emergency vehicle; place hospital directions and map inside; keep keys in ignition during field activities.
- Inventory and check site emergency (first aid kits/eye wash etc., equipment, supplies, and potable water).
- Rehearse the emergency response plan before site activities begin, including driving route to hospital.
- Brief new workers on the components of the APP and emergency response procedures.

- Communicate emergency procedures for personnel injury, exposures, fires, explosions, and releases.
- Where appropriate and acceptable to the client, inform emergency room and ambulance and emergency response teams of anticipated types of site emergencies.

9.2.2 Emergency Equipment and Supplies

The site supervisor/SSHO shall verify the availability and readiness of emergency support equipment listed below.

Emergency Equipment and Supplies	Location
20 LB (or two 10-lb) fire extinguisher (A, B, and C classes) w/ annual maintenance and monthly inspection tags	Construction Support Area and AST fuel storage tank
First aid kit/CPR Shield	Construction Support Area or Field Vehicle
Eye wash	Construction Support Area or Field Vehicle
Potable water	Construction Support Area
Blood borne-pathogen kit	Construction Support Area or Field Vehicle
Additional equipment (specify): Mobile phone and contact information	Construction Support Area or Field Vehicle for site supervisor/site management and SSHO at a minimum
Spill Control/Clean-up Materials/Proper Spill Response PPE	Construction Support Area/ AST fuel storage tank

9.2.3 Evacuation

The Site Supervisor/SSHO will direct the coordination of response to emergency or medical support situations. Response considerations include the following elements:

a) Evacuation routes and assembly areas will be specified at the commencement of field work. Evacuation route(s) and assembly area(s) will be designated by the site supervisor or SSHO before work begins and posted at the designated evacuation rally point or construction support facility.

b) Personnel shall be advised of the assembly and accounting process during emergency conditions, able to understand evacuation signals and know where final evacuation assembly areas are located. The site supervisor or SSHO will account for personnel assembly area(s).

c) Designation of a vehicle to be available to support emergency conditions or response actions.

d) Evaluation of existing and potential hazards that may be associated with any experienced emergency condition and mitigation measures necessary to control hazards so the response measures can be executed without additional danger.

e) Assessment of the situation and condition of any victims.

f) Determination of the resources needed for victim stabilization and transport and additional emergency support.

g) Enforcement of the Buddy System. No one will be permitted to perform a response to an emergency condition alone.

h) Removal of injured personnel from the area and/or control of the emergency condition.

i) Decontamination of injured parties will be accomplished after stabilization of their medical conditions, where necessary. Gross decontamination maybe required if their condition poses immediate threat to the victim's life. If decontamination may cause additional harm to an injured person, then alternate measures such as wrapping the injured person in material to prevent the spread of contamination during extrication and transport may be required. In this situation, emergency medical transport personnel and the receiving medical facility must be advised of potential contamination issues of injured personnel, as early as possible.

Evacuation signals for the project site are listed below.

Signal	Meaning
Grasping throat with hand	Emergency-help me.
Thumbs up	OK; understood.
Grasping buddy's wrist	Leave area now.
Continuous sounding of horn **(Verify signal does not coincide with evacuation signals for government personnel in close proximity to the site)**	Emergency; leave site now.
Severe Weather Warnings (radio, TV, internet)	Leave the region in accordance with the facility evacuation orders or directives from program/project management team

Figure 9-1, below, is depicts an Evacuation Route Map. This evacuation route map could be used for evacuation due to pending severe weather conditions, site emergency or in the event that was being evacuated and secured due to a to a national emergency.

FIGURE 9-1

Evacuation Route Map

Procedure
When a site emergency evacuation signal is given or required, all site personnel shall shut down operations and equipment, complete any personnel decontamination procedures, secure the site to the extent possible, and proceed to the **initial rally point** at the site construction trailer. All site personnel shall be accounted for and site personnel will receive further direction from the Site Superintendant. Notify the AGVIQ-CH2M HILL management team in accordance with Figure 4-1 "Incident Reporting Process and Chain of Command" and Attachment 4 "Emergency Contact List" of this APP and secure further instructions.

AGVIQ-CH2M HILL Project – Emergency Contacts

Sidney Allison – SBRAC Program Manager: Phone (843) 242-8018/ (843) 813-2672 (cell)
Sam Naik– SBRAC Deputy Program Manager: Phone (770) 604-9182 x54248 / (678) 860-9626 (cell)
Jim Nicotri – Project Manager (overall): (617) 626-7042/ (339) 832-4555 (cell)

9.2.4 Procedures and Tests (01.E.01)

It is the intention of the project team to verify that emergency response processes are in place and capable of being executed, prior to the start of field assignments. However, because of the secure nature of the facility, response to medical or fire emergencies will most likely be by installation personnel or even possibly by outside public responders with secured or escorted access. As such, it may be impractical and disruptive to the primary mission of these responders to perform "procedural response testing". In this case, the designated site supervisor or SSHO shall verify that emergency services are available for response, that contact information is appropriate, and that responders know how to access anticipated work areas.

9.2.5 Spill Plans (01E.01, 06.A.02)

The initial response to any spill or discharge will be to protect human health and safety, and then the environment. Identification, containment, treatment, and disposal assessment will be the secondary response.

If for some reason a chemical spill is not contained within a dike or sump area, an area of isolation must be established around the spill. When any spill occurs, only those persons involved in overseeing or performing containment operations will be allowed within the designated hazard area and must maintain appropriate training and possess proper experience and PPE, to do so.

The onsite emergency coordinator will inform the proper agencies of all spills. A Project Emergency Contact List is provided in **Attachment 5** of this APP. For work at this site, it is the AGVIQ-CH2M HILL's understanding that chemicals or materials that could create a threat to the health or safety to the surrounding community in the event of a spill or release will not be brought on-site as part of our scheduled work.

Reporting of spills or releases of oil or hazardous materials to appropriate agencies and stakeholders (i.e. NAVFAC, EPA, US Coast Guard, State DEP, the LECA etc.) must be performed when spilled or released quantities of oil or hazardous materials are in excess of established Reportable Quantities (RQs) for the material in questions.

In a spill or release response/containment, personnel shall take the following measures:

- Immediately warn any nearby workers and notify individual responsible for site operations.
- Assess the spill area to ensure that it is safe to respond.
- Evacuate area if spill presents an emergency.
- Provide notification to project stakeholders.
- Ensure all unnecessary persons are removed from the hazard area.
- Put on protective clothing and equipment.
- If a flammable material is involved, remove all ignition sources, and use only spark- and explosion-proof equipment for recovery of material.

- Remove all surrounding materials that could be especially reactive with materials in the waste. Determine the major components in the waste at the time of the spill.
- Stop source of spill and establish site control for spill area.
- If wastes reach a storm sewer, dam the outfall by using sand, earth, sandbags, etc. Pump this material out into a temporary holding tank or drums as soon as possible.
- Place all small quantities of recovered liquid wastes (55 gallons or less) and contaminated soil into drums for incineration or removal to an approved disposal site.
- Apply appropriate spill control media (e.g., clay, sand, lime) to absorb discharged liquids.
- For large spills, establish dikes around leading edge of spill using booms, sand, clay, or other appropriate material. If possible, use diaphragm pump to transfer discharged liquid to drums or holding tank. Follow proper ground and bonding procedures of equipment during recovery efforts. Intrinsically safe equipment must be used in recovery operations.
- For small fires or chemical releases, actions to be taken include the following:

    1. Shut down operations and evacuate the immediate work area
    2. Notify appropriate response personnel
    3. Account for personnel at the designated assembly area(s)
    4. Assess the need for site evacuation, and evacuate the site as warranted

Instead of implementing a work-area evacuation, small fires or spills posing minimal safety or health hazards may be controlled by onsite personnel, assuming that personnel who respond to these emergencies are properly trained to do so and wearing appropriate PPE to protect themselves against hazards that may be associated with the response.

In addition to the above, AGVIQ-CH2M HILL will have project field staff that are trained in accordance with 29CFR1910.120, are enrolled in a medical surveillance program meeting the criteria of 29CFR1910.120(f) and have previous experience training to mitigate unanticipated small releases of materials that could occur on this project (i.e. Petroleum, Oil or Lubricants) and spill materials that will be readily available at the project site.

9.2.5.1 Anticipated Hazardous Materials (06.A.02)

The following is a list of hazardous materials or chemicals that may be brought on-site and incorporated as part of the final completion of the work, generated during the execution of the work for offsite disposal or recycling or otherwise used to facilitate site work. These hazardous materials or chemicals may require spill prevention and countermeasure control processes to ensure sensitive environmental receptors are not adversely impacted in the event of a spill or release of these materials.

- Marking Paint

- Fuel & Grease
- Insect repellent(s)

9.2.5.2 Notification

In the event a spill occurs that requires notification, a project person shall follow the "AGVIQ-CH2M HILL Incident Notification Process and Lines of Authority" organizational chart identified in **section 4.4** of this APP.

In addition, the AGVIQ-CH2M HILL Project Manager shall make notification to the designated project NAVFAC Point of Contact (POC) and environmental compliance representative(s) or other designated NAVFAC personnel, such that additional appropriate community and/or federal/state agencies may be engaged and notified, as applicable. The AGVIQ-CH2M HILL overall Project Manager shall coordinate with the designated project NAVFAC POC for support with regard to adhering to local, state, or federal regulations for spill notification clean-up and closure requirements.

9.2.6 Firefighting Plan (01.E.01, Section 19)

AGVIQ-CH2M HILL personnel ARE NOT considered Firefighting Organizations or Fire Brigades. Only "small/containable", incipient stage fires that are containable by the use of first response fire protection equipment (i.e. 2.5 to 20 lb ABC fire extinguishers) may be controlled by AGVIQ-CH2M HILL personnel. All other response shall be considered firefighting measures and shall be conducted by facility provided or public agency firefighting teams.

All fire prevention measures and portable first response fire protection equipment shall be in accordance with the information identified in Section 9.7 Health and Safety Hazard Control Program – Fire Prevention, and Section 9.2 Emergency Response Plans of the APP, respectively.

9.2.7 Posting of Emergency Telephone Numbers (01.E.05)

Emergency contact numbers appropriate to project operations are included in **Attachment 5** of this APP and are referenced as the "Emergency Contact List". For this project it is anticipated that a temporary project construction support trailer will be mobilized to and established at the project site (approximately at Point A of Figure 9-1). Posting of emergency contact information shall be posted in a commonly accessed area of the temporary construction trailer and in clear view of the on-site workers. This action shall be considered as meeting the intent of EM 385 1-1, 01.A.06 and 01.E.05.

9.2.8 Man Overboard / Abandon Ship (19.A.04)

(Reserved)

Man overboard/abandon ship scenarios are not applicable to this TO.

9.2.9 Medical Support

Location and direction to the local emergency medical support facility shall be posted in a commonly accessed area of the temporary construction trailer and in clear view of the on-site workers.

In addition, the project shall be outfitted with first aid kits of suitable size and quality (contents) to meet health and safety requirements for on-site first aid and CPR response. Personal protective devices shall be provided such that universal precautions against blood borne pathogens can be exercised while administering CPR or first aid. Eye wash stations, either portable or stationary, will be available.

Procedures for the decontamination and medical treatment of injured personnel are provided in section 1.2.18 of **Attachment 1** of this APP (Site Specific Safety and Health Plan).

An effective means of communication and to summon transportation of injured workers to medical treatment facilities must be evaluated and established prior to the start of field activities. Communication devices shall be tested in the area of use to assure functionality. When a medical facility or physician is not accessible within five (5) minutes of an injury to a group of two or more employees for the treatment of injuries, at least two (2) employees on each shift shall be qualified to administer first-aid and CPR.

Injuries and illnesses experienced by AGVIQ-CH2M HILL personnel must also be reported to the Project and Program Management team identified in section 4.0 this APP and Human Resources contacts on the Emergency Contact List in **Attachment 5** of the APP. If there is doubt about whether medical treatment is necessary, or if the injured person is reluctant to accept medical treatment, contact the designated employer medical consultant or seek the evaluation form any Emergency Medical Services (EMS) Support personnel, as applicable, who may respond to on-site emergencies.

It must be understood that for life threatening emergencies, get or summon medical attention immediately.

During non-emergencies, follow these procedures as appropriate.

- Notify appropriate emergency response authorities (e.g., 911).
- The Site Supervisor or SSHO will assume charge during a medical emergency until the ambulance arrives or until the injured person is admitted to the emergency room.
- Prevent further injury.
- Initiate first aid and CPR where feasible and where worker "Universal Precautions" to Blood borne Pathogens can be completed.
- Perform decontamination where feasible; lifesaving and first aid or medical treatment take priority.
- Make certain that the injured person is accompanied to the emergency room.
- When contacting the medical consultant, give your name and telephone number, the name of the injured person, the extent of the injury or exposure, and the name and location of the medical facility where the injured person was taken.

- Report incident as outlined in Section 8.0 and in accordance with the "Primary Lines of Authority identified in section 4.4 of this APP.
- **A map showing the route to the local hospital is shown on Figure 9-2.**

FIGURE 9-2

Hospital Route Map

(Total distance about 10 miles @ ~ 18 minutes)

Directions	Distance
A 670 Seaman's Neck Rd, Seaford, NY 11783	
Start out going **south** on **Seaman's Neck Rd** toward **Peter St**.	~ 1.4 miles
Merge onto **RT-135 S / Seaford-Oyster Bay Expressway**.	~ 0.9 miles
Merge onto **Sunrise Hwy / RT-27 W** via **EXIT 2W** toward **New York**	~ 7.4 miles
Turn **left** onto **N Oceanside Rd**.	~ 0.3 miles
Take the 3rd left onto Oswald Ct.	~ 0.03 miles
Turn slight right onto Healthy Way.	
1 HEALTHY WAY is on the left	
B **South Nassau Communities Hospital, 1 Healthy Way, Oceanside, NY 11572** **(516) 632-3000**	

AGVIQ-CH2M HILL Project – Emergency Contacts

Sidney Allison – SBRAC Program Manager: Phone (843) 242-8018/ (843) 813-2672 (cell)
Michael Halil – SBRAC Deputy Program Manager: Phone (904) 777-4812 x 233/ (904) 219-6277 (cell)
Jim Nicotri – Project Manager (overall): (617) 626-7042/ (339) 832-4555 (cell)

9.3 Plan for Prevention of Alcohol and Drug Abuse (01.C.02)

The AGVIQ-CH2M HILL policy statement on alcohol and drug abuse is provided in Section 10.5 of the APP, and will not be elaborated further upon in this section.

9.4 Site Sanitation Plan (2)

Toilet facilities for this project shall be of the pre-manufactured, temporary/portable type chemical toilets typical of construction projects and shall be constructed so the occupants are protected against weather and falling objects (reasonably sized); all cracks shall be sealed; and the door shall be tight-fitting, self-closing, and capable of being latched. Adequate ventilation (natural via vents) shall be provided and all windows and vents shall be screened. Toilet facilities shall be lighted via natural lighting. Provisions for routinely servicing and cleaning all toilets and disposing of the sewage shall be established before placing toilet facilities into operation. The method of sewage disposal shall be managed by the temporary/portable toilet vendor. Separate toilet rooms for each sex need not be provided if toilet rooms can only be occupied by one person at a time can be locked from the inside, and contain at least one toilet seat.

Washing facilities shall be provided within or adjacent to the temporary/portable type chemical toilet facilities and as needed to maintain healthful and sanitary conditions. If it is not practical to provide a water source for hand washing due to low ambient air temperatures (~32^{o}F) running water, then hand sanitizers may be used as a substitute. Trash and garbage generated by the normal site operations must be properly stowed, containerized, and secured such that vermin will not be attracted and disposed of off-site on a regular basis.

Temporary sanitary facilities will be located adjacent to the construction support area trailer. The construction support trailer will contain necessary administrative support equipment, required to execute the TO.

9.5 Access and Haul Road Plan (4.B)

The site access and haul road for the project site has not been authorized by NAVFAC at the time this APP was prepared. It is assumed that the project haul route will be established on or before the project pre-construction meeting, but at this time it is anticipated to be as identified in the WP.

9.6 Respiratory Protection Plan (05.G)

(References: CH2M HILL SOP # HSE&Q 121, Respiratory Protection, TIKIGAQ Corporation Respiratory Protection Program)

(Reserved)

Respiratory protection is not anticipated for this TO.

9.7 Health and Safety Hazard Control Program (06.A)

Exposure to certain project specific hazards in the work place may include injury/accidents, occupational illnesses or property damage due to execution of a variety of assigned tasks or as a result of existing site conditions. This section of the APP is provided to aid employees in the recognition of potential specific and general project hazards and provide procedures and practices to be implemented on the project site that may facilitate the reduction or elimination of occupational incidents that may be attributed to identified projects hazards. All AGVIQ-CH2M HILL personnel are required to contact the designated Project Manager, SSHO, Program CIH/HSPA identified in this APP regarding any questions or concerns to ensure the execution of this task order in a healthy and safe manner.

9.7.1 Adverse Weather

Sudden inclement weather can rapidly encroach upon field personnel. Because of the time of year that this project is being executed and its geographical region it is not anticipated that Hurricanes or tropical storms would have an impact or require a significant stoppage in scheduled tasks. However, because of the sites location its field crew members could experience a variety of adverse weather conditions during the course of a normal work assignment and should be prepared for the effects of adverse weather conditions.

Personnel performing work outdoors should carry clothing appropriate for foul weather conditions (rain gear, etc) that may be expected. In severe weather conditions, (i.e., high wind, rain squalls, electrical storms), the field crews must evacuate from an outdoor work environment area and find safe shelter until the weather abates and until a decision is made to resume the field activities. Even though much of the field operations may be performed within sheltered environments, the following information is provided for field personnel subject to outdoor work environments as procedures must be exercised where adverse weather is encountered or is expected to occur during an assigned work day.

Frequently observe the skyline for rain squalls, thunder storms or other severe weather systems that may be developing. Check internet, local TV weather or radio channels for daily forecasts and plan daily work activities accordingly. Have a portable radio available on-site to monitoring local weather or marine forecasts. If on-site internet or radio monitoring are not available, check with the with home office support personnel who may be able to determine the severity of developing storm systems.

Shut down operations during heavy rain/lightning events, high wind or heavy snow conditions and identify “safe haven” location. Safe haven locations should be identified prior to the start of work. Safe haven structures must be grounded where there is a potential for a lightning event.

When excessively hot or cold ambient temperatures exist heat and cold stress monitoring must be implemented, as necessary, defined in section 9.14 of this APP.

9.7.2 Lightning

Preparedness and caution are the best defenses against lightning. Many lightning deaths and injuries happen before or after a thunderstorm's peak. The site supervisor or SSHO shall monitor weather forecasts for predictions of electrical storms in the area. Lightning within 6 miles of the work site, all operations shall be stopped and only resumed when conditions permit. The site supervisor or SSHO shall monitor weather conditions to determine when it is appropriate to resume work. The lightning safety recommendation is 30-30: Seek refuge when thunder sounds within 30 seconds after a lightning flash; and do not resume activity until 30 minutes after the last thunder clap. Some other general precautions include:

- Know where to go and how long it will take to get there. If possible, take refuge in a large building or vehicle. Do not go into a shed in an open area.
- The inclination to see trees as enormous umbrellas is the most frequent and most deadly mistake. Do not go under a large tree that is standing alone. Likewise, avoid poles, antennae and towers.
- Stay away from lakes, streams, pools, or any water.
- Stay away from railroad tracks that can carry lightning charges for long distances.
- If the area is wide open, go to a valley or ravine, but be aware of flash flooding. Do not stand on top of a hill.
- If you are caught in a level open area during an electrical storm and you feel your hair stand on end, drop to your knees, bend forward and put your hands on your knees or crouch. The idea is to make yourself less vulnerable by being as low to the ground as possible and taking up as little ground space as possible. Lying down is dangerous, since the wet earth can conduct electricity. Do not touch the ground with your hands.
- Do not use telephones during electrical storms, except in the case of emergency.

9.7.3 Aerial Lifts

(Reference CH2MHIILL SOP # HSE&Q-301, Aerial Lifts)

(Reserved)

Aerial lifts will not be used on this project.

9.7.4 Air Compressor Operations

(Reserved)

Compressed air sources will not be used on this project. The requirements of EM 385 1-1, section 26.I.01 are not applicable to the execution of this TO.

9.7.5 Asbestos

(Reference CH2MHIILL SOP # HSE&Q-502, Asbestos)

(Reserved)

Contact with Asbestos Containing Material (ACM) is not anticipated for this project. In the event that suspect PACM/ACM is discovered during site activities, personnel will secure/cover the material to the extent possible secure (i.e. in a manner that doesn't create a possible worker exposure) and exit the immediate work area until the nature of the material can be evaluated by qualified personnel. Personnel who do not possess proper qualifications and who are not enrolled in a medical surveillance program meeting the requirements of 29 CFR 1910.1001/29 CFR 1926.1101 will not disturb material that contains PACM/ACM.

9.7.6 Biological Hazards and Controls

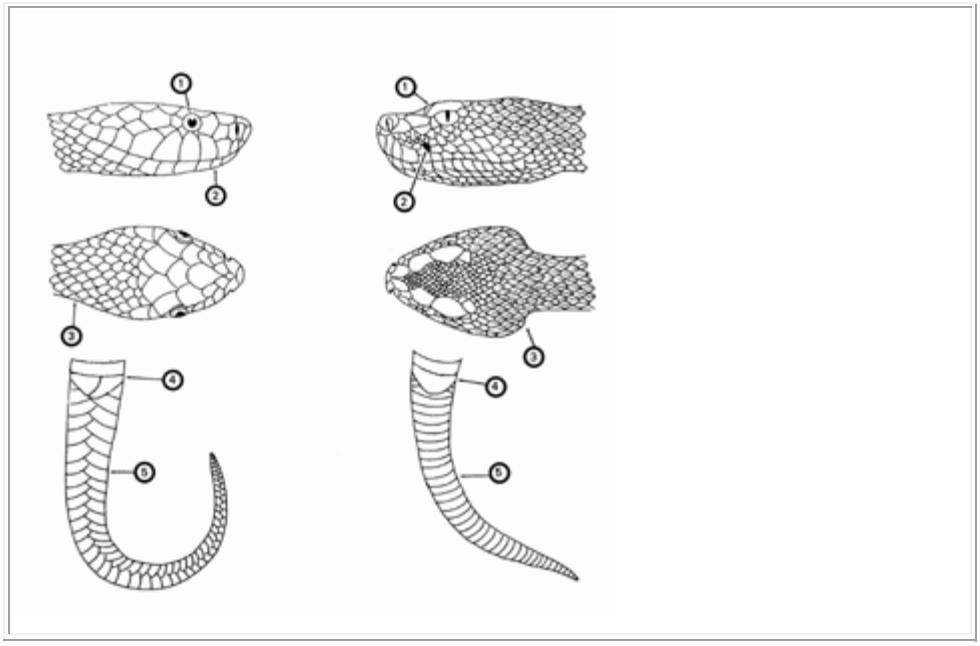
The following sections provide information on potential biological hazards. Site personnel shall notify their overall supervisors and their project site supervisor of any potential allergic reactions that may occur as a result of contact with biological hazards in the workplace. If employee antidotes are required to counteract allergic reactions from biological hazard exposure, employees shall make personnel, who may be required to administer personal antidotes, aware of the location, type, and quantity of antidotes needed to counteract any potential allergic reaction(s).

9.7.6.1 Venomous Snakes

Snakes typically are found in underbrush and tall grassy areas. If you encounter a snake, stay calm and look around; there may be other snakes. Turn around and walk away on the same path you used to approach the area. If bitten by a snake, wash and immobilize the injured area, keeping it lower than the heart if possible. Call the occupational nurse at 1-866-893-2514 immediately. Do not apply ice, cut the wound, or apply a tourniquet. Try to identify the type of snake: note color, size, patterns, and markings. Below is a guide to identifying poisonous snakes from non-poisonous snakes.

Identification of Poisonous Snakes

Major Identification Features Non-venomous Snake	**Major Identification Features Venomous Snake**
1. Round pupils	1. Elliptical pupils
2. No sensing pit	2. Sensing pit between eye and nostril
3. Head slightly wider than neck	3. Head much wider than neck
4. Divided anal plate	4. Single anal plate
5. Double row of scales on the underside of the tail	5. Single scales on the underside of the tail



9.7.6.1.1 Poisonous Plants

Poison ivy, poison oak, and poison sumac typically are found in brush or wooded areas, which are common to the site. They are more commonly found in moist areas or along the edges of wooded areas. Shrubs are usually 12" to 30" high, or can also be a tree-climbing vine, with triple leaflets and short, smooth hair underneath. Plants are red and dark green in Spring and Summer, with yellowing leaves anytime especially in dry areas. Leaves may achieve bright reds in Fall, but plants lose its (yellowed, then brown) leaves in Winter, leaving toxic stems. All parts of the plant remain toxic throughout the seasons.

Become familiar with the identity of these plants (see below). Wear protective clothing that covers exposed skin and clothes. Avoid contact with plants and the outside of protective clothing. If skin contacts a plant, wash the area with soap and water immediately. If the reaction is severe or worsens, seek medical attention.

Poison Ivy

Poison Sumac

Poison Oak

Exposure:

Contamination with poison oak, ivy or sumac can happen through several pathways. These include:

- Direct skin contact with any part of the plant.
- Contact with clothing that has been contaminated
- Contact from removing shoes that have been contaminated, as your shoes may be coated with oil)
- Sitting in a vehicle that has become contaminated
- Contact with any objects or tools that have become contaminated.

Exposure to poison oak, ivy or sumac often becomes an OSHA recordable illness. Take proper action if you are potential contaminated. The dermatitis is so severe that many people seek medical care and get prescription cortisone creams or steroid shots to reduce the suffering caused by the itch.

Best Work Practices:

If you must work on a Site that has been identified to potentially contain poison oak, ivy or sumac, the following precautions are necessary:

- Identify plants containing urushiol – The best way to prevent exposure is to recognize the plant and avoid working in areas where poison oak, ivy or sumac is present.
- If you must work in areas with urushiol containing plants, contact you project manager and health and safety manager to determine the best procedures to prevent contamination.
- Do not drive vehicles onto the Site where it will come into contact with poison oak, ivy or sumac. Vehicles which need to work in the area, such as drill rigs or heavy equipment must be washed and decontaminated as soon as possible after leaving the Site.
- All tools used in the area, including those used to cut back the plants, surveying instruments used in the area, air monitoring equipment or other test apparatus must be decontaminated before they are placed back into the Site vehicle. If on-Site decontamination is not possible, use plastic to wrap any tools or equipment until they can be decontaminated. If working on or near the ground surface, place plastic on the ground to cover the grass and foliage.
- Personal protective equipment (PPE), including Tyvek coveralls, gloves, and boot covers must be worn. PPE and plastic used to cover the ground must be placed into separate plastic bags and sealed if they are not disposed immediately into a trash receptacle.
- Shower as soon as possible to remove any potential contamination. Any body part with suspected or actual exposure should be washed with "Tecnu" or other product designed for removing urushiol. If you do not have Tecnu wash with cold water. Do not take a

bath, as the oils can form and invisible film on top of the water and contaminate your entire body upon exiting the bath.

- Zanfel™ may also be used to treat exposed areas that are experiencing signs and symptoms of poison oak, ivy or sumac contamination. Refer to the Zanfel™ information guide below for specific product and contact information.
- Use products such as IvyBlockTM to prevent poison oak, ivy and sumac contamination. IvyBlockTM is approved by the FDA to prevent the rash caused by poison oak, ivy and sumac.
- If there is exposure use the following first aid procedures, or others you may find to alleviate the pain and itching.

Poison Oak, Ivy, and Sumac First Aid :

Self-Care/First Aid

- Wash (decontaminate) all affected areas with warm water and a strong soap.
- Keep your hands away from your eyes, mouth and face.
- Do not scratch or rub the rash.
- Apply any of these to the skin rash:
- Calamine (not Caladryl) lotion
- Zanfel™ lotion
- Zinc oxide ointment
- Paste made with baking soda - mix 3 teaspoons of baking soda with 1 teaspoon of water
- Take an over-the-counter antihistamine such as Benadryl, as stated on the label
- If self-care/first aid measures don't bring relief, call your doctor.

Urushiol Plant Facts:

Urushiol Oil is Potent

- Only 1 nanogram (billionth of a gram) needed to cause rash
- Average is 100 nanograms for most people
- 1/4 ounce of urushiol is all that is needed to cause a rash in every person on earth
- 500 people could itch from the amount covering the head of a pin
- Specimens of urushiol several centuries old have found to cause dermatitis in sensitive people.
- 1 to 5 years is normal for urushiol oil to stay active on any surface including dead plants
- Derived from **urushi**, Japanese name for lacquer

New Cream to Treat Exposure to Poison Plants:

Exposure to poison oak, ivy and sumac can be uncomfortable, and in some cases the rash can become so severe that medical care is required. A relatively new product is available Zanfel™ (www.zanfel.com) that helps prevent blistering and itching from becoming severe. If you are working in an area with poison oak, ivy or sumac, you can obtain this cream by contacting and notifying your supervisor of the need to purchase this material.

Please remember, the cream does not replace preventative measures, including:

- Avoiding contact with poison oak, ivy and sumac.
- Wearing Tyvek coveralls and gloves to prevent contact.
- Washing with Tecnu® (or a similar product) after potential exposure.
- Washing clothing and decontaminating equipment with an oil-cutting detergent.

More information about Zanfel (from Zanfel):

Zanfel™ is an effective wash for urushiol-induced contact dermatitis. Urushiol is the toxin known to cause the itching and rash associated with poison oak, ivy, sumac, poisonwood, and related plants. Zanfel works by surrounding urushiol and bonding with it, thereby enabling it to be rinsed away. Unlike some products that require use within 10-20 minutes of contact or that required continued use until the rash is gone (which can take up to 5 weeks), Zanfel offers relief at any stages of the reaction and often with only one wash. Individuals with particularly severe reactions may require additional washes. Most individuals experience relief from the itching within 30 seconds of application. The rash will begin to subside within hours if the reaction is mild to moderate. Severe and systemic cases will still require medical attention. Severe cases are defined as breakouts that are present on more than 15-percent of the body, and new breakouts continue to develop after day 4.

9.7.6.2 Ticks

Ticks typically are in wooded areas, bushes, tall grass, and brush. Ticks are black, black and red, or brown and can be up to one-quarter inch in size. Wear tightly woven light-colored clothing with long sleeves and pant legs tucked into/taped to boots; spray **only outside** of clothing with permethrin or permanone and spray skin with only N, N-diethyl-meta-polyamide (DEET); and check yourself frequently for ticks. Where exposure to ticks is verified, personnel shall consider wearing "bug-out" suits to minimize potential exposures to ticks or other biting insects (i.e., chiggers). However, when these suits are used when ambient air temperatures are elevated (> 70 degrees) heat stress preventive measures and monitoring protocols must be implemented. See the Heat Stress section in this APP for additional information.

Hazard Control:

The methods for controlling exposure to ticks include, in order of most-preferred to least:

- Avoiding tick habitats and ceasing operations in heavily infested areas
- Reducing tick abundance through habitat disruption or application of acracide
- Personal protection through use of repellants and protective clothing
- Frequent tick inspections and proper hygiene

Vaccinations are not available and preventive antibiotic treatment after a bite is generally not recommended.

Tick Identification:

There are five varieties of hard-bodied ticks that have been associated with tick-borne pathogens. These tick varieties include:

- Deer (Black Legged) Tick (eastern and pacific varieties)
- Lone Star Tick
- Dog Tick (American and Brown)
- Rocky Mountain Wood Tick
- Western Black-legged tick

Illnesses and Signs/Symptoms:

There are six distinguishable tick-borne pathogens that cause human illness in the United States. These pathogens may be transmitted during a tick bite – normally hours after attachment. The illnesses, presented in approximate order of most common to least, include:

1. Lyme (bacteria)
2. Rocky Mountain Spotted Fever (RMSF) (bacteria)
3. Ehrlichiosis (bacteria)
4. Southern Tick-Associated Rash Illness (STARI) (bacteria)
5. Tularemia (Rabbit Fever) (bacteria)
6. Babesia (protozoan parasite)

Symptoms will vary based on the illness, and may develop in infected individuals typically between 3 and 30 days after transmission. Some infected individuals will not become ill or may develop only mild symptoms. These illnesses present with some or all of the following signs and symptoms: fever, headache, muscle aches, stiff neck, joint aches, nausea, vomiting, abdominal pain, diarrhea, malaise, weakness, and small solid, ring-like, or spotted rashes. The bite Site may be red, swollen, or develop ulceration or lesions. A variety of long-term symptoms may result when untreated, including debilitating effects and death.

Tick Removal:

- Use fine-tipped tweezers or shield your fingers with a tissue, paper towel, or nitrile gloves.
- Grasp the tick as close to the skin surface as possible and pull upward with steady, even pressure. Do not twist or jerk the tick; this may cause the mouthparts to break off and remain in the skin. (If this happens, remove mouthparts with tweezers. Consult your healthcare provider if infection occurs.)
- Do not squeeze, crush, or puncture the body of the tick because its fluids (saliva, hemolymph, and gut contents) may contain infectious organisms. Releasing these organisms to the outside of the tick's body or into the bite area may increase the chance of infectious organism transmission.
- Do not handle the tick with bare hands because infectious agents may enter through mucous membranes or breaks in the skin. This precaution is particularly directed to individuals who remove ticks from domestic animals with unprotected fingers. Children, elderly persons, and immune-compromised persons may be at greater risk of infection and should avoid this procedure.
- After removing the tick, thoroughly disinfect the bite Site and wash your hands with soap and water.
- You may wish to save the tick for identification in case you become ill. Your doctor can use the information to assist in making an accurate diagnosis. Place the tick in a plastic bag and put it in your freezer. Write the date of the bite on a piece of paper with a pencil and place it in the bag. See "First Aid and Medical Treatment" information below.

Previously infected individuals are not conferred immunity – re-infection from future tick bites can occur even after a person has contracted a tick-borne disease.

First-Aid and Medical Treatment:

Tick bites should always be treated with first-aid. Clean and wash hands and disinfect the bite Site after removing embedded tick. Consult a healthcare professional if infection or symptoms and effects of tick-borne illnesses are developing.

Medical treatments for tick-borne infections include antibiotics and other medical interventions. Diagnosis of specific illness involves both clinical and laboratory confirmations. Preventive antibiotic treatment in non-ill individuals who have had a recent tick bite is recommended in specific cases only.

Tick Analysis Procedure for Lyme disease:

For tick removal, follow the instructions in your tick removal kit using a fine pointed pair of tweezers. If the tick is alive, place it in two layered zip-lock bags. It is highly recommended that you wear gloves when removing the tick from the skin to avoid infection.

It is important to remove the entire tick and place it in a zip-lock bag. Place the zip-lock bag in an envelope and contact your applicable health care representative, project manager and health and safety representative (see **Attachment 5** of this APP) for instructions on where to send the tick for analysis of certain tick-borne pathogens.

9.7.6.3 Spiders - Brown Recluse

It is regarded by many as the most dangerous spider in the United States. Although Connecticut is not typically a known habitat of the Brown Recluse, it can be present as a result of interstate shipping/transportation the Brown Recluse spider can be found most anywhere in the United States.

Brown Recluse Spiders are usually 1 inch or larger in size, including the legs and can grow as large as 3 inches. Young Brown Recluse spiders are smaller and somewhat lighter in color. Brown recluse spider bites don't always hurt right away.

In fact, you may not know that you have been bitten until other symptoms appear. Symptoms of a brown recluse spider bite may include the following:

- Reddened skin followed by a blister that forms at the bite Site.
- Mild to intense pain and itching for 2 to 8 hours following the bite.

- An open sore with a breakdown of tissue (necrosis) that develops within a few hours to 3 to 4 days following the bite and the area may become painful, itchy, hot, swollen, red and tender. An irregular ulcerous sore, caused by necrosis, will often appear that is from 1/4 inch to 10 inches in diameter. Prompt attention is the best defense against preventing the necrosis. The wound is often described as being reddish and surrounded by a bluish area with a narrow whitish separation in between the red and the blue. This gives it the famous "bull's eye" pattern. In just hours, a bite from the highly venomous Brown Recluse spider can create blisters and cause tissue damage.

  Some people have a severe, systemic (whole-body) reaction to brown recluse spider bites, including the rapid destruction of red blood cells and anemia. Signs and symptoms include:

  - Fever and chills.
  - Skin rash all over the body with many tiny, flat purple and red spots.
  - Nausea or vomiting.
  - Joint pain.

  If you think you have been bitten by a brown recluse spider:

- Remain calm. Too much excitement or movement will increase the flow of venom into the blood.
- Try to collect the spider, without being bitten, (even a mangled specimen has diagnostic value), if possible, for positive identification by a spider expert. A plastic bag, small jar, or pill vial is useful and no preservative is necessary, but rubbing alcohol helps to preserve the spider.
- Apply a cool, wet cloth to the bite or cover the bite with a cloth and apply an ice bag to the bite.
- Do not apply a tourniquet. It may cause more harm than benefit.
- Try to positively identify the spider to confirm its type.
- Seek prompt medical attention.

A brown recluse bite can be serious and will likely require immediate medical care. Seek medical attention if you believe you have been bitten by a recluse spider, especially if severe symptoms develop throughout your body or an open sore and necrosis develop. A brown recluse spider bite is diagnosed through a physical examination and questions about the bite. You should be prepared to describe the spider, where and when the bite took place, and what you were doing at the time. Your health professional will ask what your main symptoms are, when they began, and how they have developed, progressed, or changed since the bite.

- Before utilizing outdoor temporary sanitary facilities, be sure to check the unit to verify there are not any spiders.

9.7.6.4 Spiders - Widow

Generally only the Northern Black Window would potentially be encountered in Connecticut. Females range from 8-15 mm in body length; males are smaller, sometimes very small (2 mm). Most have globose, shiny abdomens that are predominantly black with red markings (although some may be pale and/or have lateral stripes), with moderately long, slender legs. These spiders are nocturnal and build a three-dimensional tangled web, often with a conical tent of dense silk in a corner where the spider hides during the day. In nature, most species are found under rocks and logs, but they readily adapt to human-altered environments, where they are most commonly found in outbuildings (sheds, barns, privies), water meter holes, nursery cans, and under any item or structure (e.g., barbeque grill, slide, sand box) that has been undisturbed for a lengthy period.

Formerly, many bites by black widows (usually by female spiders) occurred in outhouse structures, but widow bites occur most frequently when the spider is trapped against human skin, either by reaching under objects where the spider is hiding or when putting on clothing, gloves or shoes containing the spider. Widow spiders are generally very timid and only bite in self-defense when they accidentally contact humans.

Northern Black

Northern Black

Note: The northern widow is similar to the southern widow except the telltale red markings are shaped slightly different.

Bite symptoms are systemic, spreading through the lymphatic system, and usually start about 1-3 hours after the bite. The most common symptoms are intense pain, rigid abdominal muscles, muscle cramping, malaise, local sweating, nausea, vomiting, and hypertension. Other symptoms may include tremors, labored breathing, restlessness, increased blood pressure, and fever. If left untreated, widow bite symptoms usually last 3-5 days.

If bitten, remain calm, and immediately seek medical attention (contact your physician, hospital and/or poison control center). Apply an ice pack directly to the bite area to relieve swelling and pain. Try to collect the spider, without being bitten, (even a mangled specimen has diagnostic value), if possible, for positive identification by a spider expert. A plastic bag, small jar, or pill vial is useful and no preservative is necessary, but rubbing alcohol helps to preserve the spider. A hospital stay may be recommended, particularly for those with a heart condition or with health problems. A physician may administer a specific antivenin to counteract the venom or calcium gluconate to relieve pain. Calcium gluconate and/or antivenin may be administered to relieve or counteract symptoms.

- Before utilizing outdoor temporary sanitary facilities, be sure to check the unit to verify there are not any spiders.

9.7.6.5 Blood borne Pathogens

Blood borne pathogens are pathogenic microorganisms present in human blood or other potentially infectious material that can cause disease. These pathogens include, but are not limited to, the Hepatitis B Virus (HBV) and the Human Immunodeficiency Virus (HIV). Other potentially infectious material includes any human body fluid that is visibly contaminated with blood, such as saliva or vomit. It also includes all body fluids in situations where it is difficult or impossible to differentiate between body fluids, such as during an emergency response and any unfixed tissue (other than intact skin) from a human (living or dead).

In emergency medical situations, certain employees may need to render first aid as a collateral duty in response to workplace accidents or injuries. This category includes the SSHO, site managers/supervisors, or individuals certified in FA and CPR and shall have received training in exercising universal precautions against exposure to blood borne

pathogens as a component to FA/CPR training, which meets the intent of 29CFR1910.1030. However, additional worker training programs in to blood borne pathogens may also be required when it is expected that employees could contact landfill waste or other waste streams containing potentially infectious material. This situation is not reasonably expected for this project. Blood borne pathogen employee training is also complemented by other regularly scheduled employer training curriculums that are typically executed for the HAZWOPER industry, regulated under 29CFR1910.120/29CFR1926.26. The only worker exposure to blood borne pathogens anticipated for this project will potentially be to those individuals providing FA/CPR to an injured or "down" worker.

To eliminate or minimize employee exposure to blood borne pathogens, workers who may be exposed to blood borne pathogens or potentially infectious material must implement the following hazard control measures.

Employees expected to render first aid shall be cognizant of and adhere to the following with regard to potential exposure to blood borne pathogens:

- First aid kits and a Blood borne Pathogens Protection Kit shall be immediately available at the Site. The kit is commercially available through most safety or medical supply vendors.
- These kits shall contain gloves, masks, CPR protectors, biohazard disposal bags, antiseptic cleanser, splash-proof goggles, towels, wipes, and an absorbent powder to clean up spills. Gloves, masks, and other PPE measures must be donned by personnel responding to emergency or first aid situations where exposure to Blood borne Pathogens could occur.

A portable eye wash station or means of conducting eye washing or flushing shall be readily available at the project site location.

- Always wash your hands and face with antiseptic soap and running water after contacting potentially infectious material. If washing facilities are unavailable, use an antiseptic cleanser with clean paper towels or moist towelettes. When antiseptic cleansers or towelettes are used, always rewash your hands and face with soap and running water as soon as available. Do not consume food or beverages, smoke, chew tobacco, or perform another hand to eye/face/mouth activity until after thoroughly cleaning your hand (with antiseptic soap and water), then your face and only after the employee has removed themselves from the designated work area that contains materials that can be reasonably considered being contaminated with blood borne pathogens.
- Use universal precautions when dealing with materials or situations where there is a potential for blood borne pathogens. Universal precaution is an approach to infection control whereby all human blood and potentially infectious material are treated as if known to be infectious for HIV, HBV, and other blood borne pathogens.
- Personnel who may be exposed to Blood borne Pathogens should review and implement all applicable components of CH2M HILL SOP # HSE&Q 202, Blood borne Pathogens.

9.7.6.6 Mosquito Bites

Because of the recent detection of the West Nile Virus in the southeastern United States, it is recommended that preventive measures be taken to reduce the probability of being bitten by mosquitoes whenever possible. Mosquitoes are believed to be the primary source for exposure to the West Nile Virus as well as several other types of encephalitis. The following guidelines should be followed to reduce the risk of these concerns for working in areas where mosquitoes are prevalent.

- Stay indoors at dawn, dusk, and in the early evening.
- Wear long-sleeved shirts and long pants whenever you are outdoors.
- Spray clothing with repellents containing pyrethrum or DEET because mosquitoes may bite through thin clothing.
- Apply insect repellent sparingly to exposed skin. An effective repellent will contain 35 percent DEET. DEET in high concentrations (greater than 35%) provides no additional protection.
    - Repellents may irritate the eyes and mouth, so avoid applying repellent to the hands.
    - Whenever you use an insecticide or insect repellent, be sure to read and follow the manufacturer's DIRECTIONS FOR USE, as printed on the product.

    Note: Vitamin B and "ultrasonic" devices are NOT effective in preventing mosquito bites.

    Symptoms of Exposure to the West Nile Virus:

    Most infections are mild, and symptoms include fever, headache, and body aches, occasionally with skin rash and swollen lymph glands. More severe infection may be marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis, and, rarely, death.

The West Nile Virus incubation period is from 3 to 15 days.

If you have any questions or to report any suspicious symptoms, contact our line supervisor, project health and safety representative and/or designated corporate occupational physician, as per your employers policy, for support with suspect exposures to West Nile Virus.

9.7.6.7 Rabid Animals

Encounters with a rabid animal can lead to rabies transmission when virus from the animal's saliva, brain tissue, or spinal fluid enters open cuts or wounds in skin or mucous membranes. Therefore, not every encounter with a rabid animal is a true exposure requiring intervention. Treatment is often provided unnecessarily to people who have encountered but had no true exposure to a potentially rabid animal.

Any penetration of the skin by an animal's teeth is considered a "bite exposure." Local wound care should be performed immediately on anyone bitten by an animal. Local treatment of wounds involving immediate and extensive washing of all bite wounds, scratches, or other Sites of potential exposure for 10 minutes with soap and water is arguably the most

important measure for preventing rabies following an exposure to a rabid animal. Experiments done in animals suggest that thorough and vigorous cleansing to the depth of the wound with a 20% soap solution can reduce the risk of developing rabies. Tetanus booster vaccine (Td) should be given if indicated. A health care provider should be consulted to determine whether other measures are necessary. When a bite exposure has been determined, laboratory testing of the animal, if available, may be indicated depending upon the circumstances of the exposure (such as whether it was provoked or not) and the species involved. The risks associated with bites from different animals vary from place to place. For work on this particular contract, contact with rabid dogs, cats, raccoons, and rats could be possible.

"Non-bite exposures" include any scratches, abrasions, or contamination of mucous membranes by an infected animal's saliva, brain tissue, or spinal fluid. Other types of contacts (such as with the blood, urine, feces, or fur of an animal) would not by themselves be considered exposures capable of transmitting rabies even if the animal were known to be rabid. The virus is not hardy; once dry, saliva containing rabies virus is considered non-infectious.

9.7.7 Buried Objects/Utilities (locating)

Do not begin excavation or other ground disturbing activities until a check for underground utilities and similar obstructions has been conducted. Contact the local utility mark-out or locating service identified below to make a request to verify the presence or absence of underground utilities that may be within your proposed work area.

- **Local Utility Mark-Out Service**
- **Name:** **Dig Safely New York**
- **Phone:** **811 or 1-800-962-7962**
- **Website:** *www.digsafely**newyork**.com*

In addition to contacting the local utility mark-out service/utility owner, review current and historic engineering or as-built drawings as a supplement to the mark-out service/utility owner location of known underground utilities that may be present in the area to be disturbed.

As a best management practice, or in areas where sufficient mark-out of utilities by the utility owner's representative is potentially insufficient or where available facility engineer drawings appear incorrect or erroneous data seems likely, then the services of an independent "third party" utility location surveyor must be secured to identify additional and potentially undiscovered/unconfirmed buried utilities in the proposed area of disturbance. The independent utility locator may need to use some or all of the following survey technologies to verify the location of potential buried utilities in the proposed disturbance area:

- **Ground Penetrating Radar (GPR)**, which can detect pipes, including both metallic and non-metallic gas pipes, tanks, conduits, and cables, at depths up to 30 feet depending on equipment. Sensitivity for both minimum object size and maximum depth detectable depends on equipment selected, soil conditions, etc.

- **Radio Frequency (RF)** involves inducing an RF signal in the pipe or cable and using a receiver to trace it. Some electric and telephone lines emit RF naturally and can be detected without an induced signal. This method requires knowing where the conductive utility can be accessed to induce RF field if necessary.
- **Dual RF** is a modified version of RF detection using multiple frequencies to enhance sensitivity but with similar limitations to RF.
- **Ferromagnetic Detectors** are metal detectors that will detect ferrous and non-ferrous utilities. Sensitivity is limited, e.g., a 100-mm iron disk to a depth of about one meter or a 25-mm steel paper clip to a depth of about 20 cm.
- **Electronic markers** are emerging technologies that impart a unique electronic signature to materials such as polyethylene pipe to facilitate location and tracing after installation. Promising for future installations but not of help for most existing utilities already in place.
- **Vacuum excavation** is not applicable to this TO.

9.7.7.1 Procedure

The following procedures shall be used to identify and mark underground utilities during subsurface construction activities on the project.

- Contact the or the local state/regional utility protection service mark-out service (i.e. Miss Utility, Call Before You Dig, Dig Safe etc.) at least three (3) working days prior to executing the proposed work, and request that the location of underground installations be identified prior to the start of proposed ground disturbing activities. Keep copies of any written documentation (faxes, email printouts) regarding utility location verification provided by utilities owners in the office project file and in a working field file on-site.
- Request and review current/historic host facility as-built or engineering drawings, documents or records to support the location of potential underground utilities within the area to be disturbed.
- Obtain utility clearances for subsurface work on both public and private property. **Clearances are to be in writing, signed by the party conducting the clearance.** Written access approval/authorization may be necessary to perform these operations on private property.
- Secure an independent third party utility locate survey subcontractor as an additional means of locating underground utilities when necessary. The independent third party utility locate shall determine the most appropriate geophysical technique or combinations of techniques to identify the buried utilities on the project, based on the survey contractor's experience and expertise, types of utilities anticipated to be present, and specific site conditions. The utility locate survey contractor shall to survey the proposed path of subsurface construction work to confirm no buried utilities are present. Schedule the independent survey, as may be necessary.

- Identify host facility/customer specific permit and/or procedural requirements for conducting ground disturbing activities. Contact and coordinate with the host facility/Customer/ Client POC to obtain the appropriate authorization to engage in ground disturbing activities.
- Underground utility locations must be physically verified by hand digging using wood or fiberglass-handled tools when any adjacent subsurface construction activity (e.g., mechanical drilling, excavating) work is expected to come within 5 feet of the marked underground system. If subsurface construction activity is within 5 feet and parallel to a marked existing utility, the utility location must be exposed and verified by hand digging every 100 feet.
- Protect and preserve the markings of identified utilities until the markings for ground disturbing operations. If the markings of utility locations are destroyed or removed before ground disturbing operations are completed, the Project Manager or the site supervisor must notify the utility company or utility protection service to inform them that the markings have been destroyed and that a remark is required.
- Photo documentation of defined utility mark-out locations as related to proposed limits of ground disturbing activities should be conducted prior to the start of work.
- Conduct a site briefing for employees regarding the hazards associated with working near the utilities and the means by which the operation will maintain a safe working environment. Detail the method used to isolate the utility and the hazards presented by breaching the isolation.
- Monitor for signs of utilities during advancement of intrusive work (e.g., sudden change in advancement of auger or split spoon during drilling or change in color, texture, or density during excavation that could indicate the ground has been previously disturbed).
- Update local utility companies or the state/regional utility protection service (i.e. Miss Utility, Call Before You Dig, Dig Safe etc.) utility verification request numbers as required. Include written responses to updated request verifications in the project file as verification the update was completed.

In addition to the information contained in this section, where personnel are required to perform hand augering operations for sample confirmation sampling activities, a fiberglass ground probe should be used to search ahead to the next sample interval prior to advancing the hand auger when there is a potential for encountering buried underground utilities. When performing environmental sampling decontamination of the fiberglass ground probe shall apply between sample intervals to prevent cross contamination.

9.7.8 Chemical Injections

(Reserved)

Chemical injection operations will not be performed as part of this TO.

9.7.9 Concrete Work

(Reference CH2M HILL SOP # HSE&Q 302, Concrete & Masonry)

The requirements of EM 385 1-1, section 27.B are not applicable to the execution of this TO as we will not perform Post-tensioning operations, constructing structural walls, piers, or columns, Precast concrete operations, or Lift Slab operations.

However, below are the hazard controls and safe work practices to follow when working around or performing concrete and masonry activities. Ensure the requirements in the referenced SOP are followed.

- Mud boots and gloves shall be worn by personnel involved in concrete placement, testing, finishing, cleanup, or other activities where contact with wet concrete is involved.
- Protruding reinforcing steel (rebar), onto which personnel could fall, must be guarded to eliminate the hazard of impalement
- During post-tensioning, only those personnel essential to the operation are permitted behind the tensioning jacks.
- Personnel shall not ride concrete buckets nor position themselves in areas where buckets are lifted overhead.
- Personnel shall maintain a safe distance from formwork and shoring being removed from concrete structures.
- Personnel shall maintain a safe distance from precast and lift-slab concrete being lifted into position until physically secured.
- Personnel shall not enter limited access zones during masonry wall construction.
- When CH2M HILL is in control of concrete and masonry operations, a lift slab competent person will oversee all the concrete and masonry operations.
- Complete the self-assessment checklist for concrete and masonry activities whenever those activities are being performed.

9.7.10 Confined Space Entry

(Reference CH2M HILL SOP # HSE&Q-203, Confined Space)

(Reserved)

Confined space entry operations will not be performed as part of this TO. The requirements of EM 385 1-1, section 34 and 29 CFR 1910.146 are not applicable to the execution of this TO.

9.7.11 Cranes

(Reference CH2M HIILL SOP # HSE&Q-303, Cranes)

Prior to the start of crane operations, a Crane and Hoisting Plan will be developed with the responsible subcontractor that is compliant with the requirements of EM 385 1-1, section 16 and 29 CFR 1926 Subparts CC and DD

Below are the general hazard controls and safe work practices to follow when working around or operating cranes. Ensure the requirements in the referenced SOP are followed.

- Cranes shall be operated by a certified crane operator. After November 10, 2014, only operators possessing a certificate from a nationally accredited testing organization, an audited employer training program, or U.S. military or state-issuing agency will be authorized to operate cranes.
- The crane's operations manual and load chart specifically designed for the crane shall be in the crane at all times.
- The crane must have a current annual inspection to include load test certification (within the last 12 months) that meets all state and federal safety standards. Documentation of this inspection must be available for review.
- A competent person will inspect the crane daily to ensure it is in safe operating condition. The daily crane inspection log provided within the crane manufacturer's operations manual shall be used. See also the requirements for monthly inspections, among others, in SOP HSE-303.
- All rigging equipment must be inspected by a competent person prior to use for signs of excessive wear; equipment found to be damaged will be tagged and removed from service.
- A qualified and competent Assembly/Disassembly (A/D) Director shall be assigned when cranes must be assembled onsite. The A/D Director is responsible for ensuring the crane is assembled and disassembled according to manufacturer requirements; performing training for the A/D crew; and ensuring sufficient ground conditions exist for crane placement; among other responsibilities (see SOP HSE-303).
- The assembly/disassembly process must comply with requirements in HSE-303, including having an AHA for the task.
- A critical lift plan shall be prepared when the lift is estimated to be greater than 75% of the crane capacity or when two cranes will be used to make a lift.
- A pre-lift meeting will be conducted to include all parties involved in that day's crane operation.
- Only one qualified person shall be designated to signal the crane operator. This person shall be thoroughly familiar with the ANSI standard method of hand signals and an illustration of these signals shall be posted at the job site.
- No personnel shall be permitted under the load at any time.
- Tag lines shall be attached to every load being made by the crane.

- The swing radius of the rear rotating superstructure (counterweight) of the crane shall be barricaded and no entrance allowed.
- Suspended loads shall not pass over workers or occupied buildings at any time.
- Complete the self-assessment checklist for crane-suspended personnel platforms whenever they are being used.
- AGVIQ- 2M HILL employees exposed to hazards posed by crane operations, must be trained in hazards awareness and control procedures. See requirements for training in HSE-303.

Power Line Safety

It must be determined whether equipment operations including assembly/disassembly, positioning, and crane operation (including traveling with a load) will occur in proximity to power lines within 20 feet (6.1 meters) for line voltage up to 350 kilo volts (kV), and within 50 feet (15.2 meters) for line voltage between 350 kV to 1000 kV. For power lines over 1000 kV, the distance must be determined by the utility/operator or qualified registered professional engineer in electrical power transmission and distribution.

If equipment operations are within proximity of aforementioned distances to power lines, one of the following options must be implemented to prevent encroachment and electrocution:

- **Option 1**: Deenergize and ground the power. Confirm from the utility/operator that the power line has been deenergized and visibly grounded at the worksite
- **Option 2**: If the voltage is not determined, ensure that no part of the equipment, load line, or load (including rigging and lifting accessories), gets closer than 20 feet (6.1m) by:
  - Conduct a planning meeting with the operator and other workers in the area to review the actions that will be taken to prevent encroachment and electrocution. Training requirements for working around energized power lines are described in Section 6.0, Training.
  - Use non-conductive tag lines.
  - Erect and maintain an elevated warning line, barricade or line of signs in view of the operator, either with flags or other high-visibility markings at 20 feet (1.6m) from the power line. A spotter must be used when the operator does not have clear line of sight to the elevated warning line.
  - To prevent encroachment, the operator can use a proximity alarm, or position a dedicated spotter with visual aids to demarcate the encroachment and constant communication access to the operator.

  If the line voltage can be determined, and if any part of the equipment, line load or load (including rigging and lifting accessories) would encroach within that specified distance listed in Table 1, then the requirements listed in Option 2 must be implemented.

TABLE 1
Minimum Clearance Distances

Voltage (nominal, kV, alternating current)	Minimum Clearance – Feet (meters)
Up to 50	10
Over 50 to 200	15
Over 200 to 350	20
Over 350 to 500	25
Over 500 to 750	35
Over 750 to 1000	45
Over 1000	Established by the utility owner/operator or by a qualified registered professional engineer in electrical power transmission and distribution

For equipment traveling within 20 feet (6.1m), under or near power lines without a load, the clearance distances described in Table 2 must be maintained and the following actions implemented.

- A dedicated spotter is assigned during equipment travel, positioned to effectively gauge the clearance distance, and is in continuous communication with the operator.
- During equipment travel, the boom/mast and support system are sufficiently lowered to ensure clearance distances are maintained, along with taking into consideration of the effects of speed and terrain.

TABLE 2
Minimum Clearance Distances While Traveling With No Load

Voltage (nominal, kV, alternating current)	Minimum Clearance – Feet (meters)
Up to 0.75	4
Over 0.75 to 50	6
Over 50 to 345	10
Over 345 to 750	16
Over 750 to 1000	20
Over 1000	Established by the utility owner/operator or by a qualified registered professional engineer in electrical power transmission and distribution

9.7.12 Demolition/Dismantling

(Reference CH2M HILL SOP # HSE&Q-305, Demolition)

(Reserved)

Demolition activities will not be performed as part of this TO. The requirements of EM 385 1-1, section 23 and 29 CFR 1926 Subpart DD are not applicable to the execution of this TO.

9.7.13 Drilling/Direct Push Technology

(Reference CH2M HILL SOP # HSE&Q-203, Drilling)

(Reserved)

Drilling will not be a part of this TO.

9.7.14 Electrical Safety

(Reference CH2M HILL SOP # HSE&Q-206, Electric Safety)

Several types of electrical hazards may be encountered during the execution of the project. These hazards might include, but not be limited to, hazards associated with the establishment of temporary construction site facilities, sampling near or adjacent to overhead utilities, use of generators/power sources, power cords or when using electric hand tools used during mobilization/demobilization operations. Where the electrical exposure hazards are possible in the work environment, the following standard work practices must be implemented.

- Review and implement all applicable components of CH2M HILL SOP # HSE&Q-206, Electrical Safety, except where other requirements may be more stringent.
- Maintain safe clearance distances between overhead power lines and sampling equipment unless the power lines have been verified as being de-energized and grounded or unless insulating barriers have been installed to prevent physical contact. To determine proper clearance from energized overhead electric lines, consult the reference table below.

Nominal System Voltage (kV)	Minimum Rated Clearance (feet)
Up to 50	10
51 - 200	15
201 - 350	20
351 – 500	25
501 – 650	30
651 – 800	35
801 - 950	40
951 - 1100	45

Clearance values calculated using:

(Initial kV-50kV) x (4 in/10 kV) x (1 ft/12 in) = increased distance (ft) over 10 ft. Add this value to 10 ft to yield minimum rated clearance (All dimensions are distances from live part to employee)
Reference: US Army Corps of Engineers, EM 385 1-1, 15 Sept 08, Table 11-1.

- Only qualified personnel (by training, experience, and/or licensure) are permitted to work on electrical systems.
- Do not tamper with or access electrical wiring and equipment unless qualified to do so. All electrical wiring and equipment must be considered energized until hazardous energy control procedures (i.e., lock-out/tag-out) are implemented.

- Inspect electrical equipment, power tools, and extension cords for damage prior to use. Do not use electrical equipment that is identified as needed repair, improperly grounded or insulated or not operating in accordance with the manufacturers intended requirements. Remove these items from service, label the equipment or device as "Damaged – Do Not Use". Ensure that all tools/equipment/power cords that are deemed damaged, dangerous or not operating in accordance with the manufacture's requirements are removed from service and repaired by an authorized manufacturer repair technician or rendered inoperable and properly dispose of.
- Extension cords must be:
  - Inspected before use and events that may have caused damage to the cord before being put back into service.
  - Equipped with third-wire grounding.
  - Covered, elevated, or protected from damage when passing through work areas.
  - Protected from pinching if routed through doorways.
  - Not fastened with staples, hung from nails, or suspended with wire.
- Ground Fault Circuit Interrupters (GFCIs) as the standard method for protecting employees from the hazards associated with electric shock;
  - GFCIs shall be used on all 120-volt, single phase 15 and 20-amphere receptacle outlets which are not part of the permanent wiring of the building or structure.
  - Most generators come with Ground Fault Circuit Interrupters (GFCI). Test the GFCIs daily to determine whether they are working. If a generator is not equipped with GFCI protected circuits plug a portable GFCI into the generator and plug appliances, tools and lights into the portable GFCI.
- Electrical power tools and equipment must be effectively grounded or double-insulated and Underwriters Laboratory (UL) approved.
- Operate and maintain electric power tools and equipment according to manufacturers' instructions.
- Protect all electrical equipment, tools, switches, and outlets from environmental elements.

9.7.14.1 Energized Electrical Work

(Reference CH2M HILL SOP HSE-221, *Energized Electrical*)

All electrical work shall be performed while components are de-energized as much as possible. For the few times that energized work is required, such as trouble shooting and testing, follow the below minimum controls.

Energized electrical work is defined as work performed on or near energized electrical systems or equipment with exposed components operating at 50 volts or greater. Working near energized live parts is any activity inside a Limited Approach Boundary.

All electrical systems shall be considered energized unless lockout/tagout procedures are implemented and verified.

Electrical wiring and equipment shall be de-energized prior to conducting work unless it can be demonstrated that de-energizing introduces additional or increased hazards or is unfeasible due to equipment design or operational limitations. When energized electrical work is the only means that work can be performed, all requirements of SOP HSE-221 must be implemented including the following:

- Only qualified personnel are permitted to work on unprotected energized electrical systems. These personnel shall complete Energized Electrical Safety Training.
- An Electrical Hazard Analysis must be performed to identify energized electrical safe work practices before any person approaches exposed live parts within the Limited Approach Boundary (as determined by the shock hazard analysis), by performing both shock hazard analysis and flash hazard analysis, which comprise the electrical analysis.
- The Energized Electrical Work Permit must be completed prior to working on unprotected energized electrical systems.
- Personnel designated as qualified persons working on live parts of energized electrical systems 480 volts and above shall implement the buddy system. Working on live parts of energized electrical systems 480 volts and above means actual contact with live parts or working within the Prohibited Approach Boundary, which is one inch (2.54 cm) for 480 volt systems.
- The buddy system requires the presence of an additional qualified person who shall stand by and render assistance, or summon help for the first person, in the event the first person is inadvertently shocked while performing the work. The second person shall not be assigned to additional distracting duties or tasks while the energized electrical work is being performed and shall know the location of the isolation device(s) for the equipment being worked on.
- Workers designated as qualified persons shall wear the required electric shock and arc-flash PPE, as specified by the qualified person responsible for the energized electrical operations.
- Safety signs, safety symbols or accident prevention tags, meeting applicable American National Standards Institute (ANSI) Standards, shall be used where necessary to warn employees about electrical hazards.
- Barricades shall be used in conjunction with safety signs where it is necessary to prevent or limit employee access to work areas containing live parts. Conductive barricades shall not be used where it may cause an electrical hazard. Barricades shall be placed no closer than the Limited Approach Boundary.
- If signs and barricades do not provide sufficient warning and protection from electrical hazards, an attendant shall be stationed to warn and protect unqualified employees. The primary duty and responsibility of an attendant providing manual signaling and alerting shall be to keep unqualified employees outside a work area where the unqualified employee might be exposed to electrical hazards. An attendant shall remain in the area as long as there is a potential for employees to be exposed to the electrical hazards.

- Employees shall not perform tasks near exposed energized parts where lack of illumination or an obstruction precludes observation of the work. Employees shall not reach blindly into areas that may contain energized parts.
- Work shall be performed in accordance with National Fire Protection Association (NFPA) 70E requirements (2012 edition).
- Follow all control measures and procedures identified on the Energized Electrical Work Permit.

9.7.15 Excavation Activities

(Reference CH2M HILL SOP # HSE&Q-307, Excavation & Trenching Safety)

Excavation activities will be executed in connection with the Underground Piping and Utilities Installation and Concrete Work. Because it is anticipated that soil within the designated excavation is anticipated to be classified as Type C soil in accordance with the OSHA Soil Classification system, the sides of the excavation areas will be sloped at a 1.5 H:1V ratio.

Because of the depth of the excavation is limited (0 to <4 feet below ground surface [bgs]) and there will be no worker exposure to open excavation edges or fall hazards as part of this proposed excavation work, the full and complete applicability of 29 CFR 1926, Subpart P, and EM 385 1-1, Section 25 Excavations and specifically Section 25.A.01, is limited. However, the information provided below is provided with the intent of addressing EM 385 1-1, 25.A.01.

9.7.15.1 Identification and Credentials of Competent Person

The designated excavation competent person for this project will be the project site supervisor and/or the SSHO (or alternates) named in Section 4.0 of this APP. These individuals have the requisite training, experience, certifications and other qualifications to act as the excavation competent person and have been so designated by their employer.

9.7.15.2 Planned Method for Confined Space Entry, Trench Access and Egress and Atmospheric Monitoring Processes

To facilitate access and egress of the excavation, an earthen ramp or stepped excavation will be utilized as a means of access and egress to the excavation for the purpose of performing excavation confirmation sampling. As the depth of the trench is less than 4 feet deep, hazardous atmosphere testing required by 29 CFR 1926, Subpart P is not applicable for this work.

9.7.15.3 Digging Permits (Excavation Permits)

The process for verifying underground utilities is detailed in section 9.7.6 Buried Objects/Utilities (locating) in this APP and will not be elaborated upon further in this section. Once the presence/location of all underground utilities is performed, if required a NAVFAC Excavation Permit will be issued by the GDA to allow the excavation work to proceed.

9.7.15.4 Other Excavation Activity Considerations

- Prior to implementing any site excavation activities, review and implement all applicable components of CH2M HILL SOP # HSE&Q-307, Excavation & Trenching Safety.
- The location of utility installations, such as sewer, telephone, fuel, electric, water lines, or any other underground installations that reasonably may be expected to be encountered during excavation work, shall be determined prior to opening an excavation. See section 9.7.6 Buried Objects/Utilities (locating) of this APP.

9.7.16 Fall Protection

(Reference CH2M HILL SOP # HSE&Q-310, Fall Protection)

Below are the hazard controls and safe work practices to follow when personnel or subcontractors are exposed to unprotected heights. Ensure the requirements in the referenced SOP are followed.

- Fall protection systems must be used to eliminate fall hazards when performing construction activities at a height of 6 feet (1.8 meters) or greater and when performing general industry activities at a height of 4 feet (1.2 meters) or greater.
- AGVIQ-CH2M HILL staff exposed to fall hazards must complete initial fall protection training by completing either the 10-Hour Construction Safety Awareness training course or the Fall Protection computer-based training module. Staff must also and receive project-specific fall protection training using the fall protection evaluation form attached to this HSP. Staff shall not use fall protection systems for which they have not been trained.
- The SSHO or designee must complete the Project Fall Protection Evaluation Form and provide project-specific fall protection training to all AGVIQ-CH2M HILL staff exposed to fall hazards.
- The company responsible for the fall protection system shall provide a fall protection competent person to inspect and oversee the use of fall protection system. AGVIQ-CH2M HILL staff shall be aware of and follow all requirements established by the fall protection competent person for the use and limitation of the fall protection system.
- When AGVIQ-CH2M HILL designs or installs fall protection systems, staff shall be qualified as fall protection competent persons or work directly under the supervision of an AGVIQ-CH2M HILL fall protection competent person.
- When horizontal lifelines are used, the company responsible for the lifeline system shall provide a fall protection qualified person to oversee the design, installation, and use of the horizontal lifeline.
- Inspect personal fall arrest system components prior to each use. Do not use damaged fall protection system components at any time, or for any reason. Fall protection equipment and components shall be used only to protect against falls, not to hoist materials. Personal fall arrest systems that have been subjected to impact loading shall

not be used. SSHO shall periodically inspect AGVIQ-CH2M HILL fall protection equipment using the Fall Protection Inspection Log form.

- Personal fall arrest systems shall be configured so that individuals can neither free-fall more than 6 feet (1.8 meters) or contact any lower level.
- Only attach personal fall arrest systems to anchorage points capable of supporting at least 5,000 pounds (2268 kg). Do not attach personal fall arrest systems to guardrail systems or hoists.
- Remain within the guardrail system when provided. Leaning over or stepping across a guardrail system is not permitted. Do not stand on objects (boxes, buckets, bricks, blocks, etc.) or ladders to increase working height on top of platforms protected by guardrails.
- Only one person shall be simultaneously attached to a vertical lifeline and shall also be attached to a separate independent lifeline.

9.7.17 Fire Prevention

9.7.17.1 Major Workplace Fire Hazards

The major workplace fire hazards are as follows:

- Storage or spillage of gasoline in approved portable containers (< up to 4 -5 gallon metal safety containers).
- Electrical fires from operating site generators
- Smoking in unauthorized/non-designated areas of the site.

Potential ignition sources of the above:

- Improper grounding or fuel pump equipment or generators
- Electrical malfunction of operating equipment
- Improper extinguishment of smoking materials
- Unauthorized hot work and improper hot work control procedures

9.7.17.2 Fire Prevention Measures

The information provided below is the minimum Fire Prevention procedures that must be engaged for the project site operations.

- Personnel shall ONLY be allowed to smoke in designated areas, where allowed at all. Designated area must be free of combustible, flammable or potentially explosive materials.
- The project supervisor or SSHO (when designated) shall be responsible for securing, inspecting and maintaining appropriate first response, portable type fire extinguisher equipment and ensure that such equipment is kept in a state of readiness and easily accessible.

- Flammable/combustible liquids must be kept in approved containers, and must be stored in an approved storage cabinet. Use only metal safety cans for storage and transfer of fuel and use funnels and nozzles during fueling operations. Flammable liquids shall be kept in closed containers or tanks when not in use.
- Personnel performing fuel dispensing operations to heavy equipment or small engine equipment shall be responsible for the fuel sources its delivery to the intended equipment. In the event of a spill or release, the person conducting the dispensing operation shall immediately notify the site supervisor so that appropriate corrective measures can be initiated.
- AGVIQ-CH2M HILL personnel incipient are only authorized to fight incipient stage fires to their level of training, and only when it is determined it is "safe"/appropriate to do so. Personnel responding to incipient stage fires shall consider their own personal safety when engaging such fires. Fires resulting from residual product in lines, tanks storage areas containing flammable/combustible waste should be handled by host facility or local agency Fire and Emergency Services. AGVIQ-CH2M HILL personnel ARE NOT considered Firefighting Organizations or Fire Brigades. Only "small/containable", incipient stage fires that are containable by the use of first response fire protection equipment (i.e. 2.5 to 20 lb ABC fire extinguishers) may be controlled by AGVIQ-CH2M HILL personnel. All other response shall be considered firefighting measures and shall be conducted by facility provided or public agency firefighting teams. However, site personnel who may be required to use portable first response type fire extinguishers shall receive training meeting the requirements of 29 CFR 1910.157(g) prior to or upon mobilization to the site.
- All flammable or combustible wastes must be kept in a fire-resistant, properly labeled covered container until removed from the site.
- Sources of open flames, sparks and heat shall not be left unattended.
- A good housekeeping program that provides for the prompt removal and disposal of accumulations of combustible scrap and debris shall be implemented on the site. Self-closing containers shall be used to collect waste saturated with flammable or combustible liquids. Only non-combustible or UL labeled nonmetallic containers may be used to dispose of waste and rubbish.
- All sources of ignition shall be prohibited within 50' of operations with a potential fire hazard.
- All sources of ignition shall be prohibited in areas where flammable and combustible liquids are stored, handled, and processed. Where it is necessary to identify such potential hazard suitable NO SMOKING, MATCHES, OR OPEN FLAME signs shall be posted in all such areas.
- Fire extinguishers will be provided so that the travel distance from any work area to the nearest extinguisher is less than 50 feet when 5 gallons or more of a flammable or combustible liquid is being used. Extinguishers must:
  - Be maintained in a fully charged and operable condition.

  - Be visually inspected each month.
  - Undergo a maintenance check each year.
  - The area in front of extinguishers must be kept clear.
  - Appropriately sized, easily accessible ABC fire extinguisher in work area. Fire extinguishers must be inspected monthly (inspection tag) and have an annual maintenance/inspection certification (tag) attached to the extinguisher.
  - Fire extinguishers shall be approved by a nationally recognized testing laboratory and labeled to identify the listing and labeling organization and the fire test and performance standard that the fire extinguisher meets or exceeds.

- Combustible materials stored outside should be at least 10 feet from any building.
- Mechanized equipment shall be shut down before and during fueling operations.
- Before conducting any hot work operations, a Hot Work Permit must be secured from the host facility designated fire department inspector/fire prevention officer, Government Designated Authority (GDA), or Agviq-CH2M HILL SSHO when welding, cutting, heating operations or other spark producing operations are performed unless otherwise indicated by the GDA.

9.7.18 Flight Line Safety

(Reserved)

No TO activities will occur on, within, or immediately adjacent to or require the crossing of flight lines.

9.7.19 General Practices and Housekeeping

Maintaining proper site housekeeping measures promotes the elimination of slip, trip and fall hazards and exhibits a perception of pride in our work product and habits. Poor housekeeping can result in the basis of citations under 29CFR1926.25(a) or other applicable regulations. Good housekeeping practices must be implemented on every AGVIQ-CH2M HILL controlled project site and at a minimum shall be as follows:

- Maintain good housekeeping at all times in all project work areas.
- During the course of executed project operations, construction, alteration, or repairs, form and scrap lumber with protruding nails, and all other debris, shall be kept cleared from work areas, passageways, and stairs, in and around buildings or other structures.
- Combustible scrap and debris shall be removed at regular intervals during the course of construction. Safe means shall be provided to facilitate such removal.
- Containers shall be provided for the collection and separation of waste, trash, oily and used rags, and other refuse. Containers used for garbage and other oily, flammable, or hazardous wastes, such as caustics, acids, harmful dusts, etc. shall be equipped with covers and appropriately labeled. Garbage and other waste shall be disposed of at frequent and regular intervals.

- Establish common paths of travel and keep them free from the accumulation of materials.
- Keep access to aisles, exits, ladders, stairways, scaffolding, and emergency equipment free from obstructions.
- Provide slip-resistant surfaces, ropes, and/or other devices to be used.
- Designate specific areas for the proper storage of materials.
- Store tools, equipment, materials, and supplies in an orderly manner.
- As work progresses, neatly store scrap and unessential materials or remove them from the work area.
- Provide containers for collecting trash and other debris and remove them at regular intervals.
- Clean up all spills quickly. Clean oil and grease from walking and working surfaces.

9.7.20 Hand and Power Tools

(Reference CH2M HILL SOP # HSE&Q 210, Hand and Power Tools)

Hand and power tools may be used intermittently during the support of all operations. When the use of hand and power tools is necessary to properly complete assigned tasks, the following work practices must be implemented, where applicable.

- Review and implement all applicable components of CH2M HILL SOP # HSE&Q 210, Hand and Power Tools except where other requirements may be more stringent.
- Disconnect power (electric, pneumatic) tools from energy sources when they are not in use, before inspecting them, performing cleaning/maintenance or when changing accessories (such as blades, bits, and cutters) so that an unexpected or accidental start-up of tool cannot occur.
- If an inspection of a power or hand tool indicates an item is in need repair, is improperly grounded or insulated or not operating in accordance with the manufacturers intended requirements, immediately remove the tool from service, label (or "tag") the equipment or device as "Damaged – Do Not Use". Ensure that all tools/equipment/power cords that are deemed damaged, dangerous or not operating in accordance with the manufacture's requirements are removed from service and repaired by an authorized manufacturer repair technician or rendered inoperable and properly dispose of.
- Hand tools will be used for their intended use and operated in accordance with manufacturer instructions and design limitations.
- Maintain all hand and power tools in a safe condition.
- Do not set power tools down in muddy or wet areas, which may damage the tool and/or or create a potential for electric shock.

- Use PPE (such as gloves, safety glasses, earplugs, and face shields) when exposed to a hazard from a tool. See table 1-1 of this **Attachment 1** (SSHSP) to this APP for details for Level D PPE.
- Do not carry or lower a power tool by its cord or hose.
- Portable electric power tools will be plugged into GFCI-protected outlets.
- Portable power tools will be UL listed and have a three-wire grounded plug or be double insulated.
- Safety guards on tools must remain installed while the tool is in use and must be promptly replaced after repair or maintenance has been performed.
- Store tools properly in a place where they will not be damaged or come in contact with hazardous materials.
- If a cordless tool is connected to its recharge unit, both pieces of equipment must conform strictly with electrical standards and manufacturer's specifications.
- Tools used in an explosive environment must be rated for work in that environment (that is, intrinsically safe, spark-proof).
- AGVIQ-CH2M HILL personnel must be provided proper training or be qualified by previous experience prior to using powder actuated tools/devices.
- When using a tool with a blade, stroke or cut away from the body with a smooth motion, where ever feasibly possible. Be careful not to use excessive force that could damage the tool, the material being cut or unprotected hands.

9.7.20.1Machine Guarding

Machine guarding for this task order is primarily associated with land clearing operations, but can also be applicable were power tools are used. The following measures must be considered to eliminate potential accidents and injuries with regard to machine guarding requirements.

- Ensure that all machine guards are in place to prevent contact with drive lines, belts, chains, pinch points or any other sources of mechanical injury.
- Maintenance and repair of equipment that results in the removal of guards or would otherwise put anyone at risk requires lockout of that equipment prior to work and this APP would have to be updated to include requirements for implementing a hazardous energy control program.

9.7.20.2Knife Use

Knives (fixed/utility) shall not be used. If it is demonstrated that a knife is the right tool for the job, this plan will be amended and the activity that knife use will be used for shall be reviewed.

9.7.20.3 Responsibilities

- Supervisors with assistance from the SSHO are responsible for funding and ensuring the correct tool is being used, employees wear the proper PPE when using knives, and they have reviewed this policy.
- Employees are responsible for having and utilizing the proper PPE while performing an activity requiring the use of a knife. Employees are also responsible for understanding the proper use of a knife.

9.7.20.4 Glove Requirements

- In general, Kevlar cut resistant gloves are to be worn when using a knife in an occupational setting.
- Other types of gloves may be required and will be identified within the AHA / written procedure. Example - Leather gloves may be worn when using the acetate sleeve cutter.

9.7.20.5 Standard Control Measures for Knife Use

- All employees that will use a knife must be trained or have experience with the proper use of a knife, prior to using it.
- When using a knife or blade tool, stroke or cut away from the body with a smooth motion. Be careful not to use excessive force that could damage the tool, the material being cut, or unprotected hands.
- When using a knife always cut away from yourself.
- Many tasks using a utility knife require a knife edge but not a sharp point. For these tasks you can add protection against puncture wounds by using a rounded-tip blade.
- If you use a folding knife, it must be a locking blade type.
- Never use a knife that will fold under pressure.
- If you use a fixed blade knife, make sure there is a handle guard to keep your hand from slipping forward. Also, make sure the handle is dry and non- greasy/slippery to assure a better grip.
- When cutting, make the force of the cut carry the blade away from any part of your body. If you have a peculiar situation where this is not possible, protect yourself with a leather apron, or other material placed between you and the blade. Consider putting the material to be cut in a vise, or other holding device.
- If you carry a fixed blade knife, use a sheath or holder.
- Store utility knives safely, retract the blade or sheath an open blade before storing. Never, leave a knife with the blade exposed on the floor, on a pallet, on a work surface, or in a drawer or cabinet.
- Keep your knife sharp. A dull blade requires you to use more force to cut, and consequently increases the risk of slip or mistake.

- Knives used on the job, but not carried with you, must be properly stored when not in use.
- Never use a defective knife.
- Utility knife blades must be used, recognize that they are brittle and can snap easily. Don't bend them or apply side loads to them by using them to open cans or pry loose objects. Use the knife only to cut. It was not designed to work as a pry bar, screw driver, hole punch, and other assorted things that make it seem so easy.
- Stay focused on the cutting job. It only takes a second of inattention with a sharp blade to produce a serious cut. Letting the mind wander or talking with others while using a knife greatly increases the risk of an accident and injury. If you are interrupted while working with a knife, stop cutting, retract the blade, and place the knife down on a secure surface before dealing with the interruption. You should never continue cutting while distracted! As always, utilize the hierarchy of controls and first attempt to engineer out the hazard and frequently ask ourselves do we have the right tool for the job.

Examples of Preferred Tools and Kevlar Cut Resistant Gloves

A safety spring provides for automatic blade "shoot-back" into the handle when contact w/cutting surface is lost.

9.7.21 Haul Trucks

It is anticipated that haul trucks will be used for the delivery of products or materials to be incorporated into the project, and for the delivery and pick-up of heavy equipment.

All haul trucks must following the designated for the project site project. The site access and haul road for the project site has not been authorized by NAVFAC at the time this APP was prepared. It is assumed that the project haul route will be established on or before the project pre-construction meeting, but at this time it is anticipated to be as identified, in Figure 2-4 of the WP.

Where haul trucks are used on the project, the following work practices shall be implemented.

- Haul truck operators should ensure all persons are clear before operating trucks or equipment. Before moving, operators should sound horn or alarm. All haul trucks shall be equipped with an operational backing alarm. Haul trucks or equipment with restricted visibility should be equipped with devices that eliminate blind spots or a spotter.
- Employees shall stay off haul roads. When approaching a haul area, employees should make eye contact and communicate their intentions directly with the equipment operator.
- If material is being delivered to the site, personnel must not be positioned within the potential “flip-over” radius of the haul truck.
- Never approach operating equipment/vehicles from the rear. Always make positive contact with the haul truck driver, and confirm that the operator has stopped the motion of the truck or does not intent to move the truck before proceeding.
- Where haul truck operators must exit the truck within the site boundary, the driver must be in the same level of PPE, maintain the same level of training and meet the same medical monitoring criteria as other site personnel in the work area. If this condition cannot be maintained, haul truck operators must remain in their truck cabs with the windows closed.
- Do not allow haul trucks operators to raise dump bed bodies underneath or in close proximity to overhead utilities or pull toward overhead utilities with dump bodies in the raised position. Haul truck operators must be cognizant of utility pole guy wires and transformers in the accessed work area.

9.7.22 Heavy Equipment

(Reference CH2M HILL SOP # HSE&Q 306, Earth Moving Equipment)

Small heavy earthmoving equipment (track excavator, front-end load, bulldozer etc.) will be used to complete this TO. When heavy equipment is used on the project, the following work procedures shall be exercised by AGVIQ-CH2M HILL personnel who may be designated to operate or supervise the operation of site heavy equipment.

- AGVIQ-CH2M HILL authorizes only those employees qualified by training or previous experience to operate heavy equipment.
- Equipment must be checked at the beginning of each shift to ensure the equipment is in safe operating condition and free of apparent damage. The check should include service brakes, parking brakes, emergency brakes, tires, horn, back-up alarm, steering mechanism, coupling devices, seat belts, and operating controls. All defects will be corrected before the equipment is placed in service.
  - Documentation of this inspection must be maintained onsite at all times.
  - Refer to the Earthmoving Equipment Inspection Form found in **Attachment 3** of this document.
- Equipment must be on a stable foundation such as solid ground or cribbing; outriggers are to be fully extended.
- Seat belts shall be used by all personnel operating AGVIQ-CH2M HILL equipment.
- Equipment must not be used to lift personnel; loads must not be lifted over the heads of personnel.
- Equipment, or parts thereof, which are suspended must be substantially blocked or cribbed to prevent shifting before personnel are permitted to work under or between them. All controls will be in a neutral position, with the motors stopped and brakes set.
- Equipment that is operating in reverse must have a reverse signal alarm distinguishable from the surrounding noise or a signal person when the operator's view is obstructed.
- When equipment is used near energized power lines, the closest part of the equipment must be at least 10 feet from power lines < 50 kV. Check the electric safety section of this APP for separation distances when working adjacent to overhead energized power lines in excess of 50 kVA person must be designated to observe clearances and give timely warning for all operations where it is difficult for the operator to maintain the desired clearance by visual means. All overhead power lines must be considered energized until the electrical utility authorities indicate that it is not an energized line and it has been visibly grounded.
- Underground utility lines must be located before excavation begins. See "Procedures for Locating Buried Utilities" contained in this APP for additional information.
- Operators loading/unloading from vehicles are responsible for seeing that vehicle drivers are in the vehicle cab or in a safe area.

- The parking brake will be set whenever equipment is parked; wheels must be chocked when parked on inclines.
- When heavy equipment is not in operation, the blade/bucket must be blocked or grounded; the master clutch must be disengaged when the operator leaves the cab. When equipment is unattended, power must be shut off, brakes set, blades/buckets landed, and shift lever in neutral.

9.7.23 Land Clearing Operations - General

Minor land clearing involving the removal of brush and ground vegetation may be required to facilitate the construction operations. A task specific AHA shall be implemented for all site land clearing operations.

- The minimum personal protective equipment (PPE) to be used by ground personnel performing site clearing operations shall be as follows:
- Appropriate work clothes (long pants, shirts, sturdy hard-toe work boots with sufficient ankle support)
- ANSI Z87 approved eyewear with a face shield (ground personnel not protected by closed equipment cabs or using chainsaws/brush cutters)
- A hardhat with the visor facing forward
- Leather work gloves
- Long-sleeved shirt
- Ear muffs (or equivalent hearing protection)
- Chainsaw chaps, properly sized for the employee
- Note: For ground personnel engaged in land clearing operations, the substitution of high visibility clothing (reflective/high visibility vests) may be considered where there is potential for worker entanglement in heavy brush growth or working in proximity to rotating heavy equipment.
- The remaining information in this section identifies general work practices that shall be implemented on-site in connection with the execution of land clearing operations.

9.7.23.1 Land Clearing Via Hydraulic Equipment

- Where it is determined that hydraulic mowing equipment (i.e. brush hog) must be used to facilitate site clearing objectives, the following shall be applicable
- Only qualified personnel, by training or previous experience, shall operate hydraulic land clearing heavy equipment.
- Only essential person shall be involved these operations. Sufficient distance must be maintained by ground support personnel or personnel observing the operations.
- Ensure that equipment kill switches are properly operating and accessible by equipment operators.

- Operators should not operate equipment on steep, slippery, or uneven slopes that could cause the equipment to flip over or otherwise become unstable to the point where operators or ground personnel could become exposed to the engaged equipment.
- Ensure all mechanic guards or protective devices over mower discharge chutes are in place.
- Operators shall review or be knowledgeable of equipment manufacturer manuals to ensure that the mower is operated in accordance with manufacturer's parameters.

9.7.24 Lock-Out/Tag-Out

(Reference CH2M HILL SOP # HSE&Q 310, Lock Out Tag Out)

The only identified site operations where the lock-out/tag-out procedures will need to be implemented is to inspect the lock-out preformed on the well by American Water. Therefore the requirements to develop a hazardous energy control (HEC) program to address the control of hazardous energy sources as applicable to the requirements 29 CFR 1910.147, 29 CFR 1926, Subpart K or EM 385 1-1, section 12 is not applicable to the execution of this TO.

However, AGVIQ-CH2M HILL will implement the following controls:

- Standard lockout/tagout procedures include the following six steps: 1) notify all personnel in the affected area of the lockout/tagout, 2) shut down the equipment using normal operating controls, 3) isolate all energy sources, 4) apply individual lock and tag to each energy isolating device, 5) relieve or restrain all potentially hazardous stored or residual energy, and 6) verify that isolation and deenergization of the equipment has been accomplished. Once verified that the equipment is at the zero energy state, work may begin.
- All safe guards must be put back in place, all affected personnel notified that lockout has been removed and controls positioned in the safe mode prior to lockout removal. Only the individual who applied the lock and tag may remove them.

9.7.25 Manual Lifting

(Reference CH2M HILL SOP # HSE&Q 112, Manual Lifting)

Manual lifting is likely to occur during many phases of the project, but especially during all mobilization and demobilization activities as described herein and sampling events. Personnel executing assigned tasks where manual lifting is required should use the following procedures to help reduce the potential for personal injury.

- AGVIQ-CH2M HILL personnel should notify supervisors or designated safety representatives of pre-existing medical conditions that may be aggravated or re-injured by lifting activities, such that AGVIQ-CH2M HILL may evaluate safe operational procedures with regard to the required task.
- Perform a muscle stretching routine or work warming regiment before engaging in manual lifting operations.
- Use proper lifting techniques (use of knees and not back) when lifting any object.

- Plan storage and staging to minimize lifting or carrying distances.
  - Split heavy loads into smaller loads.
  - Use mechanical lifting aids whenever possible.
  - Have someone assist with the lift— especially for heavy (>40 lbs.) or awkward loads. Note: If AGVIQ-CH2M HILL personnel are not capable of lifting 40 lbs., seek assistance from a team member to split the load.
  - Make sure the path of travel is clear prior to the lift.

9.7.26 Noise

(Reference CH2M HILL SOP # HSE&Q 108, Hearing Conservation Program)

Unprotected exposure to excessive noise levels may lead to gradual and permanent hearing loss. The greater the intensity of a noise and the longer a person is exposed to the noise, the greater the chance of hearing loss. A hearing loss can be permanent or temporary. After certain noise exposures, a person may experience a temporary threshold shift (hearing loss) that results in the inability to hear certain sounds. The ability to hear will usually return. However, repeated or intense noise exposure can prevent this recovery, resulting in permanent hearing loss.

Employee hearing conservation is particularly important for the following site conditions/operations:

- Working around or adjacent to heavy earthmoving equipment.

Each employee is responsible for the following:

- Notify the site supervisor or SSHO of high-noise-level areas.
- Wear hearing protection when required.
- Complete noise training and audiometric testing (as required).
- Hearing protection will be worn when operations occur within or adjacent to high-noise sources (i.e. potentially exceeding 85 dB).

9.7.27 Pressure Washing Operations

(Reserved)

Pressure Washing is not anticipated for this TO.

9.7.28 Sample Handling

Sample handling, packaging, and preservation will primarily be conducted during system start-up operations. Proper work practices and procedures to be followed during sampling activities include:

- Avoiding all skin contact with water, soil, sediment or debris of undetermined chemical characterization or material that is known to be impacted by site COCs.

- PPE and Air Monitoring requirements shall be executed in accordance with in accordance with tables 1-1 and 1-2, respectively, of **Attachment 1** (SSHSP) of the APP to minimize potential dermal and respiratory exposures to identified site contaminants of concern while conducting sample collection or characterization of potentially contaminated media (soil, water, drilling fluids/cuttings, PPE, soil vapor, etc.). In addition, good personal hygiene practices and procedures must be maintained (see section 1.13, **Attachment 1** (SSHSP) of this APP).
- Caution should be exercised when filling bottles containing acid or base preservatives. Both liquid and vapor phases of acid can cause severe burns.
- Following sample collection, sample container lids should be tightened securely to prevent any leaks, and the containers should be rinsed with clean water to ensure that they are free of chemical constituents. Sample activities, sample collection, and equipment decontamination procedures.

9.7.29 Slips, Trips and Falls

Slip, trip and fall hazards exist in virtually ALL work environments. Even though slip, trip and fall hazards are typically thought of as posing low risk to workers, they account for a large percentage of worker injuries. As such, workers should be exercise caution about becoming complacent to recognizing and removing slip, trip and fall hazard from designated work areas. To eliminate slip, trip and fall hazards from the work place the following should be implemented.

- Walk or climb only on equipment and/or surfaces designed for personnel access.
- Maintain three points of contact when entering or exiting heavy equipment or when climbing or working from ladders.
- Observe, (mark where appropriate) and avoid areas of unprotected holes, ramps, drainage areas, and ground penetrations or protrusions (curbs, utility structures etc). If these conditions cannot be corrected, mark these hazards (i.e. high visibility pant, traffic cones etc) so that workers may recognize and avoid them. Only mark where it does not mar or destroy government property, otherwise barricade as appropriate.
- Employees walking in ditches, uneven surfaces, swales and other drainage structures adjacent to roads, across undeveloped land or in controlled industrial work/process areas must use caution to prevent slips and falls, which can result in twisted or sprained ankles, knees, and backs.
- Clear/remove materials from pathways and commonly traveled areas as soon as possible.
- Whenever possible work from areas which have flat, stable surfaces and do not enter steep sided ditches/excavations.
    - Sturdy, hard toe boots that provide sufficient ankle support shall be used on AGVIQ-CH2M HILL project site.

9.7.30 Stairways and Ladders

(Reference CH2M HILL SOP # HSE&Q 214, Stairways and Ladders)

Below are the hazard controls and safe work practices to follow when using stairways and ladders. Ensure the requirements in the referenced SOP are followed.

- Stairway or ladder is generally required when a break in elevation of 19 inches (48.3 cm) or greater exists.
- Personnel should avoid using both hands to carry objects while on stairways; if unavoidable, use extra precautions.
- Personnel must not use pan and skeleton metal stairs until permanent or temporary treads and landings are provided the full width and depth of each step and landing.
- Ladders must be inspected by a competent person for visible defects prior to each day's use. Defective ladders must be tagged and removed from service.
- Always obey and pay attention to warning labels or stickers on the specific ladder being used.
- Ladders must be used only for the purpose for which they were designed and shall not be loaded beyond their rated capacity.
- Ladder safety training on safe use (e.g., review SOP HSE-214 as part of a safety meeting) must be documented and kept with the project files.
- Only one person at a time shall climb on or work from an individual ladder.
- User must face the ladder when climbing; keep belt buckle between side rails.
- Ladders shall not be moved, shifted, or extended while in use.
- User must use both hands to climb; use rope to raise and lower equipment and materials.
- Straight and extension ladders must be tied off to prevent displacement.
- Ladders that may be displaced by work activities or traffic must be secured or barricaded.
- Personnel climbing ladders shall face the ladder and maintain 3 points of contact with the ladder.
- Portable ladders must extend at least 3 feet (91.5 cm) above landing surface.
- Straight and extension ladders must be positioned at such an angle that the ladder base to the wall is one-fourth of the working length of the ladder.
- Stepladders are to be used in the fully opened and locked position.
- Users are not to stand on the top two steps of a stepladder; nor are users to sit on top or straddle a stepladder.

- Fixed ladders ≥ 24 feet (7.3 meters) in height must be provided with fall protection devices.
- Fall protection should be considered when working from extension, straight, or fixed ladders greater than six feet (1.8 meters) from lower levels and both hands are needed to perform the work, or when reaching or working outside of the plane of ladder side rails.

9.7.31 Vacuum Truck Operations

(Reserved)

The use of vacuum trucks will not be required for the execution of this TO.

9.7.32 Vehicular Traffic (Exposure to)

(Reference CH2M HILL SOP # HSE&Q 216, Traffic Control)

The site is removed from vehicular traffic. The only significant anticipated employee exposure to vehicular traffic will be that traffic associated use and parking of site support vehicles. The information provided below is intended to provide standard work practices must be exercised when personnel are working in or around traffic, haul truck routes or near an area where traffic controls have been established.

- When parking your vehicle, park in a manner that will allow for safe exit from vehicle, and where practicable, park vehicle so it can serve as a barrier.
- Shut off and secure Site vehicles prior to exiting them. Park on level ground where possible. If parking on an incline, engage parking brake. If the vehicle has a manual transmission, ensure the transmission is in gear (not neutral) and the parking brake is engaged before exiting the vehicle.
- Exercise caution when exiting traveled way or parking along street— avoid sudden stops, use flashers, etc.
- All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests.
- Eye protection should be worn to protect from flying debris.
- Remain aware of factors that influence traffic-related hazards and required controls— sun glare, rain, wind, limited sight-distance, hills etc.
- Always remain aware of an escape route, such as behind an established barrier or parked vehicle.
- Always pay attention to moving traffic – never assume drivers are looking out for you.
- Work as far from traveled way as possible to avoid creating confusion for drivers.
- When workers must face away from a haul truck to perform assigned duties, a "buddy system" should be used, where one worker is looking toward traffic.

- Work area should be protected by a physical barrier.
- Lookouts should be used when physical barriers are not available or practical.

In addition to the above work practices, AGVIQ-CH2M HILL personnel and AGVIQ-CH2M HILL subcontractors shall adhere to the following procedures while operating motor vehicles or other motorized equipment on military/government facilities.

- Always use a seat belt while driving on military/government controlled facilities.
- Always observe posted speed limits, traffic signs and signals.
- Never use a cell phone or two-way radio while driving on military/government controlled facilities.

Violating these requirements may result in loss of military/government facility driving privileges.

9.7.33 Visible Lighting

Site work should be performed during daylight hours whenever possible. Work conducted during hours of darkness (including dusk and dawn) requires the set-up of supplemental lighting equipment. (Note: A general "rule of thumb" is that the illumination intensity must be sufficient to read a newspaper without difficulty).

At this time, it is that no work executed under this TO will be performed at night. If work is to be performed at night, a night operations lighting plan shall be developed to ensure that all activities. Although it is not anticipated that work executed under this TO will be performed during dusk, dawn or night time periods, the chart below provides a reference for illumination requirements for various construction related work environments.

Illumination (Foot Candles)	Illumination (Lux)	Area of Operation
5	~ 55	General construction area lighting
3	~ 33	General construction areas, concrete placement, excavation and waste areas, access ways, active storage areas, loading platforms, refueling, and field maintenance areas
5	~ 55	Indoors: warehouses, corridors, hallways, and exit ways
5	~ 55	Tunnels, shafts, and general underground work areas: (Exception: minimum of 10 foot-candles is required at tunnel and shaft heading during drilling, mucking, and scaling. Bureau of Mines approved caplights shall be acceptable for use in the tunnel heading)
10	~ 108	General construction plant and shops (e.g., batch plants, screening plants, mechanical and electrical equipment rooms, carpenter shops, rigging lofts and active store rooms, mess halls and indoor toilets and workrooms.)
30	~ 323	First aid stations, infirmaries, and offices

Notes:

A **foot candle** is a unit of illumination on a surface that is everywhere one foot from a point source of one candle.
A **lux** is a unit of measurement of the intensity of light. It is equal to the illumination of a surface one meter away from a single candle.

CONVERSIONS

Foot Candles (FC) = Lux x .0929

Lux = Foot candles x 10.76 - (i.e.: 50 FC = 538 LUX)

The following safe work practices shall be considered with regard to lighting in the workplace.

- Do not enter poorly lit areas without first providing portable illumination.
- Do not use non-explosion proof lighting in areas of flammable or combustible gases or liquids.

9.7.34 Welding or Cutting Operations

(Reference CH2M HILL SOP # HSE&Q 314, Welding & Cutting)

It may be required to perform cutting/welding operations during system installation. Where cutting (or welding) activities are executed on-site, the following processes and precautions must be executed.

- Review and implement all applicable components of CH2M HILL SOP # HSE&Q 314, Welding & Cutting.
- Secure a NAVFAC hot work permit as required for welding and cutting activity and exercise Fire Prevention measures identified in this APP.

- Exercise appropriate fire prevention measures such maintaining appropriate size, type and quantity of fire extinguishers in the work area, pre-wet area surrounding the cutting or welding operation, protect the surrounding cutting area with fire proof materials and remove flammable or combustible materials from the area where welding and cutting operations are to be engaged. Station a fire watch adjacent cutting or welding work zone but still minimize the total amount of personnel in the work area to "essential personnel" only.
- Prior to performing any cutting operations, evaluate work areas for the potential presence or build-up of hazardous atmosphere conditions that would require the use of a multi-gas meter (LEL, O2, H2S, CO) to verify there are no potentially explosive conditions or hazardous atmospheres in the work area. If the potential exists, verify atmospheric conditions of the work area and document readings. Perform periodic checks of the work area for the duration of the welding and cutting procedure.
- During welding or cutting activities, use protective eye equipment which meets the shading where light emitting energy is generated. Use face protection, as necessary to mitigate injuries to the face that may be associated with the selected cutting or welding method. Protective equipment for these activities shall meet the requirements of 29CFR19126.102, Eye and Face Protection.
- Wear a face shield and fire resistant clothing (i.e. welding leathers) during when cutting with an oxy-acetylene torch or similar cutting equipment and when performing welding operations.
- Only qualified personnel (by training or experience) are permitted to operate cutting or welding equipment.
- Wear fire retardant clothing during when cutting with an oxy-acetylene torch or similar cutting equipment and when performing welding operations.
- During any welding and cutting operations, ensure that sparks are not directed towards the location of 1) flammable/combustible materials 2) other site personnel 3) property that could be damaged.
- During any cutting operations, ensure that sparks are not directed toward the location of 1) flammable/combustible materials, 2) other Site personnel, or 3) property that could be damaged.
- Cutters, welders, and their supervisor shall be trained or possess sufficient experience to perform the safe operation of their equipment, cutting practices cutting. Proper training in respiratory and fire protection may also be applicable.
- All cutting equipment (i.e. cutting heads, hoses, cylinders and values) and welding stingers shall be inspected before each use to ensure that all required safety devices and ancillary equipment are in place and properly functioning. Defective equipment shall be removed from service, replaced or repaired, and re-inspected before again being placed in service.

- Coatings that exist on surfaces, which may potentially create hazardous fumes (i.e. Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Chromium (VI), Cobalt, Copper, Lead, Manganese, Mercury, Nickel, Ozone, Selenium, Silver, or Vanadium) when ground, heated or otherwise cut, shall be removed a sufficient distance from the area to be heated, to ensure any temperature increase of the un-stripped metal will not be appreciable. Whenever these materials are encountered in confined spaces, local mechanical exhaust ventilation and personal respiratory protective equipment shall be used. The use of local mechanical exhaust ventilation systems that permit the re-entry of exhaust air back into the work area, or local exhaust which incorporate a system for the filtration and recirculation of exhaust air back into the work area shall not be permitted. Whenever these materials, except beryllium and chromium (VI), are encountered in outdoor operations, and local mechanical exhaust ventilation systems sufficient to reduce and maintain personal exposures to within acceptable limits are not provided, then appropriate respiratory protective equipment shall be used.
- When cutting, welding or heating toxic surface coatings (paints, preservatives, surface stripping chemicals, etc.) in enclosed spaces, all surfaces covered with the coatings shall be stripped of such for a distance of at least 4 in (10.1 cm) from the area of heat application or the employees shall be protected by airline respirators.
- Plasma cutting shall employ local mechanical exhaust ventilation or other means adequate to remove the fumes generated. For hoses and hose connections used in cutting operations the following shall be applicable:
- Fuel gas hose and oxygen hose shall be readily distinguishable from each other.
- Oxygen and fuel gas hoses shall not be interchangeable. A single hose having more than one gas passage shall not be used.
- Hose couplings of the type that can be unlocked or disconnected without a rotary motion are prohibited.
- Hose and hose connectors that have been subject to flashback or shows evidence of severe wear or damage shall be tested to twice the normal pressure to which it is subjected, and in no case less than 300 psi (2068.4-kPa) gauge. Damaged hose and hose connectors, or hose and hose connectors in questionable condition, shall not be used.
- When parallel runs of oxygen and fuel gas hose are taped together, not more than 4 out of every 12 in (10 out of every 30.4 cm) shall be covered by tape.
- Boxes used for the storage of gas hose shall be ventilated.
- Hose connections shall be clamped or otherwise securely fastened in a manner that will withstand, without leakage, twice the pressure to which they are normally subjected in service, but not less than 300 psi (2,068 kPa) gauge.

For torches used in cutting operations the following shall be applicable:

- Torches shall be inspected before each use for leaking shutoff valves, hose couplings, and tip connections. Defective torches shall not be used.
- Hoses shall be purged individually before lighting the torch for the first time each day. Hoses shall not be purged into confined spaces or near ignition sources.
- Clogged torch tip openings shall be cleaned with suitable cleaning wires, drills, or other devices designed for such purposes.
- Torches shall be lighted by friction lighters or other approved devices, not by matches or from hot work.
- Torch valves shall be closed and the gas supply shut off whenever work is suspended.
- The torch and hose shall be removed from confined spaces whenever work is suspended

Protective devices for cutting operations shall include the following:

- Oxy fuel gas, and other oxygen-fuel gas welding and cutting systems using cylinder-regulator-hose-torch shall be equipped with both a reverse-flow check valve and a flash arrestor, in each hose, at the torch handle or at the regulator.
- Connection of multiple sets of oxyacetylene hoses to a single regulator on a single set of oxyacetylene tanks may only be accomplished by installing a commercially available fitting approved by Compressed Gas Association (CGA) standards and listed by a nationally-recognized testing laboratory. The fitting shall be installed on the output side of the regulator and shall have a built-in shut-off valve and reverse-flow check valve on each branch.
- When oxygen-fuel gas systems are manifolded together the provisions of NFPA 51 shall apply.
- Acetylene regulators shall not be adjusted to permit a discharge greater than 15 psi (103.4 kPa) gauge.

9.7.34.1 Compressed Gas Cylinders

Although it is not anticipated, the use of compressed gas cylinders may be required to support cutting/welding operations during unanticipated repair operations for heavy equipment or dredging equipment. Where compressed gas cylinders are required to facilitate welding or cutting operations associated with welding or cutting operations the following must be executed.

- Cylinder valves must be closed when cylinders are not being used and when cylinders are being moved. Cylinders being transported, moved, or stored shall have valve protection caps installed.
- When transported by motor vehicle, hoisted, or carried, cylinders shall be in the vertical position.

- Cylinders shall be hoisted by a cradle, slingboard, or pallet designed to do so, and not by magnets or slings. Valve protection caps shall not be used to lift cylinders.
- Cylinders shall be kept from being knocked over by a chain, cylinder truck, or steadying device.
- Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials by a minimum of 20 feet or by a noncombustible barrier at least 5 feet high having a fire resistant rating of at least one half hour.
- Inside of buildings, cylinders shall be stored in well-ventilated, dry locations at least 20 feet from highly combustible materials. Cylinders should be stored in definitely assigned places away from elevators, stairs, or gangways. Assigned storage areas shall be located where cylinders will not be knocked over or damaged.
- During use, cylinders shall be kept far enough away from the actual welding and cutting operations to prevent sparks, hot slag, or flames from reaching them. When impractical, fire resistant shields shall be provided.
- Before a regulator is connected, the valve shall be opened slightly and closed immediately. This is referred to as "cracking" and is intended to clear the valve of dust or dirt. The person cracking the valve shall stand to the side of the outlet. The valve of a fuel-gas cylinder shall not be cracked where the gas could reach an ignition source.
- Cylinders shall not be placed where they can become part of an electrical circuit.
- Cylinders containing oxygen or fuel-gas shall not be taken into confined spaces.
- Cylinders, valves, couplings, regulators, hoses, and apparatus shall be kept free of oil and grease.
- If cylinders are frozen, warm (not boiling) water shall be used to thaw them.
- Fuel-gas cylinder valves shall not be opened more than 1 ½ turns, for quick closing.
- When a special wrench is used to open a cylinder valve, it shall be left in position on the valve. Cylinder valves shall be closed when work is finished.
- No damaged or defective cylinders shall be used. If a leak should develop at a fuse plug or other safety device, the cylinder shall be removed from the work area.
- No one except the owner of the cylinder or authorized agent shall refill a cylinder nor attempt to mix gases in a cylinder.
- Cylinders should be secured in an upright position at all times.
- Cylinders must be shielded from welding and cutting operations and positioned to avoid being struck or knocked over; contacting electrical circuits; or exposed to extreme heat sources.
- Cylinders must be secured on a cradle, basket, or pallet when hoisted; they may not be hoisted by choker slings.

9.7.35 Working Alone

(Reserved)

No site personnel will be allowed to work alone on this project.

9.7.36 Working Around Material Handling Equipment

(Reserved)

Working around material handling equipment is not anticipated for this TO.

9.7.37 Working on or Over Water

(Reserved)

It is not anticipated that working on or over water will not be encountered on this TO.

9.8 Hazard Communication Program (06.B.01)

(Reference CH2M HILL SOP # HSE&Q 316, Rigging
TIKIGAQ Corporation Hazard Communication Program)

A hard copy of the AGVIQ, LLC, and CH2M HILL, Inc. Hazard Communication program information and MSDS material shall be provided at the project site.

In general, the site supervisor or SSHO will be the main contact in any onsite emergency coordination or communication situation and will ensure offsite emergency agencies have been contacted prior to the start of and verify that emergency contact numbers contained in this APP are accurate/operational work. The site supervisor or SSHO will communicate with all potential emergency response organizations that would respond to an on-site emergency condition. In the event that during an emergency situation, the primary site supervisor or SSHO is not available or not capable of performing this function, an alternate site supervisor or SSHO or Site Supervisor can fulfill these duties. The site supervisor or SSHO or designee will serve as the Hazard Communication Coordinator, and will perform the following:

- Review the COCs and other applicable hazard communication information contained this APP.
- Request or confirm locations of MSDSs from the client, contractors, and subcontractors or material vendors for chemicals to which AGVIQ-CH2M HILL employees are potentially exposed. Maintain MSDSs in this APP (**Attachment 6**).
- Complete an inventory of chemicals brought onsite. See Attachment 6 of this APP. Give employees required chemical-specific HAZCOM training information using the format included in **Attachment 7** of this APP.
- Confirm that an inventory of chemicals brought onsite is available.
- Prior to, or as chemicals arrive onsite, obtain an MSDS for each hazardous chemical.
- Label chemical containers with the identity of the chemical and with hazard warnings, and store properly.

- Store all materials properly, giving consideration to compatibility, quantity limits, secondary containment, fire prevention, and environmental conditions.

9.8.1 Shipping and Transportation of Chemical Products

Chemicals brought to the site might be defined as hazardous materials by the U.S. Department of Transportation (DOT). All staff who ship the materials or transport them by road must receive training in shipping dangerous goods. All hazardous materials that are shipped (e.g., via Federal Express) or are transported by road must be properly identified, labeled, packed, and documented by trained staff. Contact the AGVIQ-CH2M HILL Project Manager and program regulatory specialist for additional information.

9.9 Process Safety Management (06.B.04)

(Reserved)

The requirements of EM 385 1-1, section 06.B.04 are not applicable to this TO.

9.10 Lead Abatement Plan (06.B.05)

(Reserved)

A lead hazard evaluation has been performed for the site and the maximum levels of lead to be encountered at the site are not anticipated to have the potential to cause a lead exposure above the OSHA action level of 30 $\mu g/m^3$. The type of work being performed does not fall into the category of lead abatement and therefore the requirements of EM 385 1-1, section 06.B.05 are not applicable to this TO.

9.11 Asbestos Abatement Plan (06.B.05)

(Reserved)

The requirements of EM 385 1-1, section 06.B.05 are not applicable to this TO.

9.12 Radiation Safety Program (06.E.03)

(Reserved)

There are no expected radiological hazards associated with the execution of this TO. The requirements of EM 385 1-1, section 06.E.03 are not applicable to this TO.

9.13 Abrasive Blasting (06.H.01)

(Reserved)

There are no abrasive blasting operations associated with the execution of this TO. The requirements of EM 385 1-1, section 06.H.01 are not applicable to this TO.

9.14 Heat/Cold Stress Monitoring Program (06.I.02)

9.14.1 Heat Stress Monitoring and Prevention

Because the work may be performed during periods where high/low ambient air temperatures should be prevalent, there is a potential for the development of heat stress related disorders. Workers should be aware of necessary procedures to prevent heat related disorders, be cognizant of the signs and systems that indicate heat related disorders are occurring and know when first aid or medical treatment may be required to treat heat related disorders. The following information is provided as procedural information to monitor and prevent heat related injuries to site workers, while performing assigned tasks.

- It is recommended that personnel drink 16 ounces of water before beginning work. Water maintained at 50°F to 60°F shall be available. Under severe conditions, drink 1 to 2 cups every 20 minutes, for a total of 1 to 2 gallons per day. Do not use alcohol in place of water or other nonalcoholic fluids. Decrease your intake of coffee and caffeinated soft drinks during working hours.
- Acclimate yourself by slowly increasing workloads.
- Use cooling devices, such as cooling vests, to aid natural body ventilation.
- Use mobile showers or hose-down facilities to reduce body temperature and cool protective clothing.
- Conduct field activities in the early morning or evening and rotate shifts of workers, if possible.
- Whenever possible, avoid direct sun, which can decrease physical efficiency and increase the probability of heat stress. Take regular breaks in a cool, shaded area. Use a wide-brim hat or an umbrella when working under direct sun for extended periods.
- Provide adequate shelter/shade to protect personnel against radiant heat (sun, flames, hot metal).
- Maintain good hygiene standards by frequently changing clothing and showering.
- Observe one another for signs of heat stress. Persons who experience signs of heat syncope, heat rash, or heat cramps should consult the SSHO to avoid progression of heat-related illness.
- **To counteract the onset of heat stress symptoms, a work-break regimen must be established during the executed work.**

For employees in permeable work clothing, Wet Bulb Globe Temperature (WBGT) Index or physiological monitoring shall be conducted and work/rest regimens established.

SYMPTOMS AND TREATMENT OF HEAT STRESS					
	Heat Syncope	**Heat Rash**	**Heat Cramps**	**Heat Exhaustion**	**Heat Stroke**
Signs and Symptoms	Sluggishness or fainting while standing erect or immobile in heat.	Profuse tiny raised red blister-like vesicles on affected areas, along with prickling sensations during heat exposure.	Painful spasms in muscles used during work (arms, legs, or abdomen); onset during or after work hours.	Fatigue, nausea, headache, giddiness; skin clammy and moist; complexion pale, muddy, or flushed; may faint on standing; rapid thready pulse and low blood pressure; oral temperature normal or low	Red, hot, dry skin; dizziness; confusion; rapid breathing and pulse; high oral temperature (104F or above).
Treatment	Remove to cooler area. Remove outer impermeable protective clothing. Rest victim lying down in supine position (on back, facing up) with head shoulders slightly elevated. Increase fluid intake. Recovery usually is prompt and complete. Where effected person is conscious, have them loosen their clothing to promote cooling surface between clothing/body.	Remove to cooler area. Remove outer impermeable protective clothing. Remove to cooler area. Remove outer impermeable protective clothing. Rest victim lying down in supine position (on back, facing up) with head shoulders slightly elevated.. Use mild drying lotions and powders, and keep skin clean for drying skin and preventing infection. Where effected person is conscious, have them loosen their clothing to promote cooling surface between clothing/body.	Remove to cooler area. Remove outer impermeable protective Rest victim lying down in supine position (on back, facing up) with head shoulders slightly elevated. Increase fluid intake. Where effected person is conscious, have them loosen their clothing to promote cooling surface between clothing/body.	Remove to cooler area. Rest victim lying down in supine position (on back, facing up) with head shoulders slightly elevated. Administer fluids by mouth. Seek medical attention immediately. Where effected person is conscious, have them loosen their clothing to promote cooling surface between clothing/body.	Remove to cooler area. Rest victim lying down in supine position (on back, facing up) with head shoulders slightly elevated. Where effected person is conscious, have them loosen their clothing to promote cooling surface between clothing/body. Call ambulance, and get medical attention immediately! Provide sips of cool water to if fully conscious and not nauseous or vomiting. Cool rapidly by soaking clothing in cool–but not cold–water. This procedure shall only be performed where directed by someone with medical training/ licensure (i.e. EMT, physician) and only as a life saving precaution. Evaluate employee's condition by an occupational physician prior to resuming normal assigned duties.

9.14.2 Monitoring Heat Stress

A Wet Bulb Globe Thermometer (WBGT) is the established and preferred means of measuring the environmental factors associated with heat stress and for providing indication of when physiological monitoring or rest regimens should be incorporated into the work schedule. The WBGT is the composite temperature used to estimate the effect of temperature, humidity, wind speed, and solar radiation on the human body.

When permeable work clothes are worn (street clothes or clothing ensembles over modesty clothes), physiological monitoring may be required based on the outcome of the WBGT measurements, taking into account the clothing adjustment factors. Use of the WBGT should generally begin when the heat index reaches 80° F (27° C) as indicated in the Heat Index Table below.

If the WBGT is within the TLV (acclimatized workers) or Action Limit (unacclimatized workers) per the tables below, then work may continue while maintaining the established work/rest regimen. If the WBGT reading meets or exceeds either the TLV or Action Level for a work/rest regimen of 15 minutes work and 45 minutes rest, then physiological monitoring will be implemented.

Screening Criteria for TLV and Action Limit for Heat Stress Exposure								
Allocation of work in a cycle of work and recovery	TLV (WBGT Values in ˚F/C˚) (Acclimatized Workers)				Action Limit (WBGT Values in ˚F/˚C˚) (Unacclimatized Workers)			
	Light	Moderate	Heavy	Very Heavy	Light	Moderate	Heavy	Very Heavy
75-100%	88/31	82/28	--	--	82/28	77/25	--	--
50-75%	88/31	84/29	82/28	--	83/29	79/26	75/24	--
25-50%	90/32	86/30	84/29	82/28	85/30	81/27	78/26	76/25
0-25%	91/33	89/32	87/31	86/30	86/30	84/29	82/28	81/27
Work Category Descriptions:								
Light	Sitting or standing with light manual work using hands or arms; occasional walking.							
Moderate	Sustained moderate hand, arm, and leg work; light pushing and pulling; normal walking.							
Heavy	Intense arm and trunk work, carrying, shoveling, manually sawing, pushing and pulling heavy loads, walking at a fast pace.							
Very Heavy	Very intense activity at fast to maximum pace.							
Notes: WBGT values are expressed to the nearest degree. "—"Dashes indicate the need for physiological monitoring because screening criteria are not recommended for this type of work.								

Clothing Adjustment Factors for Some Clothing Ensembles*	
Clothing Type	Addition to WBGT ˚F/˚C˚
Work Clothes (sleeved shirt and pants)	0/0
Cloth (woven material) coveralls	0/0
Double-layer woven clothing	5.4/3
Polypropylene coveralls	0.9/0.5
Limited Use Vapor barrier coveralls	19.8/11
* These values must not be used for completely encapsulating (impermeable) coveralls/suits. Coveralls assume that only modesty clothing is worn beneath.	

9.14.3 Cold Stress Monitoring and Prevention

- Be aware of the symptoms of cold-related disorders, and wear proper, layered clothing for the anticipated fieldwork. Appropriate rain/foul weather gear is a must in cool/cold weather, especially where precipitation events are occurring.
- Consider monitoring the work conditions and adjusting the work schedule using guidelines developed by the U.S. Army (wind-chill index) and the National Safety Council (NSC).

- Wind-chill index is used to estimate the combined effect of wind and low air temperatures on exposed skin. The wind-chill index does not take into account the body part that is exposed, the level of activity, or the amount or type of clothing worn. For those reasons, it should only be used as a guideline to warn workers when they are in a situation that can cause cold-related illnesses.
- NSC Guidelines for Work and Warm-Up Schedules can be used with the wind-chill index to estimate work and warm-up schedules for fieldwork. The guidelines are not absolute; workers should be monitored for symptoms of cold-related illnesses. If symptoms are not observed, the work duration can be increased.

Wind Chill Chart

Wind (mph) \ Temperature (°F)	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times: 30 minutes | 10 minutes | 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph)

Effective 11/01/01

- Persons who experience initial signs of immersion foot, frostbite, hypothermia should consult the SHSO to avoid progression of cold-related illness.
- Observe one another for initial signs of cold-related disorders.
- Obtain and review weather forecast— be aware of predicted weather systems along with sudden drops in temperature, increase in winds, and precipitation.

SYMPTOMS AND TREATMENT OF COLD STRESS			
	Immersion (Trench) Foot	Frostbite	Hypothermia
Signs and Symptoms	Feet discolored and painful; infection and swelling present.	Blanched, white, waxy skin, but tissue resilient; tissue cold and pale.	Shivering, apathy, sleepiness; rapid drop in body temperature; glassy stare; slow pulse; slow respiration.
Treatment	Seek medical treatment immediately.	Remove victim to a warm place. Re-warm area quickly in warm–but not hot water. Have victim drink warm fluids, but not coffee or alcohol. Do not break blisters. Elevate the injured area, and get medical attention.	Remove victim to a warm place. Have victim drink warm fluids, but not coffee or alcohol. Get medical attention.

9.15 Crystalline Silica Monitoring Plan (06.M)

(Reserved)

There are no anticipated potential worker exposures to crystalline silica associated with the execution of this TO.

9.16 Night Operations Lighting Plan (07.A.08)

(Reserved)

No operations will be performed at night. The requirements of EM 385 1-1, section 07.A.08 are not applicable to this TO.

9.17 Fire Prevention Plan (09.A)

Fire prevention shall be conducted in accordance with the information identified in section 9.7 of the APP, Health and Safety Hazard Control Program - Fire Prevention.

9.18 Wild Land Fire Management Plan(09.K)

(Reserved)

The requirements of EM 385 1-1, 09.K are not applicable to this TO as no USACE prescribed or planned wild land fire management operations or potential will be executed under this TO.

9.19 Hazardous Energy Control Plan (12.A.01)

(Reserved)

There are no identified site conditions or anticipated site operations where the servicing and maintenance of machines and equipment would result in the unexpected energizing or start up of the machines or equipment, or release of stored energy that could cause injury to employees. Therefore the requirements to develop a hazardous energy control (HEC) program to address the control of hazardous energy sources as applicable to the

requirements 29 CFR 1910.147, 29 CFR 1926, Subpart K or EM 385 1-1, section 12 is not applicable to the execution of this TO.

9.20 Critical Lift Plan (16.H)

(Reserved)

No critical lifts will be performed during the execution of this TO. The requirements of EM 385 1-1, section 16 and 29 CFR 1926 Subparts CC and DD are not applicable to the execution of this TO.

9.21 Contingency for Severe Weather Plan (19.A.03)

See section 9.7 Health and Safety Hazard Control Program - "Adverse Weather". Although severe weather conditions can be experienced at the site, it is anticipated that the performance period of this TO will be during periods where Hurricanes and similar severe tropical storm events are generally not a significant threat (November 30 through June 1) and therefore a Hurricane Preparedness Plan (HPP) will not be prepared as part of this APP for this TO.

9.22 Float Plan (19.F.04)

(Reserved)

The conditions of EM 385 1-1 19.F.04 are not applicable to this work.

9.23 Site Specific Fall Protection and Prevention Plan (21.C)

(Reserved)

There are no anticipated significant fall protection hazards under the requirements of EM 385 1-1 section 21.A that must be addressed by this APP.

9.24 Demolition Plan(23.A.01)

(Reserved)

Demolition activities will not be performed during the execution of this TO. The requirements of EM 385 1-1, section 23and 29 CFR 1926 Subparts t and DD are not applicable to the execution of this TO.

9.25 Excavation/Trenching Plan (25.A.01)

The means and methods for complete excavation activities associated with this TO are detailed in Section 9.7 and will not be elaborated upon further in this section. Because of the depth of the excavation is limited (0 to <4 feet bgs) and there will be no worker exposure to open excavation edges or fall hazards as part of this proposed excavation work, the full and complete applicability of 29 CFR 1926, Subpart P, and EM 385 1-1, Section 25 Excavations and specifically Section 25.A.01, is limited.

9.26 Emergency Rescue (Tunneling) (26.A)

(Reserved)

No tunneling will be performed during the execution of this TO. The requirements of EM 385 1-1, section 26 are not applicable to the execution of this TO.

9.27 Underground Construction Fire Prevention and Protection Plan (26.D)

(Reserved)

No underground construction will be performed during the execution of this TO. The requirements of EM 385 1-1, section 26 are not applicable to the execution of this TO.

9.28 Compressed Air Plan (26.I.01)

(Reserved)

No underground construction (tunnels), shafts or caissons work will be executed as part of this TO. The requirements of EM 385 1-1, section 26.I.01 are not applicable to this TO.

9.29 Formwork Shoring and Removal Plan (27.C)

(Reserved)

The requirements of EM 385 1-1, section 27 Concrete, Masonry, Steel Erection, and Residential Construction are not applicable to this TO.

9.30 Precast Concrete Plan (27.D)

(Reserved)

The requirements of EM 385 1-1, section 27 Concrete, Masonry, Steel Erection, and Residential Construction are not applicable to this TO.

9.31 Lift Slab Plan (27.E)

(Reserved)

The requirements of EM 385 1-1, section 27 Concrete, Masonry, Steel Erection, and Residential Construction are not applicable to this TO.

9.32 Steel Erection Plan (27.F)

(Reserved)

The requirements of EM 385 1-1, section 27 Concrete, Masonry, Steel Erection, and Residential Construction are not applicable to this TO.

9.33 Site Safety and Health Plan of HRTW Work (28.B)

A Site Specific Safety and Health Plan addressing the requirements of section 28.B of EM 385 1-1 is not required as there is not any HAZWOPER related work being performed under this TO. There are no anticipated exposures to site contaminates.

However, since this project is supporting a CERCLA response action, an abbreviated SSHSP has been developed to address potential concerns.

9.34 Blasting Safety Plan

(Reserved)

No blasting operations will be conducted during the execution of this TO.

9.35 Diving Plan

(Reserved)

No diving operations will be conducted during the execution of this TO.

9.36 Confined Space Program

(Reference SOP # HSE&Q 203, Confined Space)

(Reserved)

Confined space entry operations will not be performed as part of this TO. The requirements of EM 385 1-1, section 34 and 29 CFR 1910.146 are not applicable to the execution of this TO.

10.0 Risk Management Process

AGVIQ-CH2M HILL utilizes a Behavior Based Loss Prevention System (BBLPS) to support the implementation of our Risk Management Process (RMP) by identifying, analyzing and controlling certain risks (or liabilities) that may be encountered during the execution of a its assigned projects. The BBLPS is a system to prevent or reduce losses using behavior-based tools and proven management techniques to focus on behaviors or acts that could lead to losses.

The five basic loss prevention tools that will be used to implement the BBLPS on this project include:

- Activity Hazard Analysis (AHA)
- Pre-Task Safety Plans (PTSP)
- Loss Prevention Observations (LPO)
- Loss and Near Loss Investigations (NLI)
- Drug Free Workplace Program (DFWP)

The Project Manager and site superintendent are responsible for implementing the BBLPS on the project site. These personnel typically delegate authority to the SSHO for the project specific implementation of the BBLPS, but the Project Manager and Site Superintendent/Supervisor or Field Team Leader remains accountable for its implementation.

In an effort to provide a safe and healthy workplace for all program participants, AGVIQ-CH2M HILL promotes and implements a Drug Free Workplace Program (DFWP). AGVIQ-CH2M HILL personnel must participate in and adhere to the requirements of the DFWP.

10.1 Activity Hazard Analysis

One of the key elements in executing our RMP, is the use of an Activity Hazard Analysis (AHA) for each major Definable Feature of Work (DFOW) and safety sensitive operation. An AHA defines the activity being performed, the hazards posed, and the necessary hazard control measures that must be implemented to facilitate the progression of the work in a safe and health manner. In addition, the equipment to be used to perform the activity, as well as inspection and training requirements, and competent person designations necessary to execute the task are also listed in the AHA.

Site workers review (or are briefed on the content) of the AHA before initiating the DFOW or safety sensitive operation. Worker input should be solicited where ever possible and included in the AHA. After employees review (or are briefed on the content of) each AHA applicable to their assigned task(s), they will acknowledge that this review was completed by adding their printed names, signatures, and the dates that the material was delivered to them or reviewed by them on the last page of the AHA form.

AGVIQ-CH2M HILL subcontractors will be required to provide AHAs specific to their scope of work on the project for acceptance by the SSHO, AGVIQ-CH2M HILL Program CIH or HSPA or other designated qualified safety professional associated with AGVIQ-CH2M HILL. Each subcontractor will submit AHAs for their field activities, as defined in their work plan/scope of work, along with their project-specific APP. Additions or changes in AGVIQ-CH2M HILL or subcontractor field activities, equipment, tools or material to perform work, or additional/ different hazard encountered that require additional/different hazard control measures requires either a new AHA to be prepared or an existing AHA to be revised.

The AHA applicable to the current site operation(s), work phase or safety sensitive function must remain posted in a conspicuous place (project construction trailer, weather proof bulletin board, etc.) that all site or facility personnel can access. When the most current AHA is not in use and not required to be posted, these completed AHAs shall be filed on site in a neat and organized manner for review are kept onsite in a neat and organized manner for review by NAVFAC Points of Contact (POCs) or the AGVIQ-CH2M HILL project management or program management team, or health and safety representatives, if requested.

At the end of project operations, all completed hard copies of AHAs are included in the final project record.

Table 10-1 of Section 10.6, below summarizes identified hazards associated with the phases of work anticipated with the project execution. Table 10-1 provides the basis for the development of Activity Hazard Analysis documents included in section 10.6 of this APP. **Section 10.6** of this APP contains applicable Activity Hazard Analysis (AHA) documents that must be implemented during the execution of this TO. These AHAs, in addition to the content of this APP, are intended to reinforce project or program requirements and present project control measures for anticipated or encountered hazards that may occur during the execution of an employee's assigned tasks. Any changes in site conditions or processes, AHA must be updated prior to work proceeding.

10.2 Pre-Task Safety Plans

Daily safety meetings are held with all designated project site personnel in attendance to review the potential hazards that may be associated with daily work assignments. These meetings set forth various hazard control measures or policies, procedures or requirements that must be implemented by project staff to reduce or eliminate workplace incidents that could be associated with daily scheduled work. The topics developed and delivered during each production day safety meeting are documented on an AGVIQ-CH2M HILL PTSP planner. The PTSPs are held between the site line supervisor and work crews and are designed to focus on eliminating identified hazards associated with daily assigned work. An example PTSP is included in **Attachment 8** of this APP.

Daily safety topics typically include task-specific or site hazards and associated hazard control measures, health and safety processes, or "hazardous conditions" discovered and corrected and/or controlled during a previous work event that may still be applicable to the current daily production goals. Additionally, names of personnel, types of tools and equipment that will be used to perform the assigned daily task(s) are listed, along with the hazards posed and required health and safety procedures that have been identified in the task specific AHAs or the APP and are incorporated into each PTSP.

Preparation and delivery of the PTSP may be delegated to the SSHO by the site supervisor/field team leader (FTL) to facilitate site operations. At the start of each day's activities, the line supervisor or SSHO completes a PTSP. Ideally, input from the work crew is solicited and integrated into the development and delivery of each PTSP. Implementing daily PTSPs enhances worker participation in the recognition and control of hazardous site conditions or undesirable site acts, while reinforcing the task-specific required H&S procedures with the crew each work day. In the event that more than one type of project task is scheduled in any one daily production event, multiple PTSPs may need to be completed and implemented.

After the delivery of each PTSP, all personnel in attendance at the daily safety meeting acknowledge the delivered material with the addition of their printed names, signatures, and the date on which the material was delivered to them on the last page of the form. Completed PTSPs are kept on site in a neat and organized manner for review by management or the client, as deemed necessary.

Completed PTSPs are kept onsite in a neat and organized manner for review by NAVFAC POCs or the AGVIQ-CH2M HILL project management or program management team, or health and safety representatives, if requested. The project manager and the site line supervisor may establish a process by which these completed PTSPs are scanned and emailed for inclusion in the electronic project file, where email communication capability is available. Where email capability is not available other suitable distribution methods shall be arranged between the overall project manager and the site supervisor/FTL.

At the end of the project or facility operations, all completed PTSP hard copies are included in the final project record.

After the delivery of each PTSP, all personnel in attendance of the daily safety meeting shall acknowledge the delivered material with the addition of their printed name, signature and date that the material was delivered to them on the last page of the form. These completed PTSPs shall be kept on-site in a neat and organized manner for review by management or project Owner, as deemed necessary.

The use of safety meetings via the use of a PTSP or other similar format is a common safety practice in the construction industry.

10.3 Loss Prevention Observations

A LPO is a tool to be used by management, site supervisors/FTLs, and SSHOs to determine whether workplace behaviors, acts, and conditions are consistent with established H&S procedures, project site-specific APP requirements, or other established health and safety standards. An LPO may also be completed by an individual work crew member to initiate necessary corrective actions, to identify a work crew member's positive performance or contribution, or to report an undesirable act that would endanger the employee or other co-workers or result in a loss. Completion of the LPO provides a mechanism for management to reinforce positive actions for work practices performed correctly, while also identifying and eliminating work procedures, site conditions, or behaviors that could result in eventual losses.

LPOs can be completed by any employee involved with or observing site operations, but are typically prepared by the site supervisor/FTL, SSHO, or project manager using the LPO form found in **Attachment 9** of this APP. The LPO is implemented as a comparison of the actual execution of work process observed against established work procedures identified in the project-specific APP, AHAs, established health and safety policies and procedures, or regulatory standards.

One LPO shall be completed weekly and forwarded to the overall AGVIQ-CH2M HILL Project Manager and their designated management team, the CH2M HILL Administrative Assistant designated to track project labor hours and completed LPO, as well as the designated project HSPA lead where email capability is available. Where email capability is not available other suitable distribution methods shall be arranged between the overall project manager and the site supervisor. When severe or critical deficiencies are observed by the LPO process, the project manager, site supervisor/FTL, or SSHO has a duty to notify the project manager and Chain of Command personnel of the condition for further review and development of corrective action requirements.

Completed LPOs are kept onsite in a neat and organized manner for review by management or NAVFAC, as deemed necessary. At the end of the project or facility operations, all completed LPO hard copies are included in the final project record.

10.3.1 Deficiency Tracking System

On NAVFAC contracts where adherence to the US Army Corps of Engineers' EM 385-1-1, "Safety and Health Requirements Manual" is required in addition to Occupational Safety & Health Administration (OSHA) regulations, the site supervisor is responsible for ensuring that the a "Deficiency Tracking System" or log is maintained. The deficiency tracking system is used to identify and monitor the status of safety and health "deficiencies" observed at the project-specific location, in chronological order. The deficiency tracking system includes the following information:

- Date deficiency identified
- Description of deficiency
- Name of person responsible for correcting deficiency
- Projected resolution date
- Date actually resolved

The deficiency tracking system or log is posted on a project bulletin board or other conspicuous place commonly accessed by project or facility personnel, updated daily, and available for review by the NAVFAC POCs or by AGVIQ-CH2M HILL Project Management, Senior Management or Health and Safety Representatives. At project or facility sites where the use of a Deficiency Tracking System is required, this log supplements the LPO process.

At the end of the project, or when facility operations are completed, hard copies of the deficiency tracking system data or logs are included in the final record.

10.4 Loss/Near-Loss Investigations

Loss and Near Loss Incident investigations are detailed in section 8.0 "Accident Reporting and Investigation" of this APP and will not be further elaborated upon in this section. Incident reporting and investigation forms are included in **Attachment 10** of this APP.

10.5 Drug-Free Workplace Program

AGVIQ-CH2M HILL does not tolerate illegal drugs, or any use of drugs, controlled substances, or alcohol that impairs an employees work performance or behavior. AGVIQ-CH2M HILL has established a policy that its employees and subcontractors will not be involved in any manner with the unlawful manufacture, distribution, dispensation, possession, sale, or use of illegal drugs in the workplace. The use or possession of alcohol in the workplace is also prohibited. Any violation of these prohibitions may result in discipline or immediate discharge.

10.6 Project Specific Activity Hazard Analyses

Applicable project Activity Hazard Analysis (AHA) documents for each major phase of work anticipated for this contract are contained below. It is the intent of these AHAs to reinforce project or program requirements and present project control measures for anticipated or encountered hazards that may occur during the execution of an employee's assigned tasks.

Table 10-1 below summarizes identified hazards associated with the phases of work anticipated with work scheduled at the site. Table 10-1 provides only the basis for the development of Activity Hazard Analysis documents, which must be implemented as part of the AGVIQ-CH2M HILL Health and Safety Program, BBLPS and overall RMP.

TABLE 10-1: ACTIVITIY HAZARD ANALYSIS BASIS						
	PROJECT ACTIVIITIES					
PROJECT HAZARDS	Mobilization	Underground Piping and Utilities Installation	Concrete Work	Process Equipment, Piping and Valves	System Start-Up	Demobilize Temp System Subcontractor
Adverse Weather	X	X	X	X	X	X
Air Compressors						
Biological	X	X	X	X	X	X
Buried Utilities		X	X			
Chainsaws/Brush cutters						
Contaminant Exposure						
Concrete and Masonry			X			
Confined Space						
Cuts/Abrasions	X	X	X	X	X	X
Cranes		X		X		
Demolition/Dismantling						
Dredging						
Drilling/DPT						
Electrical Safety	X	X	X	X	X	X
Excavations		X	X			
Fall Prevention				X	X	
Fire/Explosion Prevention	X	X	X	X	X	
Hand & Power Tools	X	X	X	X	X	X
Haul Truck Operations	X	X	X	X		X
Heat Stress/Cold Stress	X	X	X	X		X
Heavy Equipment	X	X	X			X
Housekeeping	X	X	X	X	X	X
Land Clearing	X					
Lockout /Tagout		X			X	
Manual Lifting	X	X	X	X	X	X
MEC/MPPEH						
Noise	X	X	X	X	X	X
Overhead Utilities	X	X	X	X		X
Pinch/Struck by/Caught	X	X	X	X		X
Powered Industrial Trucks						
Pressure Washing Activities						
Pressurized Lines/Systems						
Rigging or Material Handling		X		X		
Sample Handling			X		X	
Slips/Trips/Falls	X	X	X	X	X	X
Stairways & Ladders				X	X	
Vacuum Truck						
Vehicle Traffic / Driving	X	X	X	X		X
Visible Lighting	X	X	X	X	X	X
Welding and cutting		X		X		
Working Alone						
Working over water						

TABLE 10-1: ACTIVITIY HAZARD ANALYSIS BASIS						
	PROJECT ACTIVIITIES					
PROJECT HAZARDS	Mobilization	Underground Piping and Utilities Installation	Concrete Work	Process Equipment, Piping and Valves	System Start-Up	Demobilize Temp System Subcontractor
Adverse Weather	X	X	X	X	X	X
Air Compressors						
Biological	X	X	X	X	X	X
Buried Utilities		X	X			
Chainsaws/Brush cutters						
Contaminant Exposure						
Concrete and Masonry			X			
Confined Space						
Cuts/Abrasions	X	X	X	X	X	X
Cranes		X		X		
Demolition/Dismantling						
Dredging						
Drilling/DPT						
Electrical Safety	X	X	X	X	X	X
Excavations		X	X			
Fall Prevention				X	X	
Fire/Explosion Prevention	X	X	X	X	X	
Hand & Power Tools	X	X	X	X	X	X
Haul Truck Operations	X	X	X	X		X
Heat Stress/Cold Stress	X	X	X	X		X
Heavy Equipment	X	X	X			X
Housekeeping	X	X	X	X	X	X
Land Clearing	X					
Lockout /Tagout		X			X	
Manual Lifting	X	X	X	X	X	X
MEC/MPPEH						
Noise	X	X	X	X	X	X
Overhead Utilities	X	X	X	X		X
Pinch/Struck by/Caught	X	X	X	X		X
Powered Industrial Trucks						
Pressure Washing Activities						
Pressurized Lines/Systems						
Rigging or Material Handling		X		X		
Sample Handling			X		X	
Slips/Trips/Falls	X	X	X	X	X	X
Stairways & Ladders				X	X	
Vacuum Truck						
Vehicle Traffic / Driving	X	X	X	X		X
Visible Lighting	X	X	X	X	X	X
Welding and cutting		X		X		
Working Alone						
Working over water						

Section 10.6 (continued)
Project Activity Hazard Analyses (AHAs)

Activity Hazard Analysis (AHA)

ACTIVITY/WORK TASK:	**Mobilization/Demobilization**	Overall Risk Assessment Code (RAC) (Use highest code)		**M**
	SIGNATURES	Activity #	1	AHA # **1**
PWD/OICC/ROICC OFFICE				
NAME & DATE ACCEPTED BY GDA:				
CONTRACT NUMBER:	**N62470-08-D-1006**			
TASK ORDER/DELIVERY #:	**WE23**			
PRIME CONTRACTOR:	**CH2M HILL**			
SUBCONTRACTOR:	**NA**			
DATE OF PREPARATORY MEETING:				
DATE OF INITIAL INSPECTION:				
CONTRACTOR COMPETENT PERSON:	NA			
SITE SAFETY and HEALTH OFFICER				

Risk Assessment Code (RAC) Matrix

Severity	Probability				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	**E**	**E**	**H**	**H**	**M**
Critical	**E**	**H**	**H**	**M**	**L**
Marginal	**H**	**M**	**M**	**L**	**L**
Negligible	**M**	**L**	**L**	**L**	**L**

ACCEPTANCE BY GOVERNMENT DESIGNATED AUTHORITY (GDA)

E = EXTREMELY HIGH (PWO/OICC/ROICC)

H = HIGH RISK (FEAD DIRECTOR)

M = MODERATE RISK (CM or ET or PAR)

L = LOW RISK (ET or PAR)

Review each **"Hazard"** with identified safety **"Controls"** and determine (RAC)

Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" .Place the highest RAC at the top of AHA. This is the overall risk assessment code for this activity

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible after controls are in place

"Probability" is the likelihood to cause an incident, near miss, or accident did occur and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely after controls are put in place.

Job Steps	Hazards	Controls	RAC
Mobilizing to Site **Driving** **Vehicle Backing**	• Traffic accident • Driver fatigue • Poor driving skills • Load shift • Traffic accident • Property damage •	▪ Keep alert of your surroundings. Do not try to complete other tasks while driving that can distract your attention ▪ Do not drive when tired. Pull off at a safe location and walk around your vehicle and take a break if getting tired. ▪ Use your mirrors while driving. Do not use evasive driving actions. Obey traffic laws. ▪ Secure loads before starting your trip. Make frequent stops to check your load to make sure nothing has become loose. Retighten any loose straps. ▪ Check your surroundings when before backing. When possible use a spotter. ▪ Check for obstructions before backing. Walk around vehicle to make sure area is clear.	**L**

IAW EM 385 01.A.13 Contractor-Required AHA "Work will not begin until the AHA for the work activity has been accepted by the GDA"
The AHA shall be reviewed and modified as necessary to address changing site condition, operations or change of competent/qualified person's

Job Steps	Hazards	Controls	RAC
Unloading/placing equipment.	• Back strain • Hand Injuries; cuts, bruises, pinch points • Slips, Trips, & Falls • Contact with Heavy Equipment while in use.	• Use proper lifting techniques at all times. Request assistance from other personal when weight limits exceeds 50lbs. Mechanical means shall be used for gate relocation whenever possible rather than manual means to avoid the risk of stains and sprains. • Wear protective gloves; Use hand tools in a safe manner and keep hand tools in good working condition. • Use extreme caution when walking in work areas, working on or around truck beds and around equipment during unloading and staging activities. • Only trained and experienced personnel will be allowed to stage and unload heavy equipment. • Only certified operators will be authorized to operate equipment. Certifications must be on site at all times. • High visibility vests will be worn at all times while working in or around heavy equipment, trucks or other mechanized equipment. • All ground personal etc. must maintain eye contact with operators at all times. Do not proceed toward, or into blind spots of equipment without authorization to do so by operator. • All ground personal will stay outside the swing radius of equipment while in operation.	**L**
General Construction Hazards	• Accidents due to lack of training	▪ Copies of records will be kept by the SSO. ▪ Worker will be trained prior to performing new activities. Copies of records will be kept by the SSO. This includes signature sheets for AHAs. HASP and any other training documents. ▪ A daily tailgate safety meeting will be held prior to starting each shift. All personnel must attend review and sign the Safety Tailgate log before beginning work. CH2M HILL Staff should be present. ▪ All site workers must understand all Emergency procedures, AHA and HASP procedures. ▪ A copy of each Tailgate meeting must be supplied to the CH2M HILL onsite rep each day. •	**L**
	• Electrical Hazards	• Do not open panels or cabinet's that contain live electrical parts. • NFPA 70e training is required to work on or near live electrical parts.	**L**
	• Hearing Damage	• Workers will wear hearing protection whenever voices must be raised above normal conversational speech or when noise levels exceed 85 decibels due to a load noise source; such as working around heavy equipment. • Hearing protection will be worn by equipment operators when working in open cab equipment, or when doors/windows are open.	**L**

IAW EM 385 01.A.13 Contractor-Required AHA "Work will not begin until the AHA for the work activity has been accepted by the GDA"
The AHA shall be reviewed and modified as necessary to address changing site condition, operations or change of competent/qualified person's

Equipment to be Used	Training Requirements and Competent or Qualified Personnel name(s)	Inspection Requirements	RAC
	• Injuries from slips, trips, and falls	• Walking/working surfaces will be kept free of clutter, debris, and congestion to the greatest extent possible. • Personnel will be briefed on the hazards of wet, muddy soil hazards and traversing uneven grades. • Walk or climb only on equipment and/or surfaces that are designed for personnel access. • Be aware of potential for poor footing while working on un-compacted backfill materials. • Use three-point contact when climbing onto equipment.	L
	• Accidents due to poor lighting	• Work at site is only expected to take place during daylight hours. If work after daylight hours or in dark areas of buildings, provide supplemental lighting.	L
	• Injury due to inclement weather	• Outdoor work will cease during extreme weather conditions, such as electrical storms, high wind rain, and extreme temperatures. • Shut all equipment down when lightning is visible and wait for “all-clear” from the SSHO. • Workers will take cover indoors or in vehicle. • Supervisors will monitor local forecasts for warnings about specific weather hazards. • Workers will comply with all evacuation orders regarding rough weather directives.	L
	• Heat Stress	▪ Workers will be trained in the recognition of heat stress and appropriate actions to take. ▪ Workers are encouraged to increase fluid intake while working. ▪ Workers should minimize or avoid alcohol intake the night before working in heat stress situations. ▪ Workers will increase the frequency and duration of rest breaks while working in heat stress situations. ▪ Workers will watch each other for signs and symptoms of heat exhaustion and fatigue.	L
	• Controlling work areas	• Fencing, tape, cones or other SSHO-approved boundaries will be erected to warn approaching personnel of the hazardous area. • Appropriate signs will be posted at the boundary to instruct personnel in entry requirements.	L
	• Injuries associated with insects, snakes, spiders and poisonous plants	• Workers will tuck pants into socks and wear long sleeves and sturdy leather boots when walking in tall grass. • Workers will use insect repellent when needed. • Workers will use buddy system to check for signs of insect and spider bites, such as redness, swelling, and flu-like symptoms if bitten. • If workers have known or suspected allergies, they will carry an Epi-Pen at all times and will notify supervision and co-workers of allergies. • If bitten by any insect notify the CH2M HILL (CCI) oversight rep immediately. This includes any type of injury that would require any type of First Aid.	L

IAW EM 385 01.A.13 Contractor-Required AHA “Work will not begin until the AHA for the work activity has been accepted by the GDA”
The AHA shall be reviewed and modified as necessary to address changing site condition, operations or change of competent/qualified person’s

Construction of Logistical Supplies	• Injuries associated with power tools	• Tools shall be carried in a safe and proper manner. • Tools shall not be carried up a ladder by hand; tools should be raised or lowered in a tool bag. • Defective tools shall be tagged immediately and removed from service. • Tools shall be used correctly and only for their intended purpose. • Hand tools will be inspected for mushroomed heads, broken or cracked handles, or loose heads prior to use.	**L**
Vegetation Removal	• Hydraulic Mowing Equipment Use	• Only qualified personnel, by training or previous experiences shall operate landscaping mowers. • Mower operators shall shut-down and disengage hydraulic mower when ground personnel must approach mowing operations. • Mower deck should never be tilted vertically or raised more than 6" above the ground. • Ensure that equipment kill switches are properly operating and accessible by mowing equipment operators. • Mower operators should not operate equipment on steep, slippery or uneven slopes or unstable ground surfaces which could cause the mower to flip over or otherwise become unstable to the point where operators or ground personnel could become exposed to the blades. • Ensure all mechanic guards or protective devices over mower discharge chutes are in place. • Operators of hydraulic mowers cutters should not raise cutting decks more than 6" above ground surface to cut saplings. • Operators should review mower manufacturer manuals to ensure that the mower is operated in accordance with manufacturer's parameters. • Seat belts or other restraint system shall be used by mower operators. • Perform daily maintenance and inspections on mowing equipment. Keep documentation on site.	**M**
UTILITY LOCATE	• Traffic • Carrying equipment • Minor excavation by hand (to recover survey points) • Poisonous plants • Biting insects • Heat exhaustion • Hand equipment use	▪ Use traffic cones where parking; **wear reflective clothing** (vest or jacket – **required at all NAVFAC sites**) and work signs as appropriate ▪ Follow safe lifting procedures for bulky or heavy equipment ▪ Be prepared to recognize plants (e.g. Poison Ivy) and avoid them if possible; wear long pants and shirt with sleeves ▪ Use insect spray prior to the start of work following manufactures directions; wear long pants and long sleeved shirt ▪ Hydrate prior to the start of work and keep a supply of cool water available; take frequent breaks, wear sunscreen ▪ Follow safe practices while using hand equipment (shovel, trowel, etc.).	**L**
Conduct topographic survey	• Carrying equipment • Minor excavation by hand (to recover survey points) • Poisonous plants	• Follow safe lifting procedures for bulky or heavy equipment • Have site pre-marked for utilities • Be prepared to recognize plants (e.g. Poison Ivy) and avoid them if possible; wear long pants and shirt with sleeves • Use insect spray prior to the start of work following manufactures directions; wear long	**L**

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	• Biting insects • Heat exhaustion • Hand equipment use	pants and long sleeved shirt • Hydrate prior to the start of work and keep a supply of cool water available; take frequent breaks, wear sunscreen • Follow safe practices while using hand equipment (shovel, trowel, etc.)	
	•	•	

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
• Fire extinguisher (with fuel and electrical sources) • Eye wash (small portable type) • Miscellaneous power and manual hand tools. • First Aid/BbPK/CPR shield • Track excavator(s) with material handling attachment and/or skid steer brush hog • Spill Kit • Communication devices	• Review APP by new site personnel. • 1st Aid/CPR (2 per site when medical attention a medical facility or physician is more than 5 minutes away to two or more employees. • Supervisors - BBLPS, 30 hour OSHA Construction Safety Training or equivalent • Heavy equipment operators qualified by previous training or experience. • Competent Person Requirement & Name: NA •	• Visual Inspections of designated work areas identify and address hazardous conditions. • Equipment inspections and maintenance. • Brushcutter inspection/maintenance. • Chipper maintenance, if used. • Emergency Response equipment Inspections • (Fire Extinguishers, Eye wash First Aid/CPR etc.)

Instructions for completing Contractor Activity Hazard Analysis

1. **Activity/Work Task – Insert work/task this AHA is written for i.e. excavation, scaffold building, foundation preparation.**
2. **PWO/OICC/ROICC – Insert name of Public Works Office, Officer In Charge of Construction Office or Resident Officer in Charge of Construction (PWD/OICC/ROICC**
3. **Enter name & date AHA accepted by Government Designated Authority (GDA)**
4. **Enter contract number**
5. **Enter Task order or Delivery order number**
6. **Enter Prime Contractors name**

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7. **Enter Subcontractors name**
8. **Enter date preparatory meeting was held**
9. **Enter date initial inspection was performed**
10. **Enter name of contractor competent person on site for this activity**
11. **Enter name of Prime Contractor Site Safety and Health Officer**
12. **Level of government person responsible for accepting the AHA, progressive signatures as level of risk increases.**
13. **Overall Risk Assessment code is highest code assigned to any Job step after Hazards are assessed and Controls have been assigned**
14. **Schedule number is activity number from production daily reports**
15. **AHA number is the sequential number of all AHA's for this contract.**
16. **Job steps is the complete sequence of work, not general statements to complete the entire activity**
17. **Hazards is the known safety risks associated with completing the task**
18. **Controls is the safety measures in place to reduce the hazard to the lowest level possible**
19. **Risk Assessment code is where Severity and Probability intersect, place that letter E, H, M, or L in the RAC column**
20. **List all equipment to be used to complete this activity i.e. crane, backhoe, vehicle, all heavy equipment**
21. **List the training requirements required by EM 385, Safety Spec 01356 or OSHA that apply to this task.**
    List competent person(s) required for specific tasks in EM 385
    List qualified person(s) required for specific tasks in EM 385
    List CPR/First Aid training and qualification dates
22. **List all inspection requirements of EM 385, Governmental Safety Requirements Specifications or OSHA 29 CFR 1926**

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Activity Hazard Analysis (AHA)

ACTIVITY/WORK TASK:	**Underground Piping and Utilities Installation**	Overall Risk Assessment Code (RAC) (Use highest code)			**M**
	SIGNATURES	Activity #	1	AHA #	**1**
PWD/OICC/ROICC OFFICE		**Risk Assessment Code (RAC) Matrix**			
NAME & DATE ACCEPTED BY GDA:					
CONTRACT NUMBER:	**N62470-08-D-1006**	**Severity**	**Probability**		
TASK ORDER/DELIVERY #:	**WE23**				
PRIME CONTRACTOR:	**CH2M HILL**				
SUBCONTRACTOR:	**TBD**				
DATE OF PREPARATORY MEETING:			Frequent	Likely	Occasional	Seldom	Unlikely
DATE OF INITIAL INSPECTION:		Catastrophic	**E**	**E**	**H**	**H**	**M**
CONTRACTOR COMPETENT PERSON:	TBD	Critical	**E**	**H**	**H**	**M**	**L**
SITE SAFETY and HEALTH OFFICER		Marginal	**H**	**M**	**M**	**L**	**L**
		Negligible	**M**	**L**	**L**	**L**	**L**
ACCEPTANCE BY GOVERNMENT DESIGNATED AUTHORITY (GDA)		Review each **"Hazard"** with identified safety **"Controls"** and determine (RAC)					
E = EXTREMELY HIGH (PWO/OICC/ROICC)		Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" .Place the highest RAC at the top of AHA. This is the overall risk assessment code for this activity					
H = HIGH RISK (FEAD DIRECTOR)		**"Severity"** is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible after controls are in place					
M = MODERATE RISK (CM or ET or PAR)							
L = LOW RISK (ET or PAR)		**"Probability"** is the likelihood to cause an incident, near miss, or accident did occur and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely after controls are put in place.					

Job Steps	Hazards	Controls	RAC
Mobilizing to Site **Driving** **Vehicle Backing**	• Traffic accident • Driver fatigue • Poor driving skills • Load shift • Traffic accident • Property damage •	▪ Keep alert of your surroundings. Do not try to complete other tasks while driving that can distract your attention ▪ Do not drive when tired. Pull off at a safe location and walk around your vehicle and take a break if getting tired. ▪ Use your mirrors while driving. Do not use evasive driving actions. Obey traffic laws. ▪ Secure loads before starting your trip. Make frequent stops to check your load to make sure nothing has become loose. Retighten any loose straps. ▪ Check your surroundings when before backing. When possible use a spotter. ▪ Check for obstructions before backing. Walk around vehicle to make sure area is clear.	**L**

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Job Steps	Hazards	Controls	RAC
Unloading/placing equipment.	• Back strain • Hand Injuries; cuts, bruises, pinch points • Slips, Trips, & Falls • Contact with Heavy Equipment while in use.	• Use proper lifting techniques at all times. Request assistance from other personal when weight limits exceeds 50lbs. Mechanical means shall be used for gate relocation whenever possible rather than manual means to avoid the risk of stains and sprains. • Wear protective gloves; Use hand tools in a safe manner and keep hand tools in good working condition. • Use extreme caution when walking in work areas, working on or around truck beds and around equipment during unloading and staging activities. • Only trained and experienced personnel will be allowed to stage and unload heavy equipment. • Only certified operators will be authorized to operate equipment. Certifications must be on site at all times. • High visibility vests will be worn at all times while working in or around heavy equipment, trucks or other mechanized equipment. • All ground personal etc. must maintain eye contact with operators at all times. Do not proceed toward, or into blind spots of equipment without authorization to do so by operator. • All ground personal will stay outside the swing radius of equipment while in operation.	**L**
General Construction Hazards	• Accidents due to lack of training	▪ Copies of records will be kept by the SSO. ▪ Worker will be trained prior to performing new activities. Copies of records will be kept by the SSO. This includes signature sheets for AHAs. HASP and any other training documents. ▪ A daily tailgate safety meeting will be held prior to starting each shift. All personnel must attend review and sign the Safety Tailgate log before beginning work. CH2M HILL Staff should be present. ▪ All site workers must understand all Emergency procedures, AHA and HASP procedures. ▪ A copy of each Tailgate meeting must be supplied to the CH2M HILL onsite rep each day. •	**L**
	• Electrical Hazards	• Do not open panels or cabinet's that contain live electrical parts. • NFPA 70e training is required to work on or near live electrical parts.	**L**
	• Hearing Damage	• Workers will wear hearing protection whenever voices must be raised above normal conversational speech or when noise levels exceed 85 decibels due to a load noise source; such as working around heavy equipment. • Hearing protection will be worn by equipment operators when working in open cab equipment, or when doors/windows are open.	**L**

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Equipment to be Used	Training Requirements and Competent or Qualified Personnel name(s)	Inspection Requirements	RAC
	• Injuries from slips, trips, and falls	• Walking/working surfaces will be kept free of clutter, debris, and congestion to the greatest extent possible. • Personnel will be briefed on the hazards of wet, muddy soil hazards and traversing uneven grades. • Walk or climb only on equipment and/or surfaces that are designed for personnel access. • Be aware of potential for poor footing while working on un-compacted backfill materials. • Use three-point contact when climbing onto equipment.	L
	• Accidents due to poor lighting	• Work at site is only expected to take place during daylight hours. If work after daylight hours or in dark areas of buildings, provide supplemental lighting.	L
	• Injury due to inclement weather	• Outdoor work will cease during extreme weather conditions, such as electrical storms, high wind rain, and extreme temperatures. • Shut all equipment down when lightning is visible and wait for “all-clear” from the SSHO. • Workers will take cover indoors or in vehicle. • Supervisors will monitor local forecasts for warnings about specific weather hazards. • Workers will comply with all evacuation orders regarding rough weather directives.	L
	• Heat Stress	▪ Workers will be trained in the recognition of heat stress and appropriate actions to take. ▪ Workers are encouraged to increase fluid intake while working. ▪ Workers should minimize or avoid alcohol intake the night before working in heat stress situations. ▪ Workers will increase the frequency and duration of rest breaks while working in heat stress situations. ▪ Workers will watch each other for signs and symptoms of heat exhaustion and fatigue.	L
	• Controlling work areas	• Fencing, tape, cones or other SSHO-approved boundaries will be erected to warn approaching personnel of the hazardous area. • Appropriate signs will be posted at the boundary to instruct personnel in entry requirements.	L
	• Injuries associated with insects, snakes, spiders and poisonous plants	• Workers will tuck pants into socks and wear long sleeves and sturdy leather boots when walking in tall grass. • Workers will use insect repellent when needed.	L

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		• Workers will use buddy system to check for signs of insect and spider bites, such as redness, swelling, and flu-like symptoms if bitten. • If workers have known or suspected allergies, they will carry an Epi-Pen at all times and will notify supervision and co-workers of allergies. • If bitten by any insect notify the CH2M HILL (CCI) oversight rep immediately. This includes any type of injury that would require any type of First Aid.	
Trenching/Excavation	• Buried Utilities or Unknown Objects	• Contact Name: Dig Safely New York, Phone: **811 or 1-800-962-7962**, Website: www.digsafelynewyork.com to secure a utility owner verification request number for utility clearance verification. Keep copies of any written documentation (faxes, email printouts) regarding utility location verification provided by utilities owners in the office project file and in a working field file on-site. • Photo document owner provided field utility mark-outs as related to proposed limits of ground disturbing activities prior to the start of work. • Conduct "third" party utility clearance when the locations of utilities may be in question and document results of third party utility location. • Determine if a NAVFAC "Excavator Permit" is required prior to performing any ground disturbing activities. • Hand dig around identified utilities (within 5') or as otherwise required by NAVFAC issued excavation permit. • Review base engineering records or drawings against utility owner or third party utility mark-out to verify any potential differences. • Protect and preserve the markings of approximate locations of facilities until the markings are no longer required for safe and proper excavations. If the markings of utility locations are destroyed or removed before excavation commences or is completed, utilities must be relocated/marked. • Where unknown or unanticipated buried objects are encountered (i.e. drums, tanks, cylinders, MEC/MPPEH, soil with unusual staining or odor) AGVIQ-CH2M HILL JV or subcontractor personnel shall 1) secure equipment to the extent possible, without causing bodily injury, 2) evacuate the work area and 3) immediately notify the site manager, SSHO or PM of the encountered condition. Work may only resume with appropriate documentation/notification that exposure hazards	**L**

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		(physical or chemical) do not exist. Notify AGVIQ-CH2M HILL JV PM and program officials and applicable NAVFAC POCs and do not resume work until authorized to do so.	
	• Excavations	• Inspect the excavation and temporary water dam every day and after everyday hazard increasing event. Documentation of this inspection must be maintained daily and available as part of the project record. Documentation should be available on-site for inspection. • All overburden soil removed during excavation operations shall be stockpiled a minimum of 2' horizontal feet away from any open edge of the excavation. Increased distances are preferable. Material shall also be placed in such a manner to prevent excessive loading on the face of the cut. • No person shall stand adjacent to a vertical excavation edge. Inspection and soil logging and photographic documentation shall occur from a safe distance or from cab of excavator, such that employee exposure to fall or engulfment hazards are eliminated. • Personnel will not enter test pit excavations under any circumstance. Position bearing weight of excavator away from edges of open trenches. • Where excavation edges are exposed to public, excavations shall be protected and identified from inadvertent access by the public until the excavation is backfilled. • Provide Excavation Perimeter Protection and Warning signs as necessary to be in compliance with EM 385 11-1, Section 25B Safe Access and Appendix Q, "Perimeter Protection".	**L**
	• Heavy Equipment	▪ Seat belts or other restraint system shall be used by heavy equipment operators. ▪ Perform daily maintenance and inspections on operating equipment. Keep documentation on site. ▪ Use caution around pressurized lines/hoses. Inspect hoses daily for cuts, abrasions and wear. ▪ Equipment shall only be operated by personnel qualified by prior training or experience. ▪ Ensure that a stable ground surface is available for the operation of heavy equipment. ▪ Equipment operators shall not leave the cab of the equipment while they are lifting/controlling a load unless the load has been delivered to its intended transport	**L**

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		location or the load has been fully secured (no potential for rolling onto or crushing ground personnel) and the equipment and controls are fully secured/disengaged and equipment is “de-energized”.	
	• Pinched/Struck-by/ Caught-in-between	• Sufficient separation between ground support personnel and any operating heavy equipment must be maintained. • Wear reflective vests or high visibility clothing to promote visibility of ground personnel for equipment operators. • Isolate equipment swing areas from workers, fixed objects or other equipment. • Ground personnel shall avoid positioning themselves between fixed objects, operating equipment. • Make/maintain eye contact with operators before approaching equipment. • Do not approach equipment from rear or from blind spot of operator. • Stay out of the swing radius of operating heavy equipment. • Understand and review hand signals. Designate one person to provide hand signals to equipment operators performing lifting/hoisting operations. • Ensure equipment has operable back-up alarms. • Step away from heavy equipment when adjustments (positioning) are made. • Ensure heavy equipment operator has spotter for obstructed views and backing up. • Ensure that all ground personnel have sufficient separation from tub grinding operations	**L**
Install piping and conduit	Crane Operations	• Follow the Crane Operating subcontractors EM 385 compliant Lift Plan. • Cranes shall be operated by a certified crane operator. After November 10, 2014, only operators possessing a certificate from a nationally accredited testing organization, an audited employer training program, or U.S. military or state-issuing agency will be authorized to operate cranes. • The crane’s operations manual and load chart specifically designed for the crane shall be in the crane at all times. • The crane must have a current annual inspection to include load test certification (within the last 12 months) that meets all state and federal safety standards. Documentation of this inspection must be available for review. • A competent person will inspect the crane daily to ensure it	M

		is in safe operating condition. The daily crane inspection log provided within the crane manufacturer's operations manual shall be used. See also the requirements for monthly inspections, among others, in SOP HSE-303. • All rigging equipment must be inspected by a competent person prior to use for signs of excessive wear; equipment found to be damaged will be tagged and removed from service. • A qualified and competent Assembly/Disassembly (A/D) Director shall be assigned when cranes must be assembled onsite. The A/D Director is responsible for ensuring the crane is assembled and disassembled according to manufacturer requirements; performing training for the A/D crew; and ensuring sufficient ground conditions exist for crane placement; among other responsibilities (see SOP HSE-303). • The assembly/disassembly process must comply with requirements in HSE-303, including having an AHA for the task. • A critical lift plan shall be prepared when the lift is estimated to be greater than 75% of the crane capacity or when two cranes will be used to make a lift. • A pre-lift meeting will be conducted to include all parties involved in that day's crane operation. • Only one qualified person shall be designated to signal the crane operator. This person shall be thoroughly familiar with the ANSI standard method of hand signals and an illustration of these signals shall be posted at the job site. • No personnel shall be permitted under the load at any time. • Tag lines shall be attached to every load being made by the crane. • The swing radius of the rear rotating superstructure (counterweight) of the crane shall be barricaded and no entrance allowed. • Suspended loads shall not pass over workers or occupied buildings at any time. • Complete the self-assessment checklist for crane-suspended personnel platforms whenever they are being used. • AGVIQ-CH2M HILL employees exposed to hazards posed by crane operations, must be trained in hazards awareness and control procedures. See requirements for	

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		training in HSE-303.	
	• Lock-out/ Tag-out	• Inspect the LO/TO performed on the well by Aqua New York to ensure it is complete and all hazardous energies have been isolated or relieved.	L
	• Rigging	• All rigging equipment shall be used only for its intended purpose, inspected by a competent person prior to use, and shall not be loaded in excess of its capacity rating. Defective rigging shall be removed from service. • When AGVIQ-CH2M HILL is in control of rigging operations, AGVIQ-CH2M HILL shall provide a rigging competent person that will inspect, maintain oversee all rigging operations. The competent person shall use the appropriate rigging inspection log form to inspect wire rope, synthetic slings and/or shackles. • Tag lines shall be attached to every load being lifted by a crane. • Rigging equipment shall be protected from flame cutting and electric welding operations, and or contact avoided with solvents and chemicals. • Rigging equipment, when not in use, shall be stored in an area free from damage caused by environmental elements, hazardous substances, and other factors that may compromise equipment integrity and performance. • No modification or addition, which that could affect the capacity and or safe operation of the equipment, shall be made without the manufacturer's written approval. • Rigging equipment shall not be shortened with knots, bolts or other makeshift devices. • All rigging equipment shall be load tested at least annually by a competent person and documented. • Special hoisting devices, slings, chokers, hooks, clamps, or other lifting accessories shall be marked to indicate the safe working loads and shall be proof -tested prior to initial use to 125 percent of their rated load. Vendors or suppliers will provide documentation of proof testing documentation.	L
	• Wielding and Cutting operations	• Use only properly instructed and qualified personnel. • Inspected area and obtain a Hot Work Permit. • Suitable fire extinguishing equipment shall be immediately available in the work area. • Flame-resistant blankets shall be used to control sparks	L

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		produced by welding and cutting operations from traveling to lower levels or adjacent surfaces. • Flow gages and regulators shall be inspected prior to use and removed from cylinders when not in use. • Hoses, leads, and cables shall be not be routed through doorways and walkways unless covered, elevated, or protected from damage. Where hoses, leads, and cables pass through wall openings, adequate protection shall be provided to prevent damage. • Flash arresters shall be installed at the torch handle. • Arc welding electrodes shall not be struck against compressed gas cylinders to strike an arc. • All arc welding or cutting operations shall be shielded by noncombustible or flame resistant screens to protect employees or other persons in the vicinity from the direct rays of the arc. • Proper ventilation shall be provided so as to maintain the level of contaminants in the breathing zone of welders below applicable permissible exposure limits.	
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Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
• Fire extinguisher (with fuel and electrical sources) • Eye wash (small portable type) • Miscellaneous power and manual hand tools. • First Aid/BbPK/CPR shield • Spill Kit • Communication devices	• Review APP by new site personnel. • 1st Aid/CPR (2 per site when medical attention a medical facility or physician is more than 5 minutes away to two or more employees. • Supervisors - BBLPS, 30 hour OSHA Construction Safety Training or equivalent • Heavy equipment operators qualified by previous training or experience. • Competent Person Requirement & Name: TBD •	• Visual Inspections of designated work areas identify and address hazardous conditions. • Equipment inspections and maintenance. • Brushcutter inspection/maintenance. • Chipper maintenance, if used. • Emergency Response equipment Inspections • (Fire Extinguishers, Eye wash First Aid/CPR etc.)

Instructions for completing Contractor Activity Hazard Analysis

1. **Activity/Work Task – Insert work/task this AHA is written for i.e. excavation, scaffold building, foundation preparation.**
2. **PWO/OICC/ROICC – Insert name of Public Works Office, Officer In Charge of Construction Office or Resident Officer in Charge of Construction (PWD/OICC/ROICC**
3. **Enter name & date AHA accepted by Government Designated Authority (GDA)**
4. **Enter contract number**
5. **Enter Task order or Delivery order number**
6. **Enter Prime Contractors name**
7. **Enter Subcontractors name**
8. **Enter date preparatory meeting was held**
9. **Enter date initial inspection was performed**
10. **Enter name of contractor competent person on site for this activity**
11. **Enter name of Prime Contractor Site Safety and Health Officer**
12. **Level of government person responsible for accepting the AHA, progressive signatures as level of risk increases.**

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13. **Overall Risk Assessment code is highest code assigned to any Job step after Hazards are assessed and Controls have been assigned**
14. **Schedule number is activity number from production daily reports**
15. **AHA number is the sequential number of all AHA's for this contract.**
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18. **Controls is the safety measures in place to reduce the hazard to the lowest level possible**
19. **Risk Assessment code is where Severity and Probability intersect, place that letter E, H, M, or L in the RAC column**
20. **List all equipment to be used to complete this activity i.e. crane, backhoe, vehicle, all heavy equipment**
21. **List the training requirements required by EM 385, Safety Spec 01356 or OSHA that apply to this task.**
    List competent person(s) required for specific tasks in EM 385
    List qualified person(s) required for specific tasks in EM 385
    List CPR/First Aid training and qualification dates
22. **List all inspection requirements of EM 385, Governmental Safety Requirements Specifications or OSHA 29 CFR 1926**

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Activity Hazard Analysis (AHA)

ACTIVITY/WORK TASK:	**Process Equipment, Piping, and Valves Installation**	Overall Risk Assessment Code (RAC) (Use highest code)			**M**
	SIGNATURES	Activity #	1	AHA #	**1**
PWD/OICC/ROICC OFFICE		**Risk Assessment Code (RAC) Matrix**			
NAME & DATE ACCEPTED BY GDA:					
CONTRACT NUMBER:	**N62470-08-D-1006**	**Severity**	**Probability**		
TASK ORDER/DELIVERY #:	**WE23**				
PRIME CONTRACTOR:	**CH2M HILL**		Frequent	Likely	Occasional
SUBCONTRACTOR:	**TBD**				
DATE OF PREPARATORY MEETING:		Catastrophic	**E**	**E**	**H**
DATE OF INITIAL INSPECTION:		Critical	**E**	**H**	**H**
CONTRACTOR COMPETENT PERSON:	Crane Operator TBD	Marginal	**H**	**M**	**M**
SITE SAFETY and HEALTH OFFICER		Negligible	**M**	**L**	**L**

Seldom	Unlikely			
H	**M**			
M	**L**			
L	**L**			
L	**L**			

ACCEPTANCE BY GOVERNMENT DESIGNATED AUTHORITY (GDA)	Review each **"Hazard"** with identified safety **"Controls"** and determine (RAC)
E = EXTREMELY HIGH (PWO/OICC/ROICC)	Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" .Place the highest RAC at the top of AHA. This is the overall risk assessment code for this activity
H = HIGH RISK (FEAD DIRECTOR)	**"Severity"** is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible after controls are in place
M = MODERATE RISK (CM or ET or PAR)	
L = LOW RISK (ET or PAR)	**"Probability"** is the likelihood to cause an incident, near miss, or accident did occur and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely after controls are put in place.

Job Steps	Hazards	Controls	RAC
Mobilizing to Site **Driving** **Vehicle Backing**	• Traffic accident • Driver fatigue • Poor driving skills • Load shift • Traffic accident • Property damage •	▪ Keep alert of your surroundings. Do not try to complete other tasks while driving that can distract your attention ▪ Do not drive when tired. Pull off at a safe location and walk around your vehicle and take a break if getting tired. ▪ Use your mirrors while driving. Do not use evasive driving actions. Obey traffic laws. ▪ Secure loads before starting your trip. Make frequent stops to check your load to make sure nothing has become loose. Retighten any loose straps. ▪ Check your surroundings when before backing. When possible use a spotter. ▪ Check for obstructions before backing. Walk around vehicle to make sure area is clear.	**L**

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Job Steps	Hazards	Controls	RAC
Unloading/placing equipment.	• Back strain • Hand Injuries; cuts, bruises, pinch points • Slips, Trips, & Falls • Contact with Heavy Equipment while in use.	• Use proper lifting techniques at all times. Request assistance from other personal when weight limits exceeds 50lbs. Mechanical means shall be used for gate relocation whenever possible rather than manual means to avoid the risk of stains and sprains. • Wear protective gloves; Use hand tools in a safe manner and keep hand tools in good working condition. • Use extreme caution when walking in work areas, working on or around truck beds and around equipment during unloading and staging activities. • Only trained and experienced personnel will be allowed to stage and unload heavy equipment. • Only certified operators will be authorized to operate equipment. Certifications must be on site at all times. • High visibility vests will be worn at all times while working in or around heavy equipment, trucks or other mechanized equipment. • All ground personal etc. must maintain eye contact with operators at all times. Do not proceed toward, or into blind spots of equipment without authorization to do so by operator. • All ground personal will stay outside the swing radius of equipment while in operation.	**L**
General Construction Hazards	• Accidents due to lack of training	▪ Copies of records will be kept by the SSO. ▪ Worker will be trained prior to performing new activities. Copies of records will be kept by the SSO. This includes signature sheets for AHAs. HASP and any other training documents. ▪ A daily tailgate safety meeting will be held prior to starting each shift. All personnel must attend review and sign the Safety Tailgate log before beginning work. CH2M HILL Staff should be present. ▪ All site workers must understand all Emergency procedures, AHA and HASP procedures. ▪ A copy of each Tailgate meeting must be supplied to the CH2M HILL onsite rep each day. •	**L**
	• Electrical Hazards	• Do not open panels or cabinet's that contain live electrical parts. • NFPA 70e training is required to work on or near live electrical parts.	**L**
	• Hearing Damage	• Workers will wear hearing protection whenever voices must be raised above normal conversational speech or when noise levels exceed 85 decibels due to a load noise source; such as working around heavy equipment. • Hearing protection will be worn by equipment operators when working in open cab equipment, or when doors/windows are open.	**L**

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Equipment to be Used	Training Requirements and Competent or Qualified Personnel name(s)	Inspection Requirements	RAC
	• Injuries from slips, trips, and falls	• Walking/working surfaces will be kept free of clutter, debris, and congestion to the greatest extent possible. • Personnel will be briefed on the hazards of wet, muddy soil hazards and traversing uneven grades. • Walk or climb only on equipment and/or surfaces that are designed for personnel access. • Be aware of potential for poor footing while working on un-compacted backfill materials. • Use three-point contact when climbing onto equipment.	L
	• Accidents due to poor lighting	• Work at site is only expected to take place during daylight hours. If work after daylight hours or in dark areas of buildings, provide supplemental lighting.	L
	• Injury due to inclement weather	• Outdoor work will cease during extreme weather conditions, such as electrical storms, high wind rain, and extreme temperatures. • Shut all equipment down when lightning is visible and wait for “all-clear” from the SSHO. • Workers will take cover indoors or in vehicle. • Supervisors will monitor local forecasts for warnings about specific weather hazards. • Workers will comply with all evacuation orders regarding rough weather directives.	L
	• Heat Stress	▪ Workers will be trained in the recognition of heat stress and appropriate actions to take. ▪ Workers are encouraged to increase fluid intake while working. ▪ Workers should minimize or avoid alcohol intake the night before working in heat stress situations. ▪ Workers will increase the frequency and duration of rest breaks while working in heat stress situations. ▪ Workers will watch each other for signs and symptoms of heat exhaustion and fatigue.	L
	• Controlling work areas	• Fencing, tape, cones or other SSHO-approved boundaries will be erected to warn approaching personnel of the hazardous area. • Appropriate signs will be posted at the boundary to instruct personnel in entry requirements.	L
	• Injuries associated with insects, snakes, spiders and poisonous plants	• Workers will tuck pants into socks and wear long sleeves and sturdy leather boots when walking in tall grass. • Workers will use insect repellent when needed.	L

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		• Workers will use buddy system to check for signs of insect and spider bites, such as redness, swelling, and flu-like symptoms if bitten. • If workers have known or suspected allergies, they will carry an Epi-Pen at all times and will notify supervision and co-workers of allergies. • If bitten by any insect notify the CH2M HILL (CCI) oversight rep immediately. This includes any type of injury that would require any type of First Aid.	
Process Equipment, Piping, and Valves Installation	• Electric Safety	• Ensure that electric connections from generator set to temporary construction facilities are performed by qualified electricians. • Inspect all electrical power circuits are sufficient prior to connection. • If/when electrical extension cords are required to complete work, extension cords must be: • Equipped with third-wire grounding. • Covered, elevated, or protected from damage when passing through work areas. • Protected from pinching if routed through doorways. • Extension cords and electrical power tools, must have ground fault circuit interrupters (GFCIs) installed. • Rated to handle the voltage/amperage of equipment.	**L**
	• Crane Operations	▪ Follow the Crane Operating subcontractors EM 385 compliant Lift Plan. ▪ Cranes shall be operated by a certified crane operator. After November 10, 2014, only operators possessing a certificate from a nationally accredited testing organization, an audited employer training program, or U.S. military or state-issuing agency will be authorized to operate cranes. ▪ The crane's operations manual and load chart specifically designed for the crane shall be in the crane at all times. ▪ The crane must have a current annual inspection to include load test certification (within the last 12 months) that meets all state and federal safety standards. Documentation of this inspection must be available for review. ▪ A competent person will inspect the crane daily to ensure it is in safe operating condition. The daily crane inspection log provided within the crane manufacturer's operations manual shall be used. See also the requirements for monthly inspections, among others, in SOP HSE-303. ▪ All rigging equipment must be inspected by a competent	**M**

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		person prior to use for signs of excessive wear; equipment found to be damaged will be tagged and removed from service. ▪ A qualified and competent Assembly/Disassembly (A/D) Director shall be assigned when cranes must be assembled onsite. The A/D Director is responsible for ensuring the crane is assembled and disassembled according to manufacturer requirements; performing training for the A/D crew; and ensuring sufficient ground conditions exist for crane placement; among other responsibilities (see SOP HSE-303). ▪ The assembly/disassembly process must comply with requirements in HSE-303, including having an AHA for the task. ▪ A critical lift plan shall be prepared when the lift is estimated to be greater than 75% of the crane capacity or when two cranes will be used to make a lift. ▪ A pre-lift meeting will be conducted to include all parties involved in that day's crane operation. ▪ Only one qualified person shall be designated to signal the crane operator. This person shall be thoroughly familiar with the ANSI standard method of hand signals and an illustration of these signals shall be posted at the job site. ▪ No personnel shall be permitted under the load at any time. ▪ Tag lines shall be attached to every load being made by the crane. ▪ The swing radius of the rear rotating superstructure (counterweight) of the crane shall be barricaded and no entrance allowed. ▪ Suspended loads shall not pass over workers or occupied buildings at any time. ▪ Complete the self-assessment checklist for crane-suspended personnel platforms whenever they are being used. ▪ AGVIQ-CH2M HILL employees exposed to hazards posed by crane operations, must be trained in hazards awareness and control procedures. See requirements for training in HSE-303.	
	• Fall Protection	▪ Appropriate fall protection equipment including anchorage must be identified when a fall hazard of 6 feet (1.8 meters) or greater is present. ▪ Exposed workers must complete project-specific fall protection training using the fall protection systems to be used.	**L**

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		▪ The SSHO or designee must complete the Project Fall Protection Evaluation Form and provide project-specific fall protection training to all AGVIQ-CH2M HILL staff exposed to fall hazards. ▪ The company responsible for the fall protection system shall provide a fall protection competent person to inspect and oversee the use of fall protection system. ▪ When horizontal lifelines are used, the company responsible for the lifeline system shall provide a fall protection qualified person to oversee the design, installation, and use of the horizontal lifeline. ▪ Inspect all fall protection systems and components prior to each use. ▪ Personal fall arrest systems shall be configured so that individuals can neither free-fall more than 6 feet (1.8 meters) or contact any lower level. ▪ Only attach personal fall arrest systems to anchorage points capable of supporting at least 5,000 pounds (2268 kg). Do not attach personal fall arrest systems to guardrail systems or hoists. ▪ Remain within the guardrail system when provided. Leaning over or stepping across a guardrail system is not permitted. Do not stand on objects (boxes, buckets, bricks, blocks, etc.) or ladders to increase working height on top of platforms protected by guardrails. ▪ Only one person shall be simultaneously attached to a vertical lifeline and shall also be attached to a separate independent lifeline.	
	• Rigging	• All rigging equipment shall be used only for its intended purpose, inspected by a competent person prior to use, and shall not be loaded in excess of its capacity rating. Defective rigging shall be removed from service. • When AGVIQ-CH2M HILL is in control of rigging operations, AGVIQ-CH2M HILL shall provide a rigging competent person that will inspect, maintain oversee all rigging operations. The competent person shall use the appropriate rigging inspection log form to inspect wire rope, synthetic slings and/or shackles. • Tag lines shall be attached to every load being lifted by a crane. • Rigging equipment shall be protected from flame cutting and electric welding operations, and or contact avoided with solvents and chemicals. • Rigging equipment, when not in use, shall be stored in an	**L**

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		area free from damage caused by environmental elements, hazardous substances, and other factors that may compromise equipment integrity and performance. • No modification or addition, which that could affect the capacity and or safe operation of the equipment, shall be made without the manufacturer's written approval. • Rigging equipment shall not be shortened with knots, bolts or other makeshift devices. • All rigging equipment shall be load tested at least annually by a competent person and documented. • Special hoisting devices, slings, chokers, hooks, clamps, or other lifting accessories shall be marked to indicate the safe working loads and shall be proof -tested prior to initial use to 125 percent of their rated load. Vendors or suppliers will provide documentation of proof testing documentation.	
	• Pinched/Struck-by/ Caught-in-between	• Sufficient separation between ground support personnel and any operating heavy equipment must be maintained. • Wear reflective vests or high visibility clothing to promote visibility of ground personnel for equipment operators. • Isolate equipment swing areas from workers, fixed objects or other equipment. • Ground personnel shall avoid positioning themselves between fixed objects, operating equipment. • Make/maintain eye contact with operators before approaching equipment. • Do not approach equipment from rear or from blind spot of operator. • Stay out of the swing radius of operating heavy equipment. • Understand and review hand signals. Designate one person to provide hand signals to equipment operators performing lifting/hoisting operations. • Ensure equipment has operable back-up alarms. • Step away from heavy equipment when adjustments (positioning) are made. • Ensure heavy equipment operator has spotter for obstructed views and backing up. • Ensure that all ground personnel have sufficient separation from tub grinding operations	**L**
	• Wielding and Cutting operations	• Use only properly instructed and qualified personnel. • Inspected area and obtain a Hot Work Permit. • Suitable fire extinguishing equipment shall be	L

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		immediately available in the work area. • Flame-resistant blankets shall be used to control sparks produced by welding and cutting operations from traveling to lower levels or adjacent surfaces. • Flow gages and regulators shall be inspected prior to use and removed from cylinders when not in use. • Hoses, leads, and cables shall be not be routed through doorways and walkways unless covered, elevated, or protected from damage. Where hoses, leads, and cables pass through wall openings, adequate protection shall be provided to prevent damage. • Flash arresters shall be installed at the torch handle. • Arc welding electrodes shall not be struck against compressed gas cylinders to strike an arc. • All arc welding or cutting operations shall be shielded by noncombustible or flame resistant screens to protect employees or other persons in the vicinity from the direct rays of the arc. • Proper ventilation shall be provided so as to maintain the level of contaminants in the breathing zone of welders below applicable permissible exposure limits.	

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Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
• Fire extinguisher (with fuel and electrical sources) • Eye wash (small portable type) • Miscellaneous power and manual hand tools. • First Aid/BbPK/CPR shield • Spill Kit • Communication devices	• Review APP by new site personnel. • 1st Aid/CPR (2 per site when medical attention a medical facility or physician is more than 5 minutes away to two or more employees. • Supervisors - BBLPS, 30 hour OSHA Construction Safety Training or equivalent • Heavy equipment operators qualified by previous training or experience. • Competent Person Requirement Rigging/Crane operations	• Visual Inspections of designated work areas identify and address hazardous conditions. • Equipment inspections and maintenance. • Brushcutter inspection/maintenance. • Chipper maintenance, if used. • Emergency Response equipment Inspections • (Fire Extinguishers, Eye wash First Aid/CPR etc.)

Instructions for completing Contractor Activity Hazard Analysis

1. **Activity/Work Task – Insert work/task this AHA is written for i.e. excavation, scaffold building, foundation preparation.**
2. **PWO/OICC/ROICC – Insert name of Public Works Office, Officer In Charge of Construction Office or Resident Officer in Charge of Construction (PWD/OICC/ROICC**
3. **Enter name & date AHA accepted by Government Designated Authority (GDA)**
4. **Enter contract number**
5. **Enter Task order or Delivery order number**
6. **Enter Prime Contractors name**
7. **Enter Subcontractors name**
8. **Enter date preparatory meeting was held**
9. **Enter date initial inspection was performed**
10. **Enter name of contractor competent person on site for this activity**
11. **Enter name of Prime Contractor Site Safety and Health Officer**
12. **Level of government person responsible for accepting the AHA, progressive signatures as level of risk increases.**

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13. **Overall Risk Assessment code is highest code assigned to any Job step after Hazards are assessed and Controls have been assigned**
14. **Schedule number is activity number from production daily reports**
15. **AHA number is the sequential number of all AHA's for this contract.**
16. **Job steps is the complete sequence of work, not general statements to complete the entire activity**
17. **Hazards is the known safety risks associated with completing the task**
18. **Controls is the safety measures in place to reduce the hazard to the lowest level possible**
19. **Risk Assessment code is where Severity and Probability intersect, place that letter E, H, M, or L in the RAC column**
20. **List all equipment to be used to complete this activity i.e. crane, backhoe, vehicle, all heavy equipment**
21. **List the training requirements required by EM 385, Safety Spec 01356 or OSHA that apply to this task.**
    List competent person(s) required for specific tasks in EM 385
    List qualified person(s) required for specific tasks in EM 385
    List CPR/First Aid training and qualification dates
22. **List all inspection requirements of EM 385, Governmental Safety Requirements Specifications or OSHA 29 CFR 1926**

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Activity Hazard Analysis (AHA)

ACTIVITY/WORK TASK:	**System Startup**	Overall Risk Assessment Code (RAC) (Use highest code)		**M**
	SIGNATURES	Activity #	1	AHA # **1**
PWD/OICC/ROICC OFFICE				
NAME & DATE ACCEPTED BY GDA:				
CONTRACT NUMBER:	**N62470-08-D-1006**			
TASK ORDER/DELIVERY #:	**WE23**			
PRIME CONTRACTOR:	**CH2M HILL**			
SUBCONTRACTOR:	**TBD**			
DATE OF PREPARATORY MEETING:				
DATE OF INITIAL INSPECTION:				
CONTRACTOR COMPETENT PERSON:	NA			
SITE SAFETY and HEALTH OFFICER				

Risk Assessment Code (RAC) Matrix

Severity	Probability				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	**E**	**E**	**H**	**H**	**M**
Critical	**E**	**H**	**H**	**M**	**L**
Marginal	**H**	**M**	**M**	**L**	**L**
Negligible	**M**	**L**	**L**	**L**	**L**

ACCEPTANCE BY GOVERNMENT DESIGNATED AUTHORITY (GDA)

E = EXTREMELY HIGH (PWO/OICC/ROICC)

H = HIGH RISK (FEAD DIRECTOR)

M = MODERATE RISK (CM or ET or PAR)

L = LOW RISK (ET or PAR)

Review each **"Hazard"** with identified safety **"Controls"** and determine (RAC)

Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" .Place the highest RAC at the top of AHA. This is the overall risk assessment code for this activity

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible after controls are in place

"Probability" is the likelihood to cause an incident, near miss, or accident did occur and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely after controls are put in place.

Job Steps	Hazards	Controls	RAC
General Construction Hazards	• Accidents due to lack of training	▪ Copies of records will be kept by the SSO. ▪ Worker will be trained prior to performing new activities. Copies of records will be kept by the SSO. This includes signature sheets for AHAs. HASP and any other training documents. ▪ A daily tailgate safety meeting will be held prior to starting each shift. All personnel must attend review and sign the Safety Tailgate log before beginning work. CH2M HILL Staff should be present. ▪ All site workers must understand all Emergency procedures, AHA and HASP procedures. ▪ A copy of each Tailgate meeting must be supplied to the CH2M HILL onsite rep each day.	**L**
	• Electrical Hazards	• Do not open panels or cabinet's that contain live electrical parts. • NFPA 70e training is required to work on or near live electrical parts.	**L**
	• Hearing Damage	• Workers will wear hearing protection whenever voices must be raised above normal conversational speech or when noise levels exceed 85 decibels due to a load noise source; such as working around heavy equipment. • Hearing protection will be worn by equipment operators when working in open cab equipment, or when doors/windows are open.	**L**

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	• Injuries from slips, trips, and falls	• Walking/working surfaces will be kept free of clutter, debris, and congestion to the greatest extent possible. • Personnel will be briefed on the hazards of wet, muddy soil hazards and traversing uneven grades. • Walk or climb only on equipment and/or surfaces that are designed for personnel access. • Be aware of potential for poor footing while working on un-compacted backfill materials. • Use three-point contact when climbing onto equipment.	**L**
	• Accidents due to poor lighting	• Work at site is only expected to take place during daylight hours. If work after daylight hours or in dark areas of buildings, provide supplemental lighting.	**L**
	• Injury due to inclement weather	• Outdoor work will cease during extreme weather conditions, such as electrical storms, high wind rain, and extreme temperatures. • Shut all equipment down when lightning is visible and wait for “all-clear” from the SSHO. • Workers will take cover indoors or in vehicle. • Supervisors will monitor local forecasts for warnings about specific weather hazards. • Workers will comply with all evacuation orders regarding rough weather directives.	**L**
	• Heat Stress	▪ Workers will be trained in the recognition of heat stress and appropriate actions to take. ▪ Workers are encouraged to increase fluid intake while working. ▪ Workers should minimize or avoid alcohol intake the night before working in heat stress situations. ▪ Workers will increase the frequency and duration of rest breaks while working in heat stress situations. ▪ Workers will watch each other for signs and symptoms of heat exhaustion and fatigue.	**L**
	• Controlling work areas	• Fencing, tape, cones or other SSHO-approved boundaries will be erected to warn approaching personnel of the hazardous area. • Appropriate signs will be posted at the boundary to instruct personnel in entry requirements.	**L**
	• Injuries associated with insects, snakes, spiders and poisonous plants	• Workers will tuck pants into socks and wear long sleeves and sturdy leather boots when walking in tall grass. • Workers will use insect repellent when needed.	**L**

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		• Workers will use buddy system to check for signs of insect and spider bites, such as redness, swelling, and flu-like symptoms if bitten. • If workers have known or suspected allergies, they will carry an Epi-Pen at all times and will notify supervision and co-workers of allergies. • If bitten by any insect notify the CH2M HILL (CCI) oversight rep immediately. This includes any type of injury that would require any type of First Aid.	
Flushing piping and vessels Sterilizing the system	• Chemical Exposure •	• All personnel performing this task shall be trained and enrolled in a medical surveillance program in accordance with 29CFR1910.120. • Do not allow dermal contact or incidental ingestion of impacted soil/sediment or water. • Skin contact with contaminated water, soils, debris, or equipment shall be avoided at all times. Do not kneel or step in potentially contaminated media (soil or water) without first donning proper PPE. • Exercise good hygiene practices. Always wash hands before eating, drinking, smoking and leaving site. Shower as soon as possible after leaving the site. • Only eat, drink, smoke or chew tobacco in designated areas. • Adhere to PPE and action monitoring requirements identified in Tables 1-2 and 1-3 respectively of **Attachment 1 of the APP, Site Safety and Health Plan** of the APP. • Review applicable MSDS information.	**L**
	• Fall Protection	▪ Appropriate fall protection equipment including anchorage must be identified when a fall hazard of 6 feet (1.8 meters) or greater is present. ▪ Exposed workers must complete project-specific fall protection training using the fall protection systems to be used. ▪ The SSHO or designee must complete the Project Fall Protection Evaluation Form and provide project-specific fall protection training to all AGVIQ-CH2M HILL staff exposed to fall hazards. ▪ The company responsible for the fall protection system shall provide a fall protection competent person to inspect and oversee the use of fall protection system. ▪ When horizontal lifelines are used, the company responsible for the lifeline system shall provide a fall protection qualified person to oversee the design,	**L**

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		installation, and use of the horizontal lifeline. ▪ Inspect all fall protection systems and components prior to each use. ▪ Personal fall arrest systems shall be configured so that individuals can neither free-fall more than 6 feet (1.8 meters) or contact any lower level. ▪ Only attach personal fall arrest systems to anchorage points capable of supporting at least 5,000 pounds (2268 kg). Do not attach personal fall arrest systems to guardrail systems or hoists. ▪ Remain within the guardrail system when provided. Leaning over or stepping across a guardrail system is not permitted. Do not stand on objects (boxes, buckets, bricks, blocks, etc.) or ladders to increase working height on top of platforms protected by guardrails. ▪ Only one person shall be simultaneously attached to a vertical lifeline and shall also be attached to a separate independent lifeline.	
	• Lock-out/ Tag-out	• Inspect the LO/TO performed on the well by Aqua New York to ensure it is complete and all hazardous energies have been isolated or relieved.	**L**
	• Sample Handling	• All personnel performing this task shall be trained and enrolled in a medical surveillance program in accordance with 29CFR1910.120. • Do not allow dermal contact or incidental ingestion of impacted water. • Exercise good hygiene practices. Always wash hands before eating, drinking, smoking and leaving site. • Adhere to PPE and action monitoring requirements identified in Tables 1-2 and 1-3 respectively of **Attachment 1 of the APP, Site Safety and Health Plan** of the APP. • Caution should be exercised when filling bottles containing acid or base preservatives. Both liquid and vapor phases of acid can cause severe burns. • Following sample collection, sample container lids should be tightened securely to prevent any leaks, and the containers should be rinsed with clean water to ensure that they are free of chemical constituents. Sample activities, sample collection, and equipment decontamination procedures. • Properly contain and label all decontamination solutions used for the cleaning of sampling equipment and tools. • Review applicable MSDS information.	**L**

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Loading carbon (fill GAC Vessels) **Backwash GAC Vessels**	• Chemical Exposure	• All personnel performing this task shall be trained and enrolled in a medical surveillance program in accordance with 29CFR1910.120. • Do not allow dermal contact or incidental ingestion of impacted soil/sediment or water. • Skin contact with contaminated water, soils, debris, or equipment shall be avoided at all times. Do not kneel or step in potentially contaminated media (soil or water) without first donning proper PPE. • Exercise good hygiene practices. Always wash hands before eating, drinking, smoking and leaving site. Shower as soon as possible after leaving the site. • Only eat, drink, smoke or chew tobacco in designated areas. • Adhere to PPE and action monitoring requirements identified in Tables 1-2 and 1-3 respectively of **Attachment 1 of the APP, Site Safety and Health Plan** of the APP. • Review applicable MSDS information	
	• Manual Lifting	• AGVIQ-CH2MHILL or subcontract personnel must notify supervisors or safety representatives of preexisting medical conditions that may be aggravated or re-injured by lifting activities, especially lifting operation involving repetitive motions. • When lifting objects, lift using knees not back. Do not manually handle any loads that should be moved, lifted transferred via the use heavy. • Have someone assist with manually lifting— especially for heavy (> 40lbs.) or awkward loads.	**L**
	• Pinched/Struck-by/ Caught-in-between	• Sufficient separation between ground support personnel and any operating heavy equipment must be maintained. • Wear reflective vests or high visibility clothing to promote visibility of ground personnel for equipment operators. • Isolate equipment swing areas from workers, fixed objects or other equipment. • Ground personnel shall avoid positioning themselves between fixed objects, operating equipment. • Make/maintain eye contact with operators before approaching equipment. • Do not approach equipment from rear or from blind spot of operator. • Stay out of the swing radius of operating heavy equipment. • Understand and review hand signals. Designate one	**L**

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		person to provide hand signals to equipment operators performing lifting/hoisting operations. • Ensure equipment has operable back-up alarms. • Step away from heavy equipment when adjustments (positioning) are made. • Ensure heavy equipment operator has spotter for obstructed views and backing up. • Ensure that all ground personnel have sufficient separation from tub grinding operations.	
	• Sample Handling	• All personnel performing this task shall be trained and enrolled in a medical surveillance program in accordance with 29CFR1910.120. • Do not allow dermal contact or incidental ingestion of impacted water. • Exercise good hygiene practices. Always wash hands before eating, drinking, smoking and leaving site. • Adhere to PPE and action monitoring requirements identified in Tables 1-2 and 1-3 respectively of **Attachment 1 of the APP, Site Safety and Health Plan** of the APP. • Caution should be exercised when filling bottles containing acid or base preservatives. Both liquid and vapor phases of acid can cause severe burns. • Following sample collection, sample container lids should be tightened securely to prevent any leaks, and the containers should be rinsed with clean water to ensure that they are free of chemical constituents. Sample activities, sample collection, and equipment decontamination procedures. • Properly contain and label all decontamination solutions used for the cleaning of sampling equipment and tools. • Review applicable MSDS information.	L
Tie-In to AQUA System Start-Up system by Aqua employees	• Chemical Exposure •	• All personnel performing this task shall be trained and enrolled in a medical surveillance program in accordance with 29CFR1910.120. • Do not allow dermal contact or incidental ingestion of impacted soil/sediment or water. • Skin contact with contaminated water, soils, debris, or equipment shall be avoided at all times. Do not kneel or step in potentially contaminated media (soil or water) without first donning proper PPE. • Exercise good hygiene practices. Always wash hands	

IAW EM 385 01.A.13 Contractor-Required AHA "Work will not begin until the AHA for the work activity has been accepted by the GDA"
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		before eating, drinking, smoking and leaving site. Shower as soon as possible after leaving the site. • Only eat, drink, smoke or chew tobacco in designated areas. • Adhere to PPE and action monitoring requirements identified in Tables 1-2 and 1-3 respectively of **Attachment 1 of the APP, Site Safety and Health Plan** of the APP. • Review applicable MSDS information.	
	• Lock-out/ Tag-out	• Inspect the LO/TO performed on the well by Aqua New York to ensure it is complete and all hazardous energies have been isolated or relieved.	
	•	• . •	

IAW EM 385 01.A.13 Contractor-Required AHA "Work will not begin until the AHA for the work activity has been accepted by the GDA"
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Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
• Fire extinguisher (with fuel and electrical sources) • Eye wash (small portable type) • Miscellaneous power and manual hand tools. • First Aid/BbPK/CPR shield • Spill Kit • Communication devices	• Review APP by new site personnel. • 1st Aid/CPR (2 per site when medical attention a medical facility or physician is more than 5 minutes away to two or more employees. • Supervisors - BBLPS, 30 hour OSHA Construction Safety Training or equivalent • Heavy equipment operators qualified by previous training or experience. • Competent Person Requirement: NA	• Visual Inspections of designated work areas identify and address hazardous conditions. • Equipment inspections and maintenance. • Brushcutter inspection/maintenance. • Chipper maintenance, if used. • Emergency Response equipment Inspections • (Fire Extinguishers, Eye wash First Aid/CPR etc.)

Instructions for completing Contractor Activity Hazard Analysis

1. **Activity/Work Task – Insert work/task this AHA is written for i.e. excavation, scaffold building, foundation preparation.**
2. **PWO/OICC/ROICC – Insert name of Public Works Office, Officer In Charge of Construction Office or Resident Officer in Charge of Construction (PWD/OICC/ROICC**
3. **Enter name & date AHA accepted by Government Designated Authority (GDA)**
4. **Enter contract number**
5. **Enter Task order or Delivery order number**
6. **Enter Prime Contractors name**
7. **Enter Subcontractors name**
8. **Enter date preparatory meeting was held**
9. **Enter date initial inspection was performed**
10. **Enter name of contractor competent person on site for this activity**
11. **Enter name of Prime Contractor Site Safety and Health Officer**
12. **Level of government person responsible for accepting the AHA, progressive signatures as level of risk increases.**

IAW EM 385 01.A.13 Contractor-Required AHA "Work will not begin until the AHA for the work activity has been accepted by the GDA"

The AHA shall be reviewed and modified as necessary to address changing site condition, operations or change of competent/qualified person's

13. **Overall Risk Assessment code is highest code assigned to any Job step after Hazards are assessed and Controls have been assigned**
14. **Schedule number is activity number from production daily reports**
15. **AHA number is the sequential number of all AHA's for this contract.**
16. **Job steps is the complete sequence of work, not general statements to complete the entire activity**
17. **Hazards is the known safety risks associated with completing the task**
18. **Controls is the safety measures in place to reduce the hazard to the lowest level possible**
19. **Risk Assessment code is where Severity and Probability intersect, place that letter E, H, M, or L in the RAC column**
20. **List all equipment to be used to complete this activity i.e. crane, backhoe, vehicle, all heavy equipment**
21. **List the training requirements required by EM 385, Safety Spec 01356 or OSHA that apply to this task.**
    List competent person(s) required for specific tasks in EM 385
    List qualified person(s) required for specific tasks in EM 385
    List CPR/First Aid training and qualification dates
22. **List all inspection requirements of EM 385, Governmental Safety Requirements Specifications or OSHA 29 CFR 1926**

IAW EM 385 01.A.13 Contractor-Required AHA "Work will not begin until the AHA for the work activity has been accepted by the GDA"
The AHA shall be reviewed and modified as necessary to address changing site condition, operations or change of competent/qualified person's

Activity Hazard Analysis (AHA)

ACTIVITY/WORK TASK:	**Concrete Work**	Overall Risk Assessment Code (RAC) (Use highest code)		**M**
	SIGNATURES	Activity #	1	AHA # **1**
PWD/OICC/ROICC OFFICE		**Risk Assessment Code (RAC) Matrix**		
NAME & DATE ACCEPTED BY GDA:				
CONTRACT NUMBER:	**N62470-08-D-1006**	**Severity**	**Probability**	
TASK ORDER/DELIVERY #:	**WE23**			
PRIME CONTRACTOR:	**CH2M HILL**			
SUBCONTRACTOR:	**TBD**			

Severity	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	**E**	**E**	**H**	**H**	**M**
Critical	**E**	**H**	**H**	**M**	**L**
Marginal	**H**	**M**	**M**	**L**	**L**
Negligible	**M**	**L**	**L**	**L**	**L**

DATE OF PREPARATORY MEETING:	
DATE OF INITIAL INSPECTION:	
CONTRACTOR COMPETENT PERSON:	NA
SITE SAFETY and HEALTH OFFICER	

ACCEPTANCE BY GOVERNMENT DESIGNATED AUTHORITY (GDA)

Review each **"Hazard"** with identified safety **"Controls"** and determine (RAC)

E = EXTREMELY HIGH (PWO/OICC/ROICC)	
H = HIGH RISK (FEAD DIRECTOR)	
M = MODERATE RISK (CM or ET or PAR)	
L = LOW RISK (ET or PAR)	

Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" .Place the highest RAC at the top of AHA. This is the overall risk assessment code for this activity

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible after controls are in place

"Probability" is the likelihood to cause an incident, near miss, or accident did occur and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely after controls are put in place.

Job Steps	Hazards	Controls	RAC
Mobilizing to Site **Driving** **Vehicle Backing**	• Traffic accident • Driver fatigue • Poor driving skills • Load shift • Traffic accident • Property damage •	▪ Keep alert of your surroundings. Do not try to complete other tasks while driving that can distract your attention ▪ Do not drive when tired. Pull off at a safe location and walk around your vehicle and take a break if getting tired. ▪ Use your mirrors while driving. Do not use evasive driving actions. Obey traffic laws. ▪ Secure loads before starting your trip. Make frequent stops to check your load to make sure nothing has become loose. Retighten any loose straps. ▪ Check your surroundings when before backing. When possible use a spotter. ▪ Check for obstructions before backing. Walk around vehicle to make sure area is clear.	**L**

IAW EM 385 01.A.13 Contractor-Required AHA "Work will not begin until the AHA for the work activity has been accepted by the GDA"
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Job Steps	Hazards	Controls	RAC
Unloading/placing equipment.	• Back strain • Hand Injuries; cuts, bruises, pinch points • Slips, Trips, & Falls • Contact with Heavy Equipment while in use.	• Use proper lifting techniques at all times. Request assistance from other personal when weight limits exceeds 50lbs. Mechanical means shall be used for gate relocation whenever possible rather than manual means to avoid the risk of stains and sprains. • Wear protective gloves; Use hand tools in a safe manner and keep hand tools in good working condition. • Use extreme caution when walking in work areas, working on or around truck beds and around equipment during unloading and staging activities. • Only trained and experienced personnel will be allowed to stage and unload heavy equipment. • Only certified operators will be authorized to operate equipment. Certifications must be on site at all times. • High visibility vests will be worn at all times while working in or around heavy equipment, trucks or other mechanized equipment. • All ground personal etc. must maintain eye contact with operators at all times. Do not proceed toward, or into blind spots of equipment without authorization to do so by operator. • All ground personal will stay outside the swing radius of equipment while in operation.	**L**
General Construction Hazards	• Accidents due to lack of training	▪ Copies of records will be kept by the SSO. ▪ Worker will be trained prior to performing new activities. Copies of records will be kept by the SSO. This includes signature sheets for AHAs. HASP and any other training documents. ▪ A daily tailgate safety meeting will be held prior to starting each shift. All personnel must attend review and sign the Safety Tailgate log before beginning work. CH2M HILL Staff should be present. ▪ All site workers must understand all Emergency procedures, AHA and HASP procedures. ▪ A copy of each Tailgate meeting must be supplied to the CH2M HILL onsite rep each day. •	**L**
	• Electrical Hazards	• Do not open panels or cabinet's that contain live electrical parts. • NFPA 70e training is required to work on or near live electrical parts.	**L**
	• Hearing Damage	• Workers will wear hearing protection whenever voices must be raised above normal conversational speech or when noise levels exceed 85 decibels due to a load noise source; such as working around heavy equipment. • Hearing protection will be worn by equipment operators when working in open cab equipment, or when doors/windows are open.	**L**

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Equipment to be Used	Training Requirements and Competent or Qualified Personnel name(s)	Inspection Requirements	RAC
	• Injuries from slips, trips, and falls	• Walking/working surfaces will be kept free of clutter, debris, and congestion to the greatest extent possible. • Personnel will be briefed on the hazards of wet, muddy soil hazards and traversing uneven grades. • Walk or climb only on equipment and/or surfaces that are designed for personnel access. • Be aware of potential for poor footing while working on un-compacted backfill materials. • Use three-point contact when climbing onto equipment.	L
	• Accidents due to poor lighting	• Work at site is only expected to take place during daylight hours. If work after daylight hours or in dark areas of buildings, provide supplemental lighting.	L
	• Injury due to inclement weather	• Outdoor work will cease during extreme weather conditions, such as electrical storms, high wind rain, and extreme temperatures. • Shut all equipment down when lightning is visible and wait for “all-clear” from the SSHO. • Workers will take cover indoors or in vehicle. • Supervisors will monitor local forecasts for warnings about specific weather hazards. • Workers will comply with all evacuation orders regarding rough weather directives.	L
	• Heat Stress	▪ Workers will be trained in the recognition of heat stress and appropriate actions to take. ▪ Workers are encouraged to increase fluid intake while working. ▪ Workers should minimize or avoid alcohol intake the night before working in heat stress situations. ▪ Workers will increase the frequency and duration of rest breaks while working in heat stress situations. ▪ Workers will watch each other for signs and symptoms of heat exhaustion and fatigue.	L
	• Controlling work areas	• Fencing, tape, cones or other SSHO-approved boundaries will be erected to warn approaching personnel of the hazardous area. • Appropriate signs will be posted at the boundary to instruct personnel in entry requirements.	L
	• Injuries associated with insects, snakes, spiders and poisonous plants	• Workers will tuck pants into socks and wear long sleeves and sturdy leather boots when walking in tall grass. • Workers will use insect repellent when needed.	L

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		• Workers will use buddy system to check for signs of insect and spider bites, such as redness, swelling, and flu-like symptoms if bitten. • If workers have known or suspected allergies, they will carry an Epi-Pen at all times and will notify supervision and co-workers of allergies. • If bitten by any insect notify the CH2M HILL (CCI) oversight rep immediately. This includes any type of injury that would require any type of First Aid.	
Concrete pad installation	• Concrete Work	• Mud boots and gloves shall be worn by personnel involved in concrete placement, testing, finishing, cleanup, or other activities where contact with wet concrete is involved. • Protruding reinforcing steel (rebar), onto which personnel could fall, must be guarded to eliminate the hazard of impalement • During post-tensioning, only those personnel essential to the operation are permitted behind the tensioning jacks. • Personnel shall not ride concrete buckets nor position themselves in areas where buckets are lifted overhead. • Personnel shall maintain a safe distance from formwork and shoring being removed from concrete structures. • Personnel shall maintain a safe distance from precast and lift-slab concrete being lifted into position until physically secured. • Personnel shall not enter limited access zones during masonry wall construction. • When CH2M HILL is in control of concrete and masonry operations, a lift slab competent person will oversee all the concrete and masonry operations. • Complete the self-assessment checklist for concrete and masonry activities whenever those activities are being performed	**L**
	• Heavy Equipment	▪ Seat belts or other restraint system shall be used by heavy equipment operators. ▪ Perform daily maintenance and inspections on operating equipment. Keep documentation on site. ▪ Use caution around pressurized lines/hoses. Inspect hoses daily for cuts, abrasions and wear. ▪ Equipment shall only be operated by personnel qualified by prior training or experience. ▪ Ensure that a stable ground surface is available for the operation of heavy equipment. ▪ Equipment operators shall not leave the cab of the equipment while they are lifting/controlling a load unless	**L**

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		the load has been delivered to its intended transport location or the load has been fully secured (no potential for rolling onto or crushing ground personnel) and the equipment and controls are fully secured/disengaged and equipment is “de-energized”.	
	• Manual Lifting	• AGVIQ-CH2MHILL or subcontract personnel must notify supervisors or safety representatives of preexisting medical conditions that may be aggravated or re-injured by lifting activities, especially lifting operation involving repetitive motions. • When lifting objects, lift using knees not back. Do not manually handle any loads that should be moved, lifted transferred via the use heavy. • Have someone assist with manually lifting— especially for heavy (> 40lbs.) or awkward loads.	
	• Pinched/Struck-by/ Caught-in-between	• Sufficient separation between ground support personnel and any operating heavy equipment must be maintained. • Wear reflective vests or high visibility clothing to promote visibility of ground personnel for equipment operators. • Isolate equipment swing areas from workers, fixed objects or other equipment. • Ground personnel shall avoid positioning themselves between fixed objects, operating equipment. • Make/maintain eye contact with operators before approaching equipment. • Do not approach equipment from rear or from blind spot of operator. • Stay out of the swing radius of operating heavy equipment. • Understand and review hand signals. Designate one person to provide hand signals to equipment operators performing lifting/hoisting operations. • Ensure equipment has operable back-up alarms. • Step away from heavy equipment when adjustments (positioning) are made. • Ensure heavy equipment operator has spotter for obstructed views and backing up. • Ensure that all ground personnel have sufficient separation from tub grinding operations	**L**
		•	

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Instructions for completing Contractor Activity Hazard Analysis

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2. **PWO/OICC/ROICC – Insert name of Public Works Office, Officer In Charge of Construction Office or Resident Officer in Charge of Construction (PWD/OICC/ROICC**
3. **Enter name & date AHA accepted by Government Designated Authority (GDA)**
4. **Enter contract number**
5. **Enter Task order or Delivery order number**
6. **Enter Prime Contractors name**
7. **Enter Subcontractors name**
8. **Enter date preparatory meeting was held**
9. **Enter date initial inspection was performed**
10. **Enter name of contractor competent person on site for this activity**
11. **Enter name of Prime Contractor Site Safety and Health Officer**
12. **Level of government person responsible for accepting the AHA, progressive signatures as level of risk increases.**

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19. **Risk Assessment code is where Severity and Probability intersect, place that letter E, H, M, or L in the RAC column**
20. **List all equipment to be used to complete this activity i.e. crane, backhoe, vehicle, all heavy equipment**
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    List competent person(s) required for specific tasks in EM 385
    List qualified person(s) required for specific tasks in EM 385
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22. **List all inspection requirements of EM 385, Governmental Safety Requirements Specifications or OSHA 29 CFR 1926**

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Activity Hazard Analysis (AHA)

ACTIVITY/WORK TASK:	**Site Restoration**	Overall Risk Assessment Code (RAC) (Use highest code)		**M**
	SIGNATURES	Activity #	1	AHA # **1**
PWD/OICC/ROICC OFFICE				
NAME & DATE ACCEPTED BY GDA:				
CONTRACT NUMBER:	**N62470-08-D-1006**			
TASK ORDER/DELIVERY #:	**WE23**			
PRIME CONTRACTOR:	**CH2M HILL**			
SUBCONTRACTOR:	**TBD**			
DATE OF PREPARATORY MEETING:				
DATE OF INITIAL INSPECTION:				
CONTRACTOR COMPETENT PERSON:	NA			
SITE SAFETY and HEALTH OFFICER				

Risk Assessment Code (RAC) Matrix

Severity	Probability				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	**E**	**E**	**H**	**H**	**M**
Critical	**E**	**H**	**H**	**M**	**L**
Marginal	**H**	**M**	**M**	**L**	**L**
Negligible	**M**	**L**	**L**	**L**	**L**

ACCEPTANCE BY GOVERNMENT DESIGNATED AUTHORITY (GDA)

E = EXTREMELY HIGH (PWO/OICC/ROICC)

H = HIGH RISK (FEAD DIRECTOR)

M = MODERATE RISK (CM or ET or PAR)

L = LOW RISK (ET or PAR)

Review each **"Hazard"** with identified safety **"Controls"** and determine (RAC)

Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" .Place the highest RAC at the top of AHA. This is the overall risk assessment code for this activity

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible after controls are in place

"Probability" is the likelihood to cause an incident, near miss, or accident did occur and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely after controls are put in place.

Job Steps	Hazards	Controls	RAC
Mobilizing to Site **Driving** **Vehicle Backing**	• Traffic accident • Driver fatigue • Poor driving skills • Load shift • Traffic accident • Property damage •	▪ Keep alert of your surroundings. Do not try to complete other tasks while driving that can distract your attention ▪ Do not drive when tired. Pull off at a safe location and walk around your vehicle and take a break if getting tired. ▪ Use your mirrors while driving. Do not use evasive driving actions. Obey traffic laws. ▪ Secure loads before starting your trip. Make frequent stops to check your load to make sure nothing has become loose. ▪ Retighten any loose straps. ▪ Check your surroundings when before backing. When possible use a spotter. ▪ Check for obstructions before backing. Walk around vehicle to make sure area is clear.	**L**

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Unloading/placing equipment.	• Back strain • Hand Injuries; cuts, bruises, pinch points • Slips, Trips, & Falls • Contact with Heavy Equipment while in use	▪ Use proper lifting techniques at all times. Request assistance from other personal when weight limits exceeds 50lbs. Mechanical means shall be used for gate relocation whenever possible rather than manual means to avoid the risk of stains and sprains. ▪ Wear protective gloves; Use hand tools in a safe manner and keep hand tools in good working condition. ▪ Use extreme caution when walking in work areas, working on or around truck beds and around equipment during unloading and staging activities. ▪ Only trained and experienced personnel will be allowed to stage and unload heavy equipment. ▪ Only certified operators will be authorized to operate equipment. Certifications must be on site at all times. ▪ High visibility vests will be worn at all times while working in or around heavy equipment, trucks or other mechanized equipment. ▪ All ground personal etc. must maintain eye contact with operators at all times. Do not proceed toward, or into blind spots of equipment without authorization to do so by operator. ▪ All ground personal will stay outside the swing radius of equipment while in operation.	**L**
General Construction Hazards	• Accidents due to lack of training	▪ Copies of records will be kept by the SSO. ▪ Worker will be trained prior to performing new activities. Copies of records will be kept by the SSO. This includes signature sheets for AHAs. HASP and any other training documents. ▪ A daily tailgate safety meeting will be held prior to starting each shift. All personnel must attend review and sign the Safety Tailgate log before beginning work. CH2M HILL Staff should be present. ▪ All site workers must understand all Emergency procedures, AHA and HASP procedures. ▪ A copy of each Tailgate meeting must be supplied to the CH2M HILL onsite rep each day.	**L**
	• Electrical Hazards	• Do not open panels or cabinet's that contain live electrical parts. • NFPA 70e training is required to work on or near live electrical parts.	**L**
	• Hearing Damage	• Workers will wear hearing protection whenever voices must be raised above normal conversational speech or when noise levels exceed 85 decibels due to a load noise source; such as working around heavy equipment. • Hearing protection will be worn by equipment operators when working in open cab equipment, or when doors/windows are open.	**L**
	• Injuries from slips, trips, and falls	• Walking/working surfaces will be kept free of clutter, debris, and congestion to the greatest extent possible. • Personnel will be briefed on the hazards of wet, muddy soil hazards and traversing uneven grades. • Walk or climb only on equipment and/or surfaces that are designed for personnel access. • Be aware of potential for poor footing while working on un-compacted backfill materials. • Use three-point contact when climbing onto equipment.	**L**
	• Accidents due to poor lighting	• Work at site is only expected to take place during daylight hours. If work after daylight hours or in dark areas of buildings, provide supplemental lighting.	**L**
	• Injury due to inclement weather	• Outdoor work will cease during extreme weather conditions, such as electrical storms, high wind rain, and extreme temperatures. • Shut all equipment down when lightning is visible and wait for "all-clear" from the SSHO.	**L**

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		• Workers will take cover indoors or in vehicle. • Supervisors will monitor local forecasts for warnings about specific weather hazards. • Workers will comply with all evacuation orders regarding rough weather directives.	
	• Heat Stress	▪ Workers will be trained in the recognition of heat stress and appropriate actions to take. ▪ Workers are encouraged to increase fluid intake while working. ▪ Workers should minimize or avoid alcohol intake the night before working in heat stress situations. ▪ Workers will increase the frequency and duration of rest breaks while working in heat stress situations. ▪ Workers will watch each other for signs and symptoms of heat exhaustion and fatigue.	**L**
	• Controlling work areas	• Fencing, tape, cones or other SSHO-approved boundaries will be erected to warn approaching personnel of the hazardous area. • Appropriate signs will be posted at the boundary to instruct personnel in entry requirements.	**L**
	• Injuries associated with insects, snakes, spiders and poisonous plants	• Workers will tuck pants into socks and wear long sleeves and sturdy leather boots when walking in tall grass. • Workers will use insect repellent when needed. • Workers will use buddy system to check for signs of insect and spider bites, such as redness, swelling, and flu-like symptoms if bitten. • If workers have known or suspected allergies, they will carry an Epi-Pen at all times and will notify supervision and co-workers of allergies. • If bitten by any insect notify the CH2M HILL (CCI) oversight rep immediately. This includes any type of injury that would require any type of First Aid.	**L**
Landscaping, Restore disturbed areas, Repair paving/new asphalt driveways, Site cleanup	• Heavy Equipment	• Seat belts or other restraint system shall be used by heavy equipment operators. • Perform daily maintenance and inspections on operating equipment. Keep documentation on site. • Use caution around pressurized lines/hoses. Inspect hoses daily for cuts, abrasions and wear. • Equipment shall only be operated by personnel qualified by prior training or experience. • Ensure that a stable ground surface is available for the operation of heavy equipment. • Equipment operators shall not leave the cab of the equipment while they are lifting/controlling a load unless the load has been delivered to its intended transport location or the load has been fully secured (no potential for rolling onto or crushing ground personnel) and the equipment and controls are fully secured/disengaged and equipment is “de-energized”.	**L**
	• Pinched/Struck-by/ Caught-in-between	▪ Sufficient separation between ground support personnel and any operating heavy equipment must be maintained. ▪ Wear reflective vests or high visibility clothing to promote visibility of ground personnel for equipment operators. ▪ Isolate equipment swing areas from workers, fixed objects or other equipment. ▪ Ground personnel shall avoid positioning themselves between fixed objects, operating equipment. ▪ Make/maintain eye contact with operators before approaching equipment. ▪ Do not approach equipment from rear or from blind spot of operator. ▪ Stay out of the swing radius of operating heavy equipment. ▪ Understand and review hand signals. Designate one person to provide hand signals to equipment operators performing lifting/hoisting operations.	**L**

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		▪ Ensure equipment has operable back-up alarms. ▪ Step away from heavy equipment when adjustments (positioning) are made. ▪ Ensure heavy equipment operator has spotter for obstructed views and backing up. ▪ Ensure that all ground personnel have sufficient separation from tub grinding operations	
	• Manual Lifting	• AGVIQ-CH2MHILL or subcontract personnel must notify supervisors or safety representatives of preexisting medical conditions that may be aggravated or re-injured by lifting activities, especially lifting operation involving repetitive motions. • When lifting objects, lift using knees not back. Do not manually handle any loads that should be moved, lifted transferred via the use heavy. • Have someone assist with manually lifting— especially for heavy (> 40lbs.) or awkward loads.	**L**
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<u>The AHA shall be reviewed and modified as necessary to address changing site condition, operations or change of competent/qualified person's</u>

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
• Fire extinguisher (with fuel and electrical sources) • Eye wash (small portable type) • Miscellaneous power and manual hand tools. • First Aid/BbPK/CPR shield • Spill Kit • Communication devices	• Review APP by new site personnel. • 1st Aid/CPR (2 per site when medical attention a medical facility or physician is more than 5 minutes away to two or more employees. • Supervisors - BBLPS, 30 hour OSHA Construction Safety Training or equivalent • Heavy equipment operators qualified by previous training or experience. • Competent Person Requirement: NA	• Visual Inspections of designated work areas identify and address hazardous conditions. • Equipment inspections and maintenance. • Brushcutter inspection/maintenance. • Chipper maintenance, if used. • Emergency Response equipment Inspections • (Fire Extinguishers, Eye wash First Aid/CPR etc.)

Instructions for completing Contractor Activity Hazard Analysis

1. **Activity/Work Task – Insert work/task this AHA is written for i.e. excavation, scaffold building, foundation preparation.**
2. **PWO/OICC/ROICC – Insert name of Public Works Office, Officer In Charge of Construction Office or Resident Officer in Charge of Construction (PWD/OICC/ROICC**
3. **Enter name & date AHA accepted by Government Designated Authority (GDA)**
4. **Enter contract number**
5. **Enter Task order or Delivery order number**
6. **Enter Prime Contractors name**
7. **Enter Subcontractors name**
8. **Enter date preparatory meeting was held**
9. **Enter date initial inspection was performed**
10. **Enter name of contractor competent person on site for this activity**
11. **Enter name of Prime Contractor Site Safety and Health Officer**
12. **Level of government person responsible for accepting the AHA, progressive signatures as level of risk increases.**

IAW EM 385 01.A.13 Contractor-Required AHA "Work will not begin until the AHA for the work activity has been accepted by the GDA"

The AHA shall be reviewed and modified as necessary to address changing site condition, operations or change of competent/qualified person's

13. **Overall Risk Assessment code is highest code assigned to any Job step after Hazards are assessed and Controls have been assigned**
14. **Schedule number is activity number from production daily reports**
15. **AHA number is the sequential number of all AHA's for this contract.**
16. **Job steps is the complete sequence of work, not general statements to complete the entire activity**
17. **Hazards is the known safety risks associated with completing the task**
18. **Controls is the safety measures in place to reduce the hazard to the lowest level possible**
19. **Risk Assessment code is where Severity and Probability intersect, place that letter E, H, M, or L in the RAC column**
20. **List all equipment to be used to complete this activity i.e. crane, backhoe, vehicle, all heavy equipment**
21. **List the training requirements required by EM 385, Safety Spec 01356 or OSHA that apply to this task.**
    List competent person(s) required for specific tasks in EM 385
    List qualified person(s) required for specific tasks in EM 385
    List CPR/First Aid training and qualification dates
22. **List all inspection requirements of EM 385, Governmental Safety Requirements Specifications or OSHA 29 CFR 1926**

IAW EM 385 01.A.13 Contractor-Required AHA "Work will not begin until the AHA for the work activity has been accepted by the GDA"
The AHA shall be reviewed and modified as necessary to address changing site condition, operations or change of competent/qualified person's

Attachment 1
Site Specific Health and Safety Plan

Attachment 1
Site Health and Safety Plan

Installation of Full Scale Treatment System
Liquid-Phase Granular Activated Carbon Units

New York American Water Company
Seaman's Neck Road Water Plant
NWIRP Bethpage, New York

Contract No. N62470-08-D-1006
Task Order No. WE23

Submitted to:

NAVFAC
Naval Facilities Engineering Command

Prepared by:

AGVIQ
ENVIRONMENTAL SERVICES
CH2M HILL
JOINT VENTURE

December, 2012
Revision No. 00

Contents

Tables

Acronyms and Abbreviations

APP	Accident Prevention Plan
AGVIQ-CH2M HILL	AGVIQ-CH2M HILL Joint Venture III (Small Business Remedial Action Contract)
APP	Accident Prevention Plan
BBLPS	Behavior Based Loss Prevention System
CBRNE	Chemical, Biological, Nuclear, Radiological, Explosive
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
COC	Constituents of Concern
CRZ	Contamination Reduction Zone
DFOW	Definable Feature of Work
DFWP	Drug Free Workplace Program
EMS	Emergency Medical Services
EZ	Exclusion Zone
GDA	Government Designated Authority
HSPA	Health and Safety Program Administrator
LLC	Limited Liability Company
mg/m^3	milligrams per cubic meter
NASWF	Naval Air Station Whiting Field
OEL	Occupational Exposure Limit
OSHA	Occupational Safety and Health Administration
PAHs	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyl
PEL	Permissible Exposure Limit (OSHA)
PPE	Personal Protective Equipment
ppm	Parts per million
PTSP	Pre-Task Safety Plan

SBRAC	Small Business Remedial Action Contract
SOH	Safety and Occupational Health
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
SZ	Support Zone
TO	Task Order

1.0 Site Safety and Health Plan for HTRW Work

1.1 Occupational Safety and Health Hazards with Site Cleanup

Several occupational physical hazards are associated with the execution of this Task Order (TO) as follows:

- Physical hazards associated with slips, trips and falls or manual lifting.
- Physical hazards associated with construction operations.

All site work shall be performed in accordance with the project Accident Prevention Plan (APP) and this Site Safety and Health Plan (SSHP). In accordance with the allowance of EM 385 1-1, section 28.B.02 "*general information adequately covered in the APP (introduction, site background, SOH organization and lines of authority, general site control and layout and general site safety procedures, logs, reports and inspections) need not be duplicated.*" Health and safety hazard control measures policies and procedures, and means and methods or other information presented throughout this APP that sufficiently addresses the requirements of EM 385 1-1, section 28.B.02 will not be further elaborated upon in this SSHP.

1.2 Site Description and Contamination Characterization

A site description for the project site is provided in section 2.0 "Background Information" of the APP and will not be further elaborated upon in this section of the SSHP.

Although the groundwater below the site is contaminated with Trichloroethene at a maximum concentration of 2.1 micrograms per liter (µg/L), contact with contaminated groundwater is not anticipated for this TO.

1.3 Hazard/Risk Analysis

Hazard/Risk Analysis for this project is provided in section 10.6 "Project Specific Activity Hazard Analyses" of the APP and will not be elaborated upon further in this section.

1.4 Staff Organization, Qualifications, and Responsibilities

Staff organization, qualifications and responsibilities is identified in section 4.0 "Responsibilities and Lines of Authority" and section 6.0 "Training" of the APP and will not be elaborated upon further in this section.

Qualifications of key site personnel must be provided to the government designated authority (GDA), under separate cover for review well in advance

1.4.1 Training, General and Project-Specific

General and project specific training is identified in section 6.0 "Training" of the APP and will not be elaborated upon further in this section.

1.5 Medical Surveillance

Site worker medical surveillance requirements are identified in section 6.0 "Training" of the APP and will not be further elaborated upon in this section of the SSHP.

1.6 Personal Protective Equipment and Exposure Monitoring/Air Sampling

The requirements for the use of PPE and worker exposure monitoring and air sampling in connection with the execution of identified project definable features of work (DFOWs) are provided in Tables 1-1 and Table 1-2, respectively, below.

TABLE 1-1
PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS[A]

Task	Level	Body	Head	Respirator [b]
• All Site Work	D	• Designated and appropriate work clothes • Hard-toe work boots that provide sufficient ankle support (preferable leather) • Work gloves (cut resistant) or liquid resistant for wet work environments • Reflective traffic vest	• Hardhat [c] • Safety glasses • Hearing protection (as applicable) [d]	None required

Any function identified in this APP where potential dermal contact with site chemicals used on-site **IS limited to the hands only.**
• Concrete Work
• System Start-up
  • Loading or removal of carbon GAC
  • Tie-In to AQUA System
  • Start-Up system
	Modified D1	• Designated and appropriate work clothes;
		• Boots: Hard-toe work boots that provide sufficient ankle support (preferable leather); with outer rubber boot covers or hard-toe chemically resistant rubber boots with steel shank for concrete work
		• Work gloves (cut resistant) when handling items that pose a cut hazard
		• Inner surgical-style nitrile chemical resistant nitrile gloves.
		• Acid apron and outer gloves
			• Hardhat [c]
			• Safety glasses
			• Ear protection (as applicable) [d]
			• Face shields and goggles (required when handling acids/bases)
			• Reflective safety vest
				None required.

Any function identified in this APP where potential dermal contact with chemicals used on-site **NOT limited to the hands only.**
• System Start-Up
  • Flushing piping and vessels
  • Sterilizing the system
  • Loading or removal of carbon GAC
  • Backwash GAC Vessels
	Modified D2	• Coveralls: Poly coated (or equivalent) acid resistant disposable coveralls.
		• Boots: Hard-toe work boots that provide sufficient ankle support (preferable leather); with outer rubber boot covers or hard-toe chemically resistant rubber boots with steel shank
		• Gloves: Inner surgical-style nitrile and outer chemical resistant Butyl rubber gloves for handling acid.
			• Hardhat [c]
			• Ear protection (as applicable) [d]
			• Face shields and goggles (required v handling acids/bases)
				None required.

Contact HSPA/CIH prior to implementing Level C PPE upgrade.
• System Start-Up
  • Flushing piping and vessels
  • Sterilizing the system
  • Loading carbon (fill GAC Vessels)
  • Backwash GAC Vessels
	C	• Coveralls: Polycoated Tyvek®
		• Boots: Steel-toe, chemical-resistant boots OR steel-toe, leather work boots with outer
		• rubber boot covers
		• Gloves: Inner surgical-style nitrile and outer chemical resistant Butyl rubber gloves.
			• Hardhat [c]
			• Ear protection (as applicable) [d]
			• Spectacle inserts (as applicable)
				NIOSH approved Full Face APR with P100/ Acid Vapor Cartridge. Contact HSPA/CIH prior to implementing a Level C upgrade.

Reasons for Upgrading or Downgrading Level of Protection

Upgrade [f]	Downgrade
• Request from individual performing tasks. • Change in work tasks that will increase contact or potential contact with hazardous materials. • Occurrence or likely occurrence of gas or vapor emission. • Known or suspected presence of dermal hazards. • Instrument action levels exceeded (when implemented).	• New information indicating that situation is less hazardous than originally thought. • Change in site conditions that decrease the hazard. • Change in work task that will reduce contact with hazardous materials.

[a] Modifications are as indicated. AGVIQ-CH2M HILL will provide PPE only to AGVIQ-CH2M HILL employees.
[b] No facial hair that would interfere with respirator fit is permitted.
[c] Hardhat and splash-shield areas are to be determined by the SSHO.
[d] Ear protection should be worn when conversations cannot be held at distances of 3 feet or less without shouting.
[e] Cartridge change-out schedule is at least every 8 hours (or one work day), except if relative humidity is > 85%, or if organic vapor measurements are > midpoint of Level C range --then at least every 4 hours.
If encountered conditions are different than those anticipated in this APP, contact the HSPA/CIH. **Where** AGVIQ-CH2M HILL **personnel are required to use a respirator to provide respiratory protection,** AGVIQ-CH2M HILL **personnel shall receive respiratory protection awareness training. Contact the HSPA/CIH to receive this training, prior to using any respiratory protective device.**
[f] Performing a task that requires an upgrade to a higher level of protection (e.g., Level D to Level D modified/Level C) is permitted only when the PPE requirements have been approved by the HSPA/CIH, and an SSHO qualified at that level is present.

TABLE 1-2
AIR MONITORING EQUIPMENT REQUIREMENTS

Instrument	Tasks	Action Levels[a]	Level of Protection/ Response Action	Frequency [b]	Calibration
4 gas meter with $\%0_2$, %LEL, CO and H_2S sensors	Entry into shallow excavations posing CSE hazard	$\%0_2$ 19.5 – 23.5% %LEL < 1% CO < 25 ppm H_2S < 1 ppm	Level D or Modified D1, as identified by Table 1-1 of the SSHP for dermal protection	Initially and periodically during task (see left) to verify readings are below and remain below established action levels.	Daily
		$\%0_2$ <19.5 or >23.5% %LEL > 1% C0 > 25 ppm H_2S >1 ppm (sustained 5 min. in worker BZ)	Stop work. Evacuate area for 10 minutes and recheck BZ and work area. If levels persist, consult with the CIH/HSPA for proper engineering and/or administrative controls and PPE requirements or before working in environments were worker exposure conditions are potentially unanticipated conditions.		
Dräger Chip Measurement System (CMS) **HCl = Chip # 64 06030**	• System Start-Up • Flushing piping and vessels • Sterilizing the system • Loading carbon (fill GAC Vessels) • Backwash GAC Vessels	< 1 ppm	Modified Level D1 or D2, as identified by Table 1-1 of the SSHP	Initially and periodically during task (see left) to verify readings are below and remain below established action levels.	NA
		1-2 ppm	Upgrade to Level C as identified by Table 1-1 of the SSHP		
		>2 ppm	Stop work, consult with the CIH/HSPA for proper engineering and/or administrative controls and PPE requirements or before working in environments were worker exposure conditions are potentially unanticipated conditions.		

[a] Action levels apply to sustained breathing-zone measurements, above background.

[b] The exact frequency of monitoring depends on field conditions and is to be determined by the SSHO; generally, every 5 to 15 minutes is acceptable; more frequently may be appropriate. Monitoring results shall be recorded in the Air Monitoring Log contained in **Attachment 3 of APP** and included in the final project record. Documentation shall include instrument and calibration information, time, measurement results, personnel/area monitored, and place/location where measurement is taken (e.g., “Breathing Zone/MW-3”, “at surface/SB-2”, etc.).

[c] **Note: Worker breathing zone ambient air monitoring results must be logged on an Air Monitoring Log (See Attachment 3 of APP).**

1.6.1.1 Air Monitoring Equipment Calibration Requirements

Air Monitoring equipment calibration specifications for air monitoring equipment identified in Table 1-2 are listed in Table 1-3, below.

TABLE 1-3

Air Monitoring Equipment Calibration Requirements

Instrument	Gas	Span	Reading	Method
Four Gas Meter	Methane	NA	2.5% (50% LEL)	1.5 lpm reg T-tubing/ tedlar bag
	Oxygen	NA	20.9%	1.5 lpm reg T-tubing/ tedlar bag
	Carbon Monoxide (CO)	NA	25 ppm	1.5 lpm reg T-tubing/ tedlar bag
	Hydrogen Sulfide (H_2S)	NA	50 ppm	1.5 lpm reg T-tubing/ tedlar bag

*Note: Air monitoring equipment calibration measures must be logged on the Project Air Monitoring Logs (**See Attachment 3 of APP**) and included in the final project record.*

1.7 Heat and Cold Stress

The procedures for heat and cold stress monitoring are presented in section 9.14 "Heat and Cold Stress Monitoring Program" of the APP and will not be further elaborated upon in this section of the SSHP.

1.8 Standard Operating Safety Procedures, Engineering Controls, and Work Practices

1.8.1 Site Rules and Prohibitions

Site rules and prohibitions and requirements are defined by the sections identified below and will not be further elaborated upon in this section of this SSHP.

Section 8.0 of the APP: Accident Reporting and Investigation

Section 9.2 of the APP: Emergency Response Plans

Section 9.7 of the APP: Health Hazard Control Program

Section 1.2.8.7 of the SSHP: Site Control Measures

Section 10.5 of the APP: Drug Free Work Place Program

1.9 Work Permit Requirements

Any work permit requirements necessary to execute the assigned work is identified in section 7.1 "External Inspections/Certifications" of the APP and will not be further elaborated upon in this section of the SSHP.

1.10 Material Handling Procedures

Hazard Control Measures for excavation operations, haul truck activities, rigging and working around material handling equipment are included in section 9.7 "Health and Safety Hazard Control Program" of the APP and will not be further elaborated upon in this SSHP.

1.10.1 Drum, Container, Tank Handling

(Reserved)

There will be no significant drum, container or tank handling during the execution of this TO.

1.11 Comprehensive AHA of Treatment Technologies

(Reserved)

No remediation treatment technologies will be executed during this TO.

1.12 Site Control Measures – General

Access to the site will be limited to only those authorized personnel designated to work at the site. Site workers and visitors shall sign-in and sign-out as they enter and exit the site work boundaries (see **Attachment 3 of APP**). In addition to these procedures, the following measures shall be implemented as general site control processes.

- Project managers and team leaders are to:

  1) Evaluate and ensure worker safety in remote/secluded work areas,

  2) Confirm if potentially dangerous activities could be occurring in or adjacent to any AGVIQ-CH2MHILL work areas that may jeopardize worker health and safety and

  3) Reschedule field activities when potentially dangerous activities are not occurring adjacent to AGVIQ-CH2MHILL work locations. Ensure proper two communications with workers in remote work areas. Utilize buddy system.

- Evaluate and ensure worker safety in remote/secluded work areas.
- Confirm if potentially dangerous activities could be occurring in or adjacent to any AGVIQ-CH2M HILL work areas that may jeopardize worker health and safety.
- Reschedule field activities when potentially dangerous activities are occurring adjacent to AGVIQ-CH2M HILL work locations. Ensure proper two-way communications with workers in remote work areas.
- **Establish and maintain the "Buddy System."**
- **Designate an emergency evacuation route (see Figure 9-1 of the APP).**
- **Designate an evacuation assembly area.**

- Topics for briefing on site safety: Review the site Accident Prevention, site-specific hazards, location of work zones, site contaminants, PPE and air requirements, equipment, special procedures, emergencies.
- The SSHO records safety briefing attendance in a logbook and documents the topics discussed.
- Ensure that applicable AGVIQ-CH2M HILL personnel have received the behavior based loss prevention system (BBLPS) training.
- Be aware of any potential for hazardous chemical exposure and know what precautions/training are required.
- Establish support and work zones. Delineate with flags or cones as appropriate. Support zone should be in an area absent of construction hazards. Use access control at entry and exit from each work zone.
- Know how an emergency should be reported.
- Identify exact facility location and position (where possible) when contacting Emergency Medical System (EMS)/Fire Dispatch.
- Have readily available copy of the Hospital Route Map.
- Establish onsite communication consisting of the following:
    1. Line-of-sight and hand signals
    2. Air horn
    3. Two-way radio or cellular telephone if available
- Establish offsite communication.
- Know how, what, when injuries/accidents are reported and treated.

The site supervisor, SSHO or other authorized designee is to conduct periodic inspections of work practices and site conditions to determine the effectiveness of this plan. Such inspections should identify site conditions or actions that are not consistent with the policies and procedures of the H&S program, report to the AGVIQ-CH2M HILL Project Manager (overall) and the AGVIQ-CH2M HILL Certified Industrial Hygienist (CIH) or health and safety program administrator (HSPA). The project team shall develop and implement corrective action procedures in a timely manner.

1.12.1 Work Zone

Where it is necessary to establish an Work Zone (WZ) at the site, it will be constructed to surround the entire construction area where the greatest potential for worker exposure to identified site hazards may exist. For this TO the WZ may need to be transient as the work progresses. The WEZ may also incorporate any available "permanent" perimeter fencing or other established physical barriers (curbing, fencing, etc). Other temporary barriers (i.e. caution tape, cones), may be used to supplement existing permanent barriers to demarcate the WZ to identify the restricted access. To prevent exposure of unprotected personnel work areas and personal protective equipment requirements should be clearly identified /delineated. Access to the WZ will be restricted to personnel wearing the prescribed level of protective equipment and meeting the training and medical criteria of this plan

1.12.2 Support Zone

Temporary support zones and staging areas will be established at the entrance of each control area. Potable water, an eye wash, and first aid supplies will be located at each temporary support zone. No hazardous or potentially hazardous materials will be allowed in the support zone unless it is in a properly labeled container that has no external contamination. Eating, drinking and smoking will only be allowed in this area, at designated locations.

Portable bathroom facilities will be located near the work areas. In addition, potable water and water and soap for hand washing will be available at the support zone, along with containers for solid waste for use by site personnel, in addition to first aid stations and administrative information.

1.13 Personal Hygiene

Even though we do not anticipate exposure to site COCs, it is important for personnel to adhere to good personal hygiene practices. These practices include but are not limited to the following:

1) Eating, drinking, smoking and tobacco use shall only be conducted in designated areas and not in areas where there is any exposure to hazardous material/waste, flammable/combustible liquids and gases may exist;

2) Wash hands and face, before eating, drinking, smoking or using tobacco and at the end of the work-shift.

3) shower as soon as feasible after completing field activities.

The site supervisor or SSHO shall establish areas for eating, drinking, and smoking at the site so that incident exposure to site COCs does not possibly occur.

1.13.1 Personnel and Equipment Decontamination

(Reserved)

There are not any require decontamination requirements for this TO.

1.14 Emergency Equipment and First Aid

The requirements for emergency preparedness, equipment and supplies is provided in section 9.2 “Emergency Response Plans” of the APP and will not be elaborated upon further in this SSHP.

1.14.1 Emergency Response and Contingency Procedures

The requirements for emergency preparedness, equipment and supplies is provided in section 9.2 “Emergency Response Plans” of the APP and will not be elaborated upon further in this SSHP.

1.14.1.1 Pre-Emergency Planning

The requirements for emergency response and contingency procedures are provided in section 9.2 “Emergency Response Plans” of the APP and will not be elaborated upon The

requirements for pre-emergency planning are provided in section 9.2 "Emergency Response Plans" of the APP and will not be elaborated upon further in this SSHP.

1.14.1.2 Personnel and Lines of Authority - Emergency Situations

Personnel and lines of authority for both chain of command and emergency situations are included in section 4.0 "Responsibilities and Lines of Authority" of the APP and will not be elaborated upon further in this SSHP.

1.14.1.3 Criteria and Procedures for Emergency Recognition and Site Evacuation

Procedures of emergency recognition and site evacuation is outline in section 9.2 "Emergency Response Plans" of the APP and will not be elaborated upon further in this SSHP.

1.14.1.4 Decontamination and Medical Treatment of Injured Personnel

(Reserved)

There are not any require decontamination requirements for this TO.

1.14.2 Route Map to Emergency Medical Facilities

The route map to area emergency medical facilities is provided by Figure 9-2 of section 9.2.9 "Medical Support" of the APP and need not be reproduced in this SSHP.

1.14.3 Criteria for Alerting Medical Facilities

There are no specific or unusual hazards [i.e. Chemical, Biological, Radiological, Nuclear, Explosive (CBRNE)] that require notification to area responders prior to the start of site operations.

1.14.4 Responsibilities

The responsibilities for HAZWOPER regulated activities will be the same as for non-HAWOPER regulated activities. Both project level and AGVIQ-CH2M HILL program level responsibilities for all operations are included in section 4.0 "Responsibilities and Lines of Authority" of the APP and will not be further elaborated upon in this SSHP.

1.14.5 Training

All training requirements for this project are discussed in section 6.0 "Training" of the APP and will not be elaborated upon further in this SSHP.

1.14.6 Medical Surveillance

All worker surveillance requirements for this project are discussed in section 6.0 "Training" of this APP and will not be elaborated upon further in this SSHP.

1.14.7 RCRA TSD Facilities

Not Applicable. The criteria of EM 385 1-1, section 28 are not applicable to the site operations nor are Treatment, Storage and Disposal (TSD) facility conditions under the requirements of 40 CFR 264/265 applicable to this project.

1.14.8 Facility/Construction Project Emergency Response

Facility/construction project emergency response emergency procedures are outlined in section 9.2 "Emergency Response Plans" of the APP and will not be elaborated upon further in this SSHP.

Attachment 2
Accident Prevention Plan & Site Specific Health and Safety Plan Acknowledgement Form

ACCIDENT PREVENTION PLAN &

SITE SPECIFIC HEALTH and SAFETY PLAN

ACKNOWLEDGEMENT FORM

AGVIQ-CH2M HILL Joint Venture III SBRAC

Contract Task Order WE23

AGVIQ-CH2M HILL project employees and subcontractors listed below have been provided with a copy of this Health and Safety Plan, have read or been briefed on its contents and agree to abide by its provisions.

Project Name: **Task Order:**

EMPLOYEE NAME (Please print)	**EMPLOYEE SIGNATURE**	**COMPANY**	**DATE**

Attachment 3
Subcontractor H&S Tracking Form

Subcontractor H&S Tracking Form

Project Name: **Task Number:** **Date:**

Subcontractor		Completed as Needed						Completed Within the Last 12 Months		
Name	Company	40-hour Training	8-hour Site Supervisor Training	Confined Space Entry Training	FA/CPR /BBP	Hazard Specific Training	Equipment Specific Training	Med Clearance	Fit Test	8-hour Refresher Training
		Enter "√" if Completed						Enter Date Last Completed		

Hazard Specific Training may include Hazard Communication (HAZCOM), asbestos, lead, fall protection, electrical, lock-out tag-out, drilling, demolition, etc.
Equipment Specific Training may include Industrial (fork) truck, aerial lift, crane, portable extinguisher, respirator, scaffolding, etc.
Medical Clearance documents must **not** include actual medical reports. Only accept a signed physician's statement of fitness to work.

Attachment 4
Project H&S Forms/Permits

EQUIPMENT INSPECTION FORM

This form will be used to document AGVIQ-CH2M HILL earthmoving equipment inspections. Earthmoving equipment will be inspected each day and shift prior to use. All components will be inspected for damage and proper operation. Any component failing the inspection will be corrected prior to earthmoving equipment use. Check each box after passing inspection and initial bottom of form each day.

Equipment Name: _____ Identification #: _____ Week of: _____

INSPECTION ITEM	**Mon**	**Tue**	**Wed**	**Thu**	**Fri**	**Sa**	**Sun**
Visual Checks							
Operating manual – present							
Controls - labeled as to their function, visible and legible, safety latches/guards present							
Tires/tracks – proper inflation/tension, not excessively worn or damaged							
Fluid levels/leaks - engine, transmission, hydraulic, radiator, swing motor and PTO oils.							
Lubrication - to the manufacturer's specifications							
Air filter gauge - gauge is not in the red zone.							
Hydraulics – no fluid leaks, connections tight, hoses, cylinders free of damage.							
Hoses/belts – held securely, not loose or rubbing, no excessive wear or crimping							
Fuel system - tank free of damage, all valves/hoses secure, no leaks							
Body & ground-engaging tools – no damage, cracks, bends, or excessive wear.							
Cylinders/articulation joints– no worn pins, loose connections or other damage.							
Roll-over protective structures (ROPS) - no damage, no cracks or bends							
Seat belt/bar – required unless operator stands or no ROPS							
Handrails, steps, platforms – clean, free from grease, oil, clear of obstructions.							
Cab glass – safety glass, clean, no cracks or visible distortion							
Mirrors – properly adjusted, no cracks or visible distortion							
Windshield wipers, fluid, and defroster - functioning							
Machine guards – present and in good condition							
Fire extinguisher – present and charged							
Operational Checks – check items through normal maneuvers							
Horn & back-up alarm – operating and distinguishable from surrounding noise							
Lights, directional signals, and brake lights - functioning							
Gauges/indicators – visible and working properly							
Operating controls - lift and tilt functioning properly							
Outriggers, if present – functioning properly							
Accelerator - even acceleration, does not stick							
Brakes (service & parking) - brings to complete stop, holds in fixed position							
Steering – responsive, minimal looseness							
Exhaust system – guarded if potential for contact, no signs of sparks/leaks							
Inspector's Initials							

AGVIQ
AGVIQ ENVIRONMENTAL SERVICES
CH2M HILL
JOINT VENTURE

AGVIQ-CH2M HILL Joint Venture III SBRAC – TO WE23
NWIRP Bethpage– Site Sign In Sheet

DATE	NAME	COMPANY	IN	OUT	IN	OUT

AGVIQ-CH2M HILL Joint Venture III SBRAC – TO WE23
NWIRP Bethpage - AIR MONITORING LOG

Date	Time	Activity	Location	Particulate mg/M^3	$\%0_2$	%LEL	CO	H_2S

AGVIQ-CH2M HILL Joint Venture III SBRAC – TO WE23
NWIRP Bethpage– Exclusion Zone Log

DATE	NAME	COMPANY	IN	OUT	IN	OUT

Stop Work Order Form

REPORT PREPARED BY:

Name:	Title:	Signature:	Date:

ISSUE OF NONPERFORMANCE

Description:_____ _____ _____ _____ _____ _____	Date of Nonperformance: _____

SUBCONTRACTOR SIGNATURE OF NOTIFICATION:

Name:	Title:	Signature:	Date:

** Corrective action is to be taken immediately. Note below the action taken, sign and return to CCI.*

SUBCONTRACTOR'S CORRECTIVE ACTION

Description:_____ _____ _____ _____ _____ _____	Date of Corrective Actions: _____

SUBCONTRACTOR SIGNATURE OF CORRECTION:

Name:	Title:	Signature:	Date:

Attachment 5
Emergency Contact List

Emergency Contact List

24-hour CH2M HILL Serious Incident Reporting Contact/Pager: 720-286-4911
CH2M HILL 24-hour Nurse Number: 866-893-2514
(See attached instructions *

Medical, Fire, Security: 911	**CH2M HILL- Medical Consultant** WorkCare Dr. Peter Greaney M.D. 300 S. Harbor Blvd, Suite 600 Anaheim , CA 92805 800-455-6155 714-978-7488 (After hours calls will be returned within 20 minutes) **AGVIQ Medical Consultant(s)** Refer to AGVIQ VBO office for a detailed list of Medical Facilities/contacts.
AGVIQ-CH2M HILL SBRAC Program Manager Name: Sidney Allison AGVIQ Phone (843) 242-8018 / (843) 813-2672 (cell) **Project Manager (overall)** Jim Nicotri : (617) 626-7042/ (339) 832-4555 (cell)	**AGVIQ-CH2M HILL SBRAC Deputy Program Manager** Name: Sam Naik CH2M HILL – (ATL) Phone: (770) 604-9182 x54248 / (678) 860-9626 (cell)
AGVIQ-CH2M HILL Site Superintendent Name: Randy Grogan Phone: (516) 796-6251 Cell Phone: (907) 441-5814 **AGVIQ-CH2M HILL Joint Venture Project SSHO** Name: TBD Phone: TBD	**AGVIQ-CH2M HILL Program CIH** Name: Angelo Liberatore Phone: (678) 530-4210/(770) 335-2076 (cell) **AGVIQ-CH2M HILL HSPA** Name: Mark Orman Phone: (414) 847-0597/ (414) 712-4138 (Cell) **AGVIQ-CH2M HILL HSPA** Name: Josh Painter Cell Phone: (303) 993-9274
AGVIQ Corporate Human Resources Department & AGVIQ Worker's Compensation & Auto Claims Name: Sabrina Ben TIKIGAQ Corp. Anchorage, AK Phone: (907) 365 6129/ (907) 341-6139 (fax) AGVIQ personnel to report all accidents or injuries to AGVIQ Corporate HSM or HSO immediately but no later than 24 hrs. Fatalities and hospitalizations shall require immediate notification to AGVIQ Corporate HSM.	**CH2M HILL Worker's Compensation & Auto Claims** Zurich American Ins. Co 1400 American Lane Schaumburg IL 60196-1056 1800-987-3373 Contact Business Group Human Resources Dept. to have form completed or contact Albert Jerman after hours: 303/741-5927 Rental: Linda Anderson/COR 720/286-2401 CH2M HILL owned vehicle: Linda George 720-286-2057 Fatalities and hospitalizations shall require immediate notification to AGVIQ-CH2M HILL Program CIH.
AGVIQ Corporate HSM Name: Troy Izatt Office phone # (907) 365-6182 Cell phone # (907) 748-3697	**Federal Express Dangerous Goods Shipping** Phone: 800/238-5355 **Emergency Number for Shipping Dangerous Goods** Phone: 800/255-3924
Facility Alarms: Sound vehicle horn three times. (Site 4A)	**Evacuation Assembly Area(s):** See Figure 9-1 of this APP.
Facility/Site Evacuation Assembly Area/Route: See Figure 9-1 of this APP.	
Hospital Name/Address **South Nassau Communities Hospital (**See Figure 9-2 of this APP) **1 Healthy Way, Oceanside, NY 11572** **(516) 632-3000**	

Attachment 6
Material Safety Data Sheets (provided on-site)

Attachment 7
Chemical Specific Training Form and Project Specific Chemical Product Hazard Communication Form

CHEMICAL-SPECIFIC TRAINING FORM

Location:	Task Order:
SSHO:	Trainer:

TRAINING PARTICIPANTS:

NAME	SIGNATURE	NAME	SIGNATURE

REGULATED PRODUCTS/TASKS COVERED BY THIS TRAINING:

The SSHO will use the product MSDS to provide the following information concerning each of the products listed above.

☐ Physical and health hazards

☐ Control measures that can be used to provide protection (including appropriate work practices, emergency procedures, and personal protective equipment to be used)

☐ Methods and observations used to detect the presence or release of the regulated product in the workplace (including periodic monitoring, continuous monitoring devices, visual appearance or odor of regulated product when being released, etc.)

Training participants will have the opportunity to ask questions concerning these products and, upon completion of this training, will understand the product hazards and appropriate control measures available for their protection.

Copies of MSDSs, chemical inventories, and the written hazard communication program will be made available for employee review in the facility/project hazard communication file.

Project-Specific Chemical Product Hazard Communication Form

This form must be completed prior to performing activities that expose personnel to hazardous chemicals products. Upon completion of this form, the SSHO will verify that training is provided on the hazards associated with these chemicals and the control measures to be used to prevent exposure to AGVIQ-CH2M HILL and subcontractor personnel. Labeling and MSDS systems will also be explained.

Project Name: **Task Order:**

MSDSs will be maintained at the following location(s):

Hazardous Chemical Products Inventory

Chemical	Quantity	Location	MSDS Available	Container labels	
				Identity	Hazard

Refer to CH2M HILL SOP HS-107 Hazard Communication for more detailed information.

Attachment 8
Pre-Task Safety Plan

AGVIQ ENVIRONMENTAL SERVICES
CH2M HILL JOINT VENTURE

EXAMPLE ONLY

DAILY PRE-TASK SAFETY PLAN (PTSP)

Project: _____ Location: _____ Date:_____
Site Safety & Health Officer: _____ Job Activity: _____ _____ Site #: _____

Task Personnel:
_____
_____
_____

List Tasks:
_____ _____

Tools/Equipment/Materials required (ladders, scaffolds, fall protection, cranes/rigging, heavy equipment, power tools, cords, generators, compressed gases, regulated chemical products, etc.):
_____

Potential H&S Hazards, including chemical, physical, safety, biological and environmental (Check all that apply):

_X_ Chemical burns/contact Dermal protection (hands), eye protection. See APP for PPE requirements per task.	__ Trench, excavations, cave-ins	__Ergonomics
__ Pressurized lines/equipment	X_ Overexertion Work/break regiment as dictated by task. Maintain fluid intake for hydration	_X_ Chemical splash Use PPE in accordance with the APP. Protect hands from splash during decon. activities.
_X_Thermal burns Watch for warm engine/muffler components on generators.	__ Pinch points	X Poisonous plants/insects Review APP for identification of poisonous snakes in the geographic area. Long sleeves in areas where poison ivy, sumac or oak may exist. Use insect repellent. Tape pant legs to boots (ticks).
X_ Electrical GCFIs for generators, Inspect. & protect extension cords, cords rated for use & have 3rd wire grounding	X_Cuts/abrasions Do not use razor knives. Cut away from body. Identify and avoid rusty/jagged or sharp surfaces from above ground features (brush, pipe chases/supports, utility structures, doors)	X Eye hazards/flying projectile Use eye protection at all times. Ensure head protection is used in areas where heavy brush, trees, thorns, vines exist when accessing well heads.
__ Weather conditions Foul and cold weather clothing as dictated by expected conditions	X Spills Use funnels & nozzles during fueling of generators.	__ Inhalation hazard
__Heights/fall> 6'	__ Overhead Electrical hazards	X **Heat**/cold stress Work/break regiment as dictated by heat exposure Provide sufficient fluids for employee intake. Recommended employees begin with 16 oz. of water before initiating field work.
X_Noise Use hear protection in loud work environments	__ Elevated loads	__ Water/drowning hazard
X_Explosion/fire Metal safety cans for fuel storage, No open flame, sparks ignition in hazardous/flammable/ combustible storage areas. Let engine surfaces cool before fueling.	X_ Slips, trip and falls Exercise good general housekeeping practices Identify/remove slip/trip falls hazards in work area. Watch for and avoid holes, ground protrusions. Watch for entanglement of feet around vines and brush.	__ Heavy equipment
X_ Radiation Solar. UV protection on skin and UV eye protection. ANSI rated safety eye protection only.	X_Manual lifting >50 lbs or awkward loads, get assistance. If employee not capable of lifting 40 lbs. seek assistance.	__ Aerial lifts/platforms
__ Confined space entry	__Welding/cutting	__ Demolition

Continue on page 3 of 3 (if necessary)

Hazard Control Measures (Check all that apply):

PPE	Protective Systems	Fire Protection	Electrical
X_ Head protection	__ Locate buried utilities	__ Fire extinguishers	__ Lockout/tagout
__ Face protection	__ Competent person	__ Fire watch	__ Grounded
X_Hard toe work boots	__ Daily inspections	__ Non-spark tools	__ Panels covered
__ Thermal/lined	__ Sloping	__ Grounding/bonding	X_GFCI/extension cords
X_ Eye	__ Shoring	__ Intrinsically safe equipment	__ Power tools/cord inspected
X_Dermal/hand	__ Trench box	__Combustible materials storage	__Insulated tools/gloves
__ Hearing	__ Barricades	__Chemical Storage	
__ Respiratory			
X_Reflective vests			

Fall Protection	Air Monitoring	Proper Equipment	Welding & Cutting
__ Harness/lanyards	__ PID/FID	__ Aerial lift/ladders/scaffolds	__ Cylinders secured/capped
__ Adequate anchorage	__ Detector tubes	__ Forklift/ Heavy equipment	__ Cylinders separated/upright
__ Guardrail system	__ Radiation	__ Backup alarms	__ Flash-back arrestors
__ Covered opening	__ Personnel sampling	__ Hand/power tools	__ No cylinders in CSE
__ Fixed barricades	__ LEL/O2	__ Crane w/current inspection	__ Flame retardant clothing
__ Warning system	__ Other	__ Proper rigging	__ Appropriate goggles
		__ Operator qualified	

Confined Space Entry	Medical/Emerg. Response	Heat/Cold Stress	Vehicle/Traffic
__ Isolation	X_ First-aid & BBP kit	X_Work/rest regime	__ Traffic Awareness
__ Air monitoring	X_Eye wash	X_ Rest area	__Traffic control
__ Trained personnel	X_FA-CPR training	X_Liquids available	__ Barricades
__ Permit completed	X_Route to hospital	X_Monitoring	__ Flags
__ Rescue provisions		__ Training	__ Signs

Permits	Demolition	Inspections	Training
__ Hot work	__ Pre-demolition survey	__ Ladders/aerial lifts	X_ Hazwaste
__ Confined space	__ Structure condition	__ Lanyards/harness	__ Construction
__ Lockout/tagout	__ Isolate area/utilities	__ Scaffolds	__Equipment
__ Excavation	__ Competent person	__ Heavy equipment	__ Competent person
__ Demolition	__ Hazmat present	__Cranes and rigging	X_Task-specific (AHA)
__ Energized work		__Other per Field Safety Plan	X_ Hazcom
__Local/Environmental			

Field Notes:

_____

_____

_____

Additional Space for Project Specific Hazard Awareness (if necessary):

1) Observe government/military facility posted speed limits.
2) Wear seat belts in vehicles while on government/military facilities.
3) Do not use cell phones or two way radios while driving or actively operating equipment on government/military facilities.
4) Failure to do so may result in loss of driving privileges on government/military facilities.
5) Report all accidents/injuries and property damage to the Project Manager and Program CIH immediately.
6) Maintain hospital route maps in site vehicles. Know facility EMS, Fire and Security dispatch #s.
7) Secure any loads to hauling vehicle (pick-up truck) with appropriate rated tie down straps.
8) Use reflective vests/ high visibility clothing in high traffic areas or in areas were material handling operations are occurring.

Attendees:

Name (Printed):	Signature:

Meeting Conducted By:

Name Printed	Signature

Attachment 9
Loss Prevention Observation Form

Loss Prevention Observation Form		
Project:	Observer:	
Position/Title of worker observed:	Background Information/comments:	
Task/Observation Observed:		Date:

- Identify and reinforce safe work practices/behaviors
- Identify and improve on at-risk practices/acts
- Identify and improve on practices, conditions, controls, and compliance that eliminate or reduce hazards
- Proactive PM/Site Manager support facilitates eliminating/reducing hazards (material/personnel resources)
- Positive, corrective, cooperative, collaborative feedback/recommendations

Actions & Behaviors	**Consistent w/ H&S Program**	**Not Consistent w/ H&S Program**	**Observations/Comments**
Current & accurate Pre-Task Planning/Briefing (Project safety plan, AHA, PTSP, tailgate briefing, c., as needed)			**Positive Work Practices Observed:**
Personnel properly trained/qualified/experienced			
Tools/equipment available and adequate			
Proper use of tools			**Questionable Activity/Condition Observed:**
Barricades/work zone control			
Housekeeping			
Communication			
Work Approach/Habits			
Attitude			
Focus/attentiveness			**Actions/Comments:**
Pace			
Uncomfortable position			
Inconvenient location			
Position/Line of fire			
Apparel (hair, loose clothing, jewelry)			
Repetitive motion			**Observed Worker's Corrective Actions/Comments:**
Other…			

Safety and Occupational Health Deficiency Tracking Log						
Item	Date Identified	Identified By	Deficiency Description	Resolution Date	Corrected By	Actual Correction Date
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						

Attachment 10
Loss/Near Loss Incident Report Form

Incident Report Form

Type of Incident (Select at least one)

- ☐ Injury/Illness
- ☐ Environmental/Permit Issue
- ☐ Property Damage
- ☐ Near Miss
- ☐ Spill/Release
- ☐ Other

General Information (Complete for all incident types)

Preparer's Name: _____ Preparer's Employee Number: _____

Date of Report: _____ Date of Incident: _____ Time of Incident: _____ am/pm

Type of Activity (Provide activity being performed that resulted in the incident)

- ☐ Asbestos Work
- ☐ Confined Space Entry
- ☐ Construction Mgmt- Haz Waste
- ☐ Construction Mgmt - Non-Haz Waste
- ☐ Demolition
- ☐ Drilling-Haz Waste
- ☐ Drilling-Non Haz Waste
- ☐ Drum Handling
- ☐ Electrical Work
- ☐ Excavation Trench-Haz Waste
- ☐ Excavation Trench-Non Haz
- ☐ Facility Walk Through
- ☐ General Office Work
- ☐ Keyboard Work
- ☐ Laboratory
- ☐ Lead Abatement
- ☐ Motor Vehicle Operation
- ☐ Moving Heavy Object
- ☐ Other (Specify) _____
- ☐ Process Safety Management
- ☐ Tunneling
- ☐ Welding
- ☐ Wetlands Survey
- ☐ Working from Heights
- ☐ Working in Roadways
- ☐ WWTP Operation

Location of Incident (Select one)

- ☐ Company Premises (JVI Office: _____)
- ☐ Field (Project #: _____ Project/Site Name: _____ Client: _____)
- ☐ In Transit (Traveling from: _____ Traveling to: _____)
- ☐ At Home

Geographic Location of Incident (Select region where the incident occurred)

- ☐ Northeast
- ☐ Southeast
- ☐ Northwest
- ☐ Southwest
- ☐ Corporate
- ☐ Canadian
- ☐ Asia Pacific
- ☐ Europe Middle East
- ☐ Latin America

If an AGVIQ-CH2M HILL subcontractor was involved in the incident, provide their company name and phone number:

_____

Describe the Incident (Provide a brief description of the incident): _____

_____

_____

_____

_____

Injured Employee Data (Complete for Injury/Illness incidents only)

If AGVIQ-CH2M HILL employee injured

Employee Name: _____ Employee Number: _____

If AGVIQ-CH2M HILL Subcontractor employee injured

Employee Name: _____ Company: _____

Injury Type

- ☐ Allergic Reaction
- ☐ Amputation
- ☐ Asphyxia
- ☐ Bruise/Contusion/Abrasion
- ☐ Burn (Chemical)
- ☐ Burn/Scald (Heat)
- ☐ Cancer
- ☐ Carpal Tunnel
- ☐ Concussion
- ☐ Cut/Laceration
- ☐ Dermatitis
- ☐ Dislocation
- ☐ Electric Shock
- ☐ Foreign Body in eye
- ☐ Fracture
- ☐ Freezing/Frost Bite
- ☐ Headache
- ☐ Hearing Loss
- ☐ Heat Exhaustion
- ☐ Hernia
- ☐ Infection
- ☐ Irritation to eye
- ☐ Ligament Damage
- ☐ Multiple (Specify)

_____

- ☐ Muscle Spasms
- ☐ Other (Specify)

_____

- ☐ Poisoning (Systemic)
- ☐ Puncture
- ☐ Radiation Effects
- ☐ Strain/Sprain
- ☐ Tendonitis
- ☐ Wrist Pain

Part of Body Injured

- ☐ Abdomen
- ☐ Ankle(s)
- ☐ Arms (Multiple)
- ☐ Back
- ☐ Blood
- ☐ Body System
- ☐ Buttocks
- ☐ Chest/Ribs
- ☐ Ear(s)
- ☐ Elbow(s)
- ☐ Eye(s)
- ☐ Face
- ☐ Finger(s)
- ☐ Foot/Feet
- ☐ Hand(s)
- ☐ Head
- ☐ Hip(s)
- ☐ Kidney
- ☐ Knee(s)
- ☐ Leg(s)
- ☐ Liver
- ☐ Lower (arms)
- ☐ Lower (legs)
- ☐ Lung
- ☐ Mind
- ☐ Multiple (Specify)
- ☐ Neck
- ☐ Nervous System
- ☐ Nose
- ☐ Other (Specify)

_____

- ☐ Reproductive System
- ☐ Shoulder(s)
- ☐ Throat
- ☐ Toe(s)
- ☐ Upper Arm(s)
- ☐ Upper Leg(s)
- ☐ Wrist(s)

Nature of Injury

- ☐ Absorption
- ☐ Bite/Sting/Scratch
- ☐ Cardio-Vascular/Respiratory System Failure
- ☐ Caught In or Between
- ☐ Fall (From Elevation)
- ☐ Fall (Same Level)
- ☐ Ingestion
- ☐ Inhalation
- ☐ Lifting
- ☐ Mental Stress
- ☐ Motor Vehicle Accident
- ☐ Multiple (Specify)

_____

- ☐ Other (Specify)

_____

- ☐ Overexertion
- ☐ Repeated Motion/Pressure
- ☐ Rubbed/Abraded
- ☐ Shock
- ☐ Struck Against
- ☐ Struck By
- ☐ Work Place Violence

- Initial Diagnosis/Treatment Date: _____

Type of Treatment

- ☐ Admission to hospital/medical facility
- ☐ Application of bandages
- ☐ Cold/Heat Compression/Multiple Treatment
- ☐ Cold/Heat Compression/One Treatment
- ☐ First Degree Burn Treatment
- ☐ Heat Therapy/Multiple treatment
- ☐ Multiple (Specify)

_____

- ☐ Heat Therapy/One Treatment
- ☐ Non-Prescriptive medicine
- ☐ None
- ☐ Observation
- ☐ Other (Specify)

_____

- ☐ Prescription- Multiple dose
- ☐ Prescription- Single dose
- ☐ Removal of foreign bodies
- ☐ Skin Removal
- ☐ Soaking therapy- Multiple Treatment
- ☐ Soaking Therapy- One Treatment
- ☐ Stitches/Sutures
- ☐ Tetanus
- ☐ Treatment for infection
- ☐ Treatment of 2nd /3rd degree burns
- ☐ Use of Antiseptics – multiple treatment
- ☐ Use of Antiseptics – single treatment
- ☐ Whirlpool bath therapy/multiple treatment
- ☐ Whirlpool bath therapy/single treatment
- ☐ X-rays negative
- ☐ X-rays positive/treatment of fracture

Number of days doctor required employee to be off work: _____
Number of days doctor restricted employee's work activity: _____
Equipment Malfunction: Yes ☐ No ☐ Activity was a Routine Task: Yes ☐ No ☐
Describe how you may have prevented this injury:
_____
_____
_____

Physician Information
Name: _____
Address: _____
City: _____
Zip Code: _____
Phone: _____

Hospital Information
Name: _____
Address: _____
City: _____
Zip Code: _____
Phone: _____

Property Damage (Complete for Property Damage incidents only)

Property Damaged: _____ Property Owner: _____
Damage Description: _____
Estimated Amount: $ _____

Spill or Release (Complete for Spill/Release incidents only)

Substance (attach MSDS): _____ Estimated Quantity: _____
Facility Name, Address, Phone No.:
_____
Did the spill/release move off the property where work was performed?:
_____
Spill/Release From: _____ Spill/Release To: _____

Environmental/Permit Issue (Complete for Environmental/Permit Issue incidents only)

Describe Environmental or Permit Issue:
_____
Permit Type:
_____
Permitted Level or Criteria (e.g., discharge limit):
_____
Permit Name and Number (e.g., NPDES No. ST1234):
_____
Substance and Estimated Quantity:
_____
Duration of Permit Exceedance:
_____

Verbal Notification (Complete for all incident types)(Provide names, dates and times)

AGVIQ-CH2M HILL Personnel Notified: _____
Client Notified: _____

Root Cause Investigation

This attachment is provided to assist in accessing, completing, and reviewing an incident investigation. It is important to remember the following when conducting an investigation:

Gather relevant facts, focusing on fact-finding, not fault-finding.
Draw conclusions, pitting facts together into a probable scenario.
Determine incident root cause(s), the basic causes why an unsafe act/condition existed.
Develop and implement solutions, matching all identified root causes with solutions.

Documentation
The following should be included in the Incident Report Form (IRF) to document the incident.

Description

Provide a description of the event and the sequence of events and actions that took place prior to the incident. Start with the incident event and work backwards in time through all of the preceding events that directly contributed to the incident. The information should identify why the event took place as well as who was involved, when and where the event took place, and what actions were taken.

Cause Analysis

Using the form and flowchart in this attachment the root cause of the incident will be determined. This form must be retained in the project and/or regional HS&E files.

Immediate Causes—List the substandard actions or conditions that directly affected the incident. The following are examples of immediate causes:

> ***Substandard Actions*:** Operating equipment without authority; failure to warn; failure to secure; operating at improper speed; making safety device inoperable; using defective equipment; failing to use PPE; improper loading; improper lifting; improper position for task; under influence of alcohol or drugs; horseplay.
>
> ***Substandard Conditions:*** Exposure to hazardous materials; exposure to extreme temperatures; improper lighting; improper ventilation; congestion; exposure to fire and explosive hazard; defective tools, equipment or materials; exposure to extreme noise; poor ventilation; poor visibility; poor housekeeping.

Basic Causes—List the personal and job factors that caused the incident. The following are examples of basic causes:

> ***Personal Factors:*** Capability; knowledge; skill; stress; motivation.
>
> ***Job Factors:*** Abuse or misuse; engineering; maintenance; purchasing; supervision; tools and equipment; wear and tear; work standards.

Corrective Action Plan

Include all corrective actions taken or those that should be taken to prevent recurrence of the incident. Include the specific actions to be taken, the employer and personnel responsible for implementing the actions, and a time frame for completion. Be sure the corrective actions address the causes. For example, training may prevent recurrence of an incident caused by a lack of knowledge, but it may not help an incident caused by improper motivation.

The following are examples of management programs that may be used to control future incidents. These programs should be considered when determining specific corrective actions.

Management Programs: Accident/incident analysis; emergency preparedness; engineering controls; general promotion; group meetings; health control; hiring and placement; leadership and administration; management training; organizational rules; personal protective equipment; planned inspections; program audits; program controls; purchasing controls; task analysis and procedures; task observation.

Loss/Near-Loss Investigation Report Form

Employer Information

Company Name: _____

Project Name: _____ Task Order: _____

Project Location: _____

Task Location: _____

Job Assignment: _____

Preparer's Name: _____ Preparer's Employee Number: _____

Incident Specific Information

Date of Incident: _____ Time of Incident: _____ a.m./p.m.

Location of incident:
☐ Company premises
☐ Field
☐ In Transit
☐ Other:_____

Address where the incident occurred: _____

Equipment Malfunction: Yes ☐ No ☐ Activity was a Routine Task: Yes ☐ No ☐

Describe any property damage: _____

Specific activity the employee was engaged in when the incident occurred:
_____
_____

All equipment, materials, or chemicals the employee was using when the incident occurred:
_____
_____

Describe the specific incident and how it occurred:
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Describe how this incident may have been prevented:

_____
_____
_____
_____
_____
_____
_____
_____

Contributing Factors (Describe in detail why incident occurred):

_____
_____
_____
_____
_____

Date employer notified of incident: _____ To whom reported: _____

Witness Information (First Witness)

Name: _____
Employee Number_____
Address:_____
City: _____
Zip Code : _____
Phone: _____

Witness Information (Second Witness)

Name: _____
Employee Number_____
Address:_____
City: _____
Zip Code : _____
Phone: _____

Additional information or
comments:_____
_____
_____

A ROOT CAUSE ANALYSIS FORM MUST BE COMPLETED FOR ALL INJURIES AND ILLNESSES OR ACTUAL LOSSES.

COMPLETION OF THE ROOT CAUSE ANALYSIS FORM FOR NEAR LOSSES IS OPTIONAL, AT THE DISCRETION OF THE HEALTH AND SAFETY MANAGER.

Determination of Root Cause(s)

For losses or near losses the information may be gathered by the supervisor or other personnel immediately following the loss or near loss. Based on the complexity of the situation, this information may be all that is necessary to enable the investigation team to analyze the loss, to determine the root cause, and to develop recommendations. More complex situations may require the investigation team to revisit the loss site or re-interview key witnesses to obtain answers to questions that may arise during the investigation process.

Photographs or videotapes of the scene and damaged equipment should be taken from all sides and from various distances. This point is especially important when the investigation team will not be able to review the loss scene.

The investigation team must use the Root Cause Analysis Flow Chart to assist in identifying the root cause(s) of a loss. Any loss may have one or more "root causes" and "contributing factors". The "root cause" is the primary or immediate cause of the incident, while a "contributing factor" is a condition or event that contributes to the incident happening, but is not the primary cause of the incident. Root causes and contributing factors that relate to the *person* involved in the loss, his or her peers, or the supervisor should be referred to as "personal factors". Causes that pertain to the *system* within which the loss or injury occurred should be referred to as "job factors".

Personal Factors

1. Lack of skill or knowledge, lack of motivation
5. Correct way takes more time and/or requires more effort
6. Short-cutting standard procedures is positively reinforced or tolerated
7. Person thinks that there is no personal benefit to always doing the job according to standards

Job Factors

2. Lack of or inadequate operational procedures or work standards.
3. Inadequate communication of expectations regarding procedures or standards
4. Inadequate tools or equipment

Other

8. Uncontrollable Factors *

The root cause(s) could be any one or a combination of these seven possibilities or some other "uncontrollable factor". In the vast majority of losses, the root cause is very much related to one or more of these seven factors. * **Uncontrollable factors should be used rarely and only after a thorough review eliminates "all" seven other factors.**

Root Cause Analysis Form

Root Cause Analysis (RCA)

Root Cause Categories (RCC): Select the RCC numbered below that applies for the root cause (RC) and/or contributing factor (CF) in the first column, then describe the specific root cause and corrective actions in each column.

1. **Lack of skill or knowledge**
2. **Lack of or inadequate operational procedures or work standards**
3. **Inadequate communication of expectations regarding procedures or work standards**
4. **Inadequate tools or equipment**
5. **Correct way takes more time and/or requires more effort**
6. **Short-cutting standard procedures is positively reinforced or tolerated**
7. **Person thinks there is no personal benefit to always doing the job according to standards**
8. **Uncontrollable Factor (Note: Uncontrollable factors should be used rarely and only after a thorough review eliminates "all" seven other factors.)**

RCC #	Root Cause(s)	Corrective Actions	RC[1]	CF[2]	Due Date	Completion Date	Date Verified

[1] RC = Root Cause; [2] CF = Contributing Factors (check which applies)

Investigation Team Members

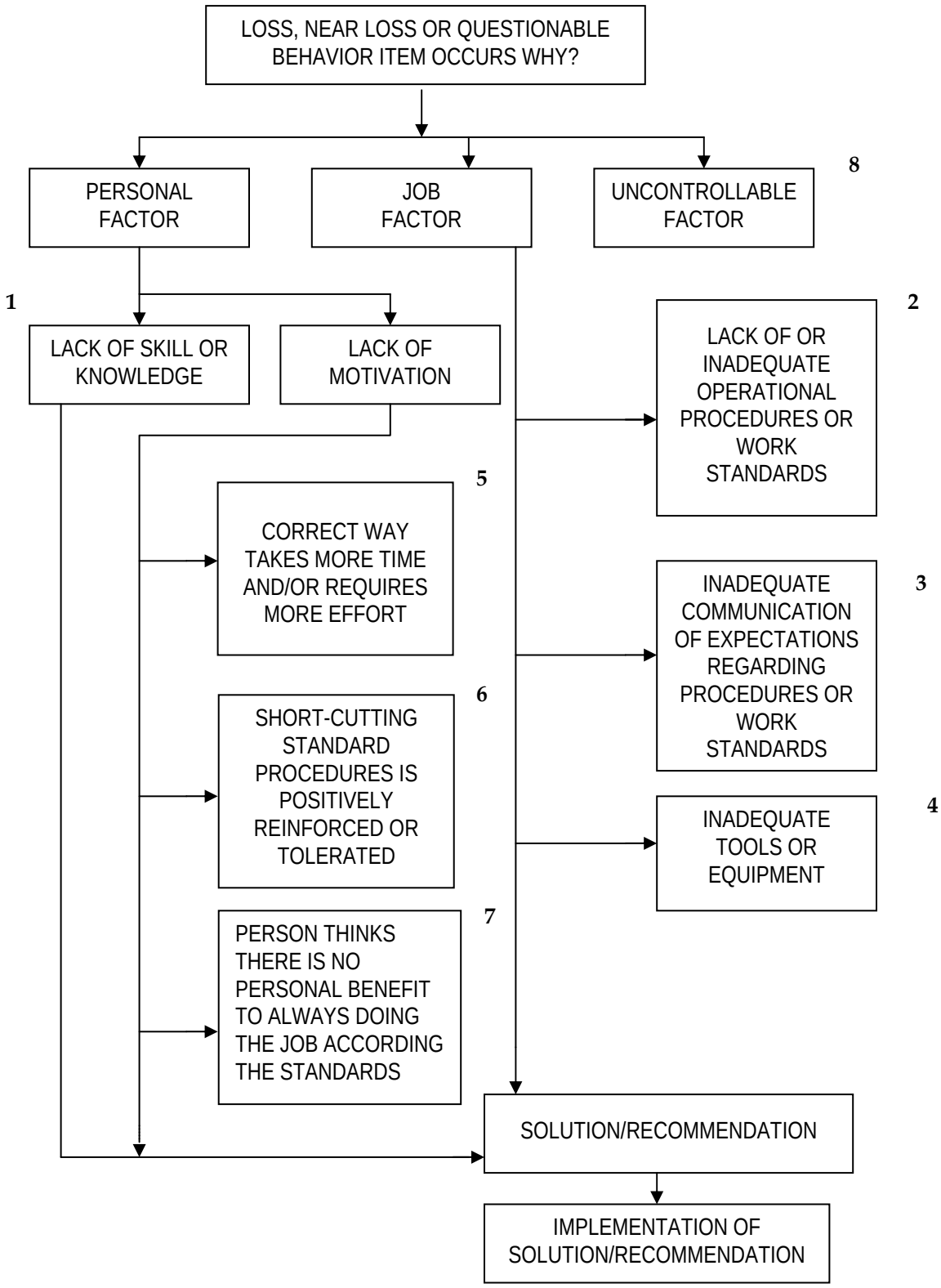
Name	Job Title	Date

Results of Solution Verification and Validation

Reviewed By

Name	Job Title	Date

Root Cause Analysis Flow Chart



Emergency Nurse Assistance Instructions
(CH2M HILL personnel only)

- After informing their supervisor (AGVIQ-CH2M HILL Project Manager and/or AGVIQ-CH2M HILL Deputy Program Manager), the injured employee calls CH2M HILL's contracted Occupational Nurse.
- 24-hour CH2M HILL Emergency Nurse Assistance (1-866-893-2514)
- The Occupational Injury Nurse listens to the injured employee to understand the injury/illness.
- Employee is provided guidance on appropriate treatment options (triage).
- If instructed to visit a medical facility by the Occupational Injury Nurse, the Supervisor is responsible for instructing the injured employee to take a copy of the **CH2M HILL Initial Medical Treatment Form (Attachment 9– For Use by CH2M HILL Personnel Only)** with them to the physician, clinic or hospital.
- Appropriate treatment details are handled by the Occupational Injury Nurse, and Workers Compensation Groups.
- Nurse communicates and troubleshoots with and for employee through full recovery
- Upon any project incident (fire, spill, injury, near miss, death, etc.), immediately notify the AGVIQ-CH2M HILL PM (overall) and AGVIQ-CH2M HILL Program Manager, Project Manager and CIH/HSPA.
- For work-related injuries or illnesses to CH2M HILL personnel, contact and help Human Resources administrator complete a Hours and Incident Tracking System (HITS) Form. HITS must be completed within 24 hours of incident.

For AGVIQ-CH2M HILL subcontractor incidents, complete the IRF, Near Loss Investigation Report and Root Cause Analysis and submit to the AGVIQ-CH2M HILL PM and CIH/HSPA.

CH2MHILL INITIAL MEDICAL TREATMENT FORM

To be completed by CH2M HILL Supervisor – Send with employee visiting medical facility or forward within 24 hours.

Employee name: _____Date of Injury:_____
Supervisor: _____ HS
Representative:_____
Visit Authorized by: _____Phone #;_____

CH2M HILL Workers Compensation Administrator: Cambridge
Send Bills to: CH2M HILL
Attn: Jennifer Rindahl
P.O. Box 22508
Denver, Colorado 80222-0508

To be completed by medical provider:

Physician's name: _____ Phone #: _____
Address: _____
CH2M HILL employee: _____ has been treated for:_____

It is the policy of CH2M HILL to provide temporary modified duty whenever possible for employees with physical restrictions resulting from an occupational injury or illness.

Released to full duty

Released to restricted duty only (list restrictions below)

Out of work until _____(date)

Please list any physical restrictions:
_____
_____

Expected duration of restricted duty?
_____

CH2M HILL would like the best and most efficient care extended to all our employees. Please recommend over-the-counter (OTC) medication as a suitable alternative when medically feasible.

Prescribed medication:_____

Recommended OTC alternative:_____

Date of follow-up
appointment:_____

Physician's signature: _____ Date: _____

Please return this form to the injured employee and FAX to Health Resources at 1-800-853-2641. If you want to
discuss the employee's work restrictions, please call the person listed in the "Visit Authorized by" field.

Attachment 12
Hurricane Preparedness Plan
(RESERVED)

APPENDIX B

Quality Control Plan

Final
Construction Quality Control Plan

Installation of Full Scale Treatment System
Liquid-Phase Granular Activated Carbon Units

New York American Water Company
Seaman's Neck Road Water Plant
NWIRP Bethpage, New York

Revision No. 00

Contract No. N62470-08-D-1006
Task Order No. WE23

Submitted to:

Department of the Navy
Naval Facilities Engineering Command
Mid-Atlantic

Prepared by:

December 2012

Contents

Tables

Figure

Attachments

Acronyms and Abbreviations

AGVIQ-CH2M HILL	AGVIQ-CH2M HILL Constructors, Inc. Joint Venture III
AHA	activity hazard analysis
American Water	New York American Water Company
APP	Accident Prevention Plan
AQUA-NY	Aqua New York, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CO	Contracting Officer
CPR	Contractor Production Report
CQCR	Contractor QC Report
DFOW	Definable Feature of Work
H&S	health and Safety
LPGAC	Liquid-Phase Granular Activated Carbon
µg/L	micrograms per liter
NCDOH	Nassau County Department of Health
NFESC	Naval Facilities Engineering Service Center
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
O&M	Operation and Maintenance
PM	Project Manager
QA	Quality Assurance
QC	Quality Control
QCM	Quality Control Manger
QCP	Quality Control Plan
RFI	Request for Information
ROD	Record of Decision
SSHO	Site Safety and Health Officer
SOP	Standard Operating Procedure
STC	Senior Technical Consultant

TO	Task Order
TOH	Town of Hempstead
VOC	volatile organic compound

1.0 Introduction

AGVIQ-CH2M HILL Constructors, Inc. Joint Venture III (AGVIQ-CH2M HILL) has prepared this Quality Control Plan (QCP) describing the quality control (QC) process for the installation of the permanent Liquid-Phase Granular Activated Carbon (LPGAC) units at the New York American Water Company (American Water), Seaman's Neck Road Water Plant, in Levittown, NY. This QCP was prepared under Response Action Contract No. N62470-08-D-1006, Task Order (TO) No. WE23.

1.1 Scope of Work

The purpose of this QCP is to outline the required QC procedures that will be employed during the installation of the full scale permanent LPGAC units in order to ensure that all work is completed in accordance with the project specifications. Specifically, the QCP focuses on the performance of the following activities:

- Construction Preparation
- Mobilization
- Demolition
- Underground Piping and Utilities
- Concrete Work
- Process Equipment, Piping, and Valves
- Pre-engineered Building
- Electrical and Instrumentation
- Final Exterior Work
- System Start-Up
- Site Restoration
- Demobilization

These activities will be performed in accordance with the approved 100% Design Document. Work plan documents will be approved by the Navy before field work begins.

1.2 Project Background

This Quality Control Plan is to address construction and startup of a full scale permanent well-head treatment system for American Water water supply wells N-8480 (Well No. 3) and N-9338 (Well No. 4) located at the Seaman's Neck Road Facility.

Construction of the full-scale permanent treatment system is tentatively planned to start in early winter or early spring 2013 and be completed in the end of 2013. The treatment system is being constructed to protect public health. The Navy is conducting this action under the Navy's Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) authority and per the approved Record of Decision (ROD). In accordance with the ROD, the Navy is conducting this action since a threat exists to the public water supply system.

For more information, please refer to the 100% Final Design Documents.

1.3 Project Objectives

The key objectives of the Implementation of Remedial Action Wellhead Treatment at the American Water facility project are summarized below:

- Procure, install, and start-up the Full Scale Permanent LPGAC Wellhead Treatment System per the Tetra Tech NUS, Inc. (TtNUS) design documents.
- Minimize the disturbance to plant operation and staff during construction.

2.0 Organization and Responsibilities

This section discusses the key roles and responsibilities of the project team that will deliver this task order.

2.1 Quality Management Roles and Responsibilities

The project organization chart (Figure 2-1) depicts the chain of command for this TO and the individuals responsible for executing the work as indicated. Individual roles and responsibilities of TO personnel are summarized in Table 2-1.

2.1.1 Program Quality Manager – Theresa Rojas

The Program Quality Manager is responsible for developing, maintaining, and ensuring implementation of the quality program on this project. This responsibility includes oversight of activities performed under the guidance of this QCP, conducting periodic reviews of the processes being implemented, and implementing continuous improvement evaluations of the quality program.

2.1.2 Program Health and Safety Manager – Joshua Painter

The Program Health and Safety Manager is responsible for developing, maintaining, and ensuring implementation of the health and safety (H&S) program on this project. This responsibility includes general oversight of activities performed under this TO, conducting periodic reviews and inspections of the H&S procedures being implemented, evaluating any H&S concerns raised by the project team over the course of the project, providing guidance on any H&S issues raised by the team to ensure the safety of project personnel, and implementing continuous improvement evaluations of the H&S program.

2.1.3 Project Manager – Jim Nicotri

The Project Manager (PM) is responsible for the overall execution of the TO. He provides the managerial and administrative skills to ensure that resource allocation, planning, execution, and reporting to meet contract and TO requirements. He is ultimately accountable for all work activities undertaken on this project. The global quality-related responsibilities of the Project Manager can include, but are not limited to, the following:

- Organizes the project team and assign responsibilities
- Understands the contract and scope of work for the specific project
- Communicates to the project team regarding client requirements and quality assurance/quality control (QA/QC) practices
- Identifies, documents, and notifies the client and project team of changes in the scope of work, project documentation, and activities
- Supervises preparation and approval of project-specific procedures, work plans, and quality assurance (QA) project plans
- Approves project design bases, design parameters, drawings, and reports

- Approves project construction methodologies
- Disseminates project-related information from the client such as design bases, input parameters, and drawings
- Serves as liaison for communications with the client and subcontractors
- Serves as liaison between the project team and other internal groups
- Determines whether drawings require independent review
- Investigates nonconformance and implementation of corrective actions
- Evaluates the effect of nonconformance on the project and the appropriateness for reporting such items to the client and provides appropriate documentation for reporting
- Verifies that changes, revisions, and rework are subject to the same QC requirements as the original work
- Serves as final reviewer prior to release of project information
- Approves and signs outgoing correspondence

The PM may delegate some of these responsibilities to the Site Superintendent, Quality Control Manager (QCM), or others who will remain onsite for the duration of project field activities as appropriate.

2.1.4 Site Superintendent/Construction Manager – Randy Grogan

The Site Superintendent is responsible to the PM for efficiently applying the resources of the project team to execute construction. In addition, the Site Superintendent is responsible for ensuring that the construction is conducted in accordance with the work plan and approved design, ensuring appropriate personnel are performing certain tasks, the construction methodology, quality, and safety of the project and the project team during the field work. The Site Superintendent will assist the PM in ensuring that sufficient resources are allocated to maintain project schedule and budget and will provide daily feedback to the PM on project progress, issues requiring resolution, and other project-specific issues, as required. The quality-related responsibilities of the Site Superintendent include, but are not limited to, the following:

- Notifies the PM if the project cannot be completed with regard to quality, schedule, or cost
- Provides oversight and control of subcontractor services
- Serves as liaison for communications with the project staff and subcontractors, as well as with the onsite client representatives
- Continuously monitors work progress, quality, safety, and adherence to authorized work scopes, budgets, and schedules
- Aids in the preparation of construction submittals
- Initiates corrective actions for non-conformance identified onsite
- Leads weekly status meetings
- Reviews the project work plans regularly
- Interfaces daily with the subcontractors

- Prepares and submits Requests for Information (RFIs) and routes them to the PM and Technical Lead for review and approval

2.1.5 Project QCM /Site Safety and Health Officer – To Be Determined

The Project QCM is responsible for the execution of the project's construction quality control system and communicates the onsite QA program policies, objectives, and procedures to the project team and subcontractors during project meetings and informal discussions. Onsite technical personnel, which may include a construction QCM, engineers, chemists, geologists, and scientists, will assist the Project QCM in monitoring, controlling, and documenting the quality of the onsite construction, surveying, and other remedial activities. All documentation related to the control of the quality of the project, including analytical test results, inspections, material test results, and audits, will be reviewed or prepared by the Project QCM. The Project QCM's duties include the following:

- Three phases of control inspections
- Control testing
- Document control
- Review of submittals
- Completion inspection
- Records Maintenance and Filing
- Conduct of audits and surveillance

The Project QCM will also coordinate with and assist the Navy representatives in the performance of QA audits and inspections.

The Site Safety and Health Officer (SSHO) is responsible for administering the provisions of the Accident Prevention Plan (APP) during the fieldwork. The SSHO will ensure that proper H&S precautions are considered and conducted during project implementation. Responsibilities include, but are not limited to, the following:

- Provides H&S oversight of the field team and coordinates with subcontractor H&S representatives
- Serves as liaison for H&S communications with the project staff and subcontractors as well as program H&S team
- Continuously monitors implementation of H&S practices and has the authority to stop work when deemed appropriate
- Aids in the preparation of H&S documentation
- Initiates corrective actions for non-conformance identified onsite
- Leads daily H&S meetings
- Reviews the project work plans regularly

2.1.6 Senior Construction Manager – Steve Matney

The Senior Construction Manager is responsible for identifying the appropriateness of the construction activities selected for the project, evaluates the current site conditions and construction methods used on the project. The Senior Construction Manager's duties include identifying appropriate short-term and long-term means and methods for

constructing the project. The Senior Construction Manager will also review and guide the preparation of project technical work plans and project completion reports and supervise the field construction staff on the project.

2.1.7 Senior Technical Consultant – Russell Ford

The Senior Technical Consultant (STC) is responsible for reviewing the process information for the treatment system and site and for evaluating the performance of the system. The STC is also responsible for overseeing the construction of the project to ensure compliance with design drawings and specifications and will ultimately certify that the system was installed and operates in accordance with the design drawings and specifications.

2.2 Outside Organizations and Subcontractors

AGVIQ-CH2M HILL assumes overall responsibility for ensuring conformance of subcontracted materials and services to quality requirements. However, it is the responsibility of subcontractors to plan, manage, and accomplish their activities in accordance with the plans, specifications, and local, state, and federal regulations.

Subcontractors include those organizations supplying services to the project. Subcontractors report directly to the Site Superintendent and are responsible for completing the project-specific activities assigned to them. Subcontractors are also responsible for meeting the quality requirements for materials and workmanship as defined by the Project QCM. Subcontractors will verify that construction activities and materials comply with the requirements of the contract plans and specifications.

Services/materials anticipated to be subcontracted for the full scale system, upgrades include:

- General Construction Subcontractor (construction services, system installation, pre-fabricated building procurement and installation, geotechnical testing, surveying, utility location services, waste management and disposal)
- Specialty vendor (LPGAC System)
- Various rental equipment vendors (office trailer, frac tank, etc)
- Chemical laboratory

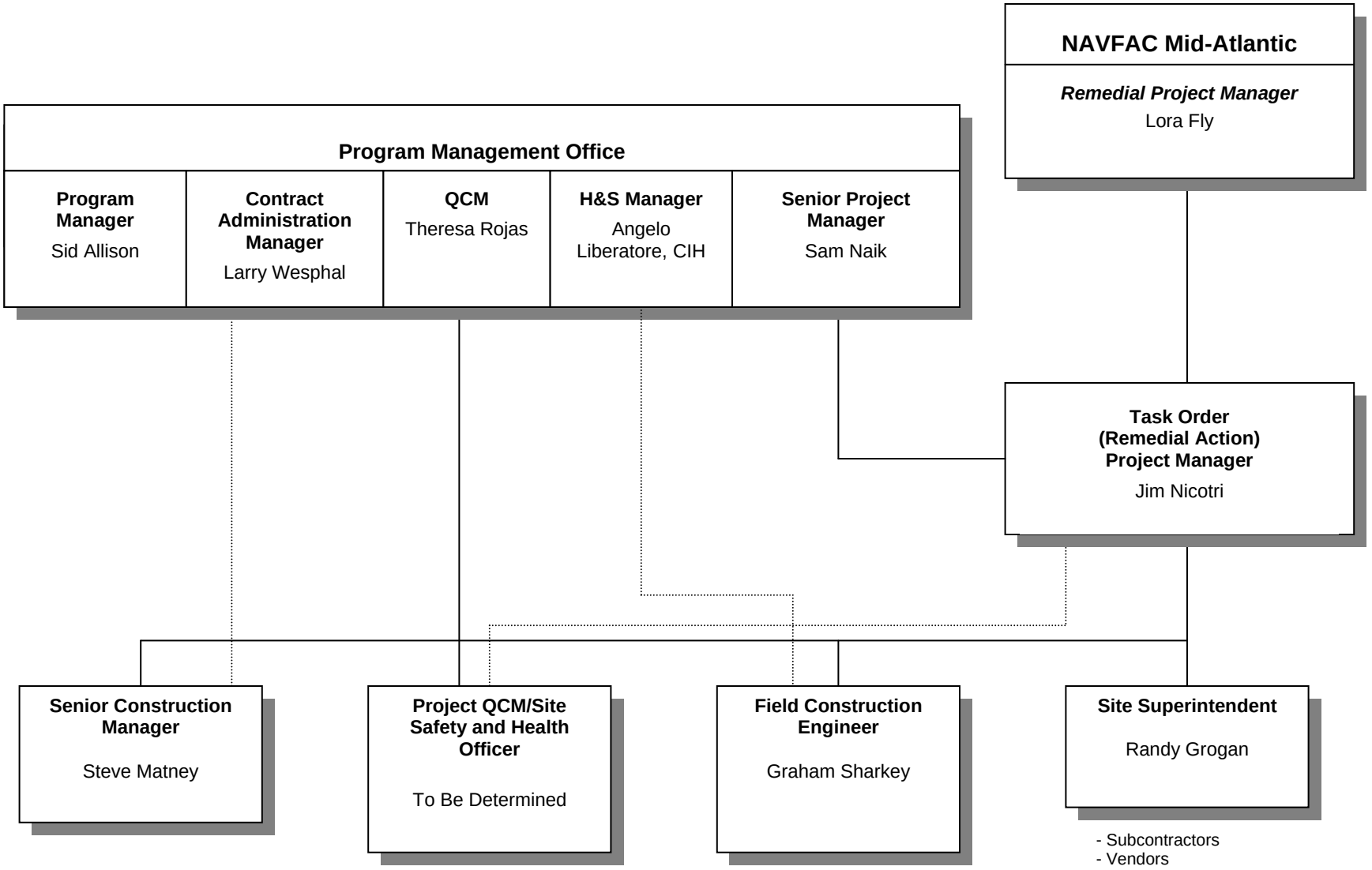


Figure 2-1
Project Organization Chart

TABLE 2-1
Roles, Responsibilities, and Authorities of Key Project Personnel

Role	Responsibility	Authority
PM	Management and technical direction of work Communicate with Navy Remedial PM and Navy technical representative Subcontractor management Select TO staff Develop TO Work Plan and supporting plans Meet TO performance objectives Prepare status reports Prepare field change requests	Approve subcontractor selection Approve invoices to the Navy Approve TO baseline schedule Stop work at the site for any reason Approve payment to vendors and suppliers Approve payment to subcontractors Review technical qualifications of subcontractors Respond to Change Notices
Site Superintendent/ Construction Manager	Responsible for all site activities Provide direction to field personnel and subcontractors Onsite construction management Provide daily status reports Implement TO Work Plan Review subcontractor qualifications Stop work for unsafe conditions or practices	Stop site work as necessary Approve corrective action for site inspections and assessments Approve materials and labor costs for site operations Resolve field personnel and/or subcontractor interface issues Approve daily and weekly status reports
Project QCM	Monitor and oversee implementation compliance with scope of work Document inspections to ensure compliance Review requests for changes in scope of work Recommend improvements in work techniques or metrics Monitor and report on subcontractor quality and quantities Maintain Submittal Register	Complete daily quality report Monitor and report on subcontractor quality and quantities Conduct inspections to ensure compliance Stop work for non-compliant operations Maintain rework items list
SSHO	Monitor and report on field personnel and/or subcontractor safety and health performance Record and report safety statistics Conduct needed site safety and health orientation and daily safety meetings Maintain environmental log Stop work for unsafe practices or conditions	Stop work for unsafe practices or conditions Enforce site-specific Accident Prevention Plan Set weekly safety objectives Approve resumption of work for resolved safety issues
Program Quality Manager	Coordinate with the Project QCM on QCP implementation Provide oversight of the Project QCM's role Monitor and audit project quality implementation	Review and oversight of QCP implementation Coordination with Project Quality Manager and PM on corrective actions
Program H&S Manager	Coordinate with the SHSO on H&S implementation Provide oversight of the SHSO's role Monitor and audit project H&S implementation	Review and oversight of APP implementation Coordination with SHSO and PM on H&S corrective actions

TABLE 2-1
Roles, Responsibilities, and Authorities of Key Project Personnel

Role	Responsibility	Authority
Senior Technical Consultant (STC)	Coordinate with the Field Construction Engineer on implementation of the design drawings and specifications Review the process information for the treatment system and site Evaluate the performance of the system. Oversee the construction of the project to ensure compliance with design drawings and specifications	Certify that the system was installed and operates in accordance with the design drawings and specifications Stop work and require rework on items that are not in compliance with design drawings and specifications

3.0 Construction Quality Control

The construction QC methods applicable to the work activities described for this QCP are outlined in the following subsections. The Project QCM and the Construction Manager (Site Superintendent) will verify conformance with the field requirements. The Project QCM, or his designee, will perform final inspections of the materials and the overall work activities. These inspections are performed to ensure safe, efficient, high- quality work is performed, while meeting the objectives and requirements of the plans and specifications.

The project tasks for this TO project are grouped into definable features of work (DFOWs), which are work activities that are significant enough to warrant separate inspections. The DFOWs for this project are:

- Mobilization
- Demolition
- Underground Piping and Utilities
- Concrete Work
- Process Equipment, Piping, and Valves
- Pre-engineered Building
- Electrical and Instrumentation
- Final Exterior Work
- System Start-Up
- Site Restoration
- Demobilization

3.1 Procedures for Performing the Three Phases of Control

The DFOWs will be inspected in accordance with the three phases of control—preparatory, initial, and follow-up. An overview of the inspection provisions is outlined in the subsections that follow.

3.1.1 Preparatory Phase

The preparatory phase culminates with the planning and design process. Successful completion of the Preparatory Phase verifies that the TO delivery and project plans have been completed and are ready to be implemented. For each DFOW established in the QCP, the following events must be performed during the preparatory phase by the Project QCM in conjunction with the Site Superintendent and the SSHO responsible for the DFOW:

1. Confirm that the appropriate technical specifications are incorporated into the project work plan and review specifications.
2. Confirm that the appropriate contract drawings are incorporated into the project work plan and review drawings.
3. Verify that all shop drawings and submittals have been approved by the proper approving authority (including factory test results, when required).

4. Confirm that the testing plan coincides with the work plan and that adequate testing is called for to assure quality delivery.
5. Confirm definition of preliminary work required at the TO work site and examine the TO work area to confirm required preliminary work has been properly completed.
6. Confirm availability of required materials and equipment. Examine materials and equipment to confirm compliance with approved submittals and procedures. Examine mock-ups and any sample work product to confirm compliance with approved submittals.
7. Review the site APP and activity hazard analysis (AHA) to ensure that safety concerns are adequately addressed and applicable safety requirements have been incorporated into the plan. Confirm that the appropriate material safety data sheets have been identified and properly submitted.
8. Discuss construction methods to be employed during the activity. Identify checkpoints and areas of evaluation that will allow confirmation that the appropriate quality of construction is being achieved.
9. Confirm permits and other regulatory requirements are met.

The Navy's Contracting Officer (CO) or designated representative must be notified at least 2 working days in advance of each preparatory phase. Results of the activity are to be documented in the Preparatory Phase Report and attached to the Contractor QC Report (CQCR).

3.1.2 Initial Phase

The initial phase occurs at the startup of each construction activity associated with a specific DFOW. The initial phase confirms that the QCP is being effectively implemented and the desired results are being achieved. As is the case with the preparatory phase, proper notification to the Navy's CO or designated representative is required when crews are ready to start work on a DFOW.

During the initial phase, the initial segment of the DFOW is observed and inspected to ensure that the work complies with contract and specification requirements. The initial phase should be repeated when acceptable levels of specified quality are not being met.

The following shall be performed for each DFOW:

1. Establish the quality of workmanship required to properly deliver the TO in accordance with contract requirements. The Project QCM ensures that the Site Superintendent has made the work crews aware of expectations associated with the construction methods established under the preparatory phase. This assurance is to be achieved via observation of the initial work activities as well as interaction with the Site Superintendent and responsible subcontractor.

2. Resolve conflicts. The Project QCM will guide the Site Superintendent and responsible foreman in resolving conflicts. Should conflicts arise in establishing the baseline quality for the DFOW, the responsibility to resolve the conflict falls to the Project QCM. Should the conflict not be resolved in a manner that satisfies the contract requirements, the Project QCM must elevate the conflict to the Project Manager and, if needed, the

Program Quality Manager and issue a non-conformance report. The Project QCM may direct a "stop work" order for that activity, with the concurrence of the Project Manager, should the issue jeopardize the results of the DFOW or put the TO at risk of non-compliant performance.

3. Evaluate the site APP and AHA against actual work conditions with the Site Superintendent and responsible foreman to ensure that the AHA conducted to prepare the plan adequately addressed field conditions. Confirm that applicable safety requirements are being implemented during construction activities.

4. Observe and evaluate the performance of testing technicians. Confirm with the Site Superintendent and/or responsible subcontractor that testing is being performed in accordance with the testing plan and that all required protocols are being observed. Review all reports and documentation associated with extraction, packaging, transporting, and testing of samples. Note any discrepancies and direct correction accordingly.

Upon completion of the initial phase activities, results are to be documented in the CQCR. Should results be unsatisfactory, the initial phase will be rescheduled.

3.1.3 Follow-up Phase

Completion of the initial phase of QC activity then leads directly into the follow-up phase, which addresses the routine day-to-day activities on the construction site. Inspection activities associated with each DFOW are to be documented in the CQCR. Specific concerns associated with the follow-up include:

1. Inspection of the work activity to ensure work is in compliance with the contracted remedial action

2. Evaluation and confirmation that the quality of workmanship is being maintained at a level no less than that established during the initial phase

3. Evaluation and confirmation that required testing is being performed in accordance with procedures established during the preparatory phase and confirmed during the initial phase

4. Confirmation that non-conforming work is being corrected promptly and in accordance with the direction provided by the Project QCM

The follow-up phase inspections should be performed daily, or as identified in the QCP until the completion of each DFOW.

3.2 Construction Preparation

A preconstruction meeting will be conducted prior to the commencement of the full scale installation. Coordination of the key utilities (gas, power and water) is vital to continued, uninterrupted service to these utilities and smooth transition to full scale treatment system installation. Due to the involvement of multiple utility providers, coordination with those outside firms shall be conducted concurrently (and in some cases) including the general contractor. Subcontracts will be finalized with vendors and supporting subcontractors

(offsite chemical laboratory, pre-engineered building, etc.) prior to conducting the teleconference involving MIDLANT, the Navy, American Water, TtNUS, and NASSAU County.

3.2.1 Preparatory Phase

The preparatory phase will effectively be considered the project kick-off meeting that will be conducted to discuss the preparedness to begin the full scale system installation. The overall project schedule, status of permits and relevant submittals, regulatory communications and lines of communication, utility coordination and status, procurement of subcontractors and services, the overall system design objectives and reporting. Deadlines for resolving actionable items will be established.

3.2.2 Initial Phase

Communications with facility personnel, stakeholders, regulatory agencies, subcontractors and vendors will be made to address actionable items. The project manager will lead the effort to coordinate and address items prior to the mobilization regarding general site conditions, traffic flow and control, status of utilities (electrical, compressed air, water, etc.) will be documented; any deficiencies will be noted and corrected as deemed necessary.

3.2.3 Follow-up Phase

The project manager will provide updates to NAVFAC MIDLANT as they occur. A summary of the coordination efforts will be provided in the Monthly Status Report.

Table 3-1 lists the QC procedures that will be implemented during construction preparation activities.

TABLE 3-1
QC Procedures for Construction Preparation

Task	Procedures/Construction Details
Pre-construction Meeting	• Conduct coordination (pre-construction) meeting and prepare meeting minutes. • Review status of submittals (requiring approval) and relevant to commencing construction and utilities. • Discuss status of utilities (gas, power, and water). • Review project schedule. • Discuss status of permits. • Review procurement status for general contractor, vendor and service subcontracts. • Discuss communications matrix and change management plan.

3.3 Mobilization

Mobilization will consist of mobilizing personnel, equipment and supplies to the work site and verifying temporary facilities are satisfactory, receiving materials necessary for BMPs and demarcation of work zones, and conducting additional utility surveys in support of the continued work planned for the treatment system. Equipment and materials staging will be discussed as well as the status of critical submittals. Additionally, requirements for equipment and material deliveries will be reviewed (updates since the temporary system demobilization reiterated) to ensure no disruption to traffic flow and facility access by authorized employees and vendors.

3.3.1 Preparatory Phase

The preparatory phase will include a review of the APP and relevant AHAs, the construction sequence, communications matrix, project schedule, submittal status based on review of the project Submittal Register, and confirmation that appropriate materials and equipment are onsite or are in the process of mobilizing to the site. The respective responsibilities and scope of services for the subcontractors will be outlined as well.

Requirements for managing the vegetative debris that will result from the single tree removal and trimming of other trees and brush will be discussed.

3.3.2 Initial Phase

Inspections will be conducted as necessary to verify that construction limits are defined, utilities are marked, and material is staged in the designated areas. Evaluation of work area signage, demarcation of the construction work areas, and evaluation of environmental-best management practices will be performed. Communications with facility personnel regarding general site conditions, traffic flow and control, status of utilities (electrical, plant air, compressed air, water, etc.) will be documented; any deficiencies will be noted and corrected as deemed necessary.

3.3.3 Follow-up Phase

The Project QCM will provide continuous oversight of the site preparation activities to verify that the work is completed in accordance with the requirements provided in the design and facility rules. Deficiencies will be noted and corrected.

Table 3-2 lists the QC procedures that will be implemented during mobilization.

TABLE 3-2
QC Procedures for Mobilization

Task	Procedures/Construction Details
Site Walk	• Verify site layout plan. • Verify Environmental Conditions Report (Rev 02) – for documenting existing conditions. • Identify all associated utilities. • Update plan drawings with any known utilities. • Identify tree requiring removal and trimming. • Verify waste collection system in place and appropriate for the job.
Pre-construction Submittals	• Review details of the plans and specifications (including subcontractor plans). • Review Submittal Register. • Accident Prevention Plan with AHAs. • Personnel qualification and certifications, including subcontractor personnel.

3.4 Demolition

The structure and ancillary equipment features associated with Well #2 (and asphalt and curbing amid Well #3) will be demolished and disposed offsite. The asphalt will be removed to base course. Well #2 will be capped following demolition. The motor and pump will not be salvaged.

3.4.1 Preparatory Phase

The preparatory phase will involve reviewing the asphalt removal footprint illustrated in the design drawings. Additionally, waste management requirements for handling and disposing the materials and equipment removed will be discussed. The AHAs and project waste management plan will also be reviewed.

3.4.2 Initial Phase

Inspections will be conducted to ascertain satisfactory removal of the asphalt and curbing. As demolition progresses, observations will be made to assure the selected equipment is dismantled and disposed.

3.4.3 Follow-up Phase

The Project QCM will be responsible for the ongoing inspection of demolition and capping of Well #2. Surveillance will verify that the work is being completed according to the design drawings.

Table 3-3 lists the QC procedures that will be implemented during demolition work activities.

TABLE 3-3
QC Procedures for Demolition

Task	Procedures/Construction Details
Material Receiving	• Inspect to ensure asphalt adequately removed. • Inspect asphalt saw cutting to ensure full cut and straight lines prior to and during removal. • Observe shed, pump, and motor satisfactorily removed. • Monitor waste handling and offsite disposal of demolition debris. • Obtain documentation of waste removed and updates waste tracking log. • Inspect capping of Well #2 to ensure adequate. • Perform walk through inspection at completion of demolition.

3.5 Underground Piping and Utilities

Establishing the layout of the piping and precise locations of utilities is critical to the gas and power relocates. Trenching will begin once the utilities are confirmed. The respective utility companies will assist to ensure routing of trenches and authorize utility disconnects as necessary. Installation of underground utilities, piping and conduit will be completed prior to or concurrent with the installation of the concrete pad or GAC units. No utilities will be backfilled until connections are inspected and tested per the specifications.

Utility tie-ins and American Water water distribution connections will be phased-in during construction activities. All tie-ins and connections must be coordinated with American Water through AGVIQ-CH2M HILL. American Water will install a valve and piping stub where the Subcontractor will tie in the facility piping for the GAC system.

Final tie-in to existing water mains will be by American Water. The subcontractor shall coordinate all tie-ins with AGVIQ-CH2M HILL and American Water.

3.5.1 Preparatory Phase

The preparatory phase will include the following: reviewing the relevant AHAs; reviewing the requirements provided in the design for pads and foundations, integration system piping, and ancillary components and verifying acceptance and approval of the utility clearance; review of lock-out/tag-out procedures; and ensuring that waste staging areas will be prepared and managed in accordance with the protocols of the Waste Management Plan.

3.5.2 Initial Phase

As the installation work activities proceeds, the Project QCM will conduct initial inspections to ascertain whether the underground piping is being installed in accordance with the project plans and specifications. Coordination of utility connects or disconnects, communications with existing WTP personnel and facility operations will be performed.

Any deficiencies noted will be documented and corrected as necessary.

3.5.3 Follow-up Phase

The Project QCM will be responsible for the ongoing inspection of underground piping installations and utility connections as they occur. Surveillance will verify that the work is being completed according to design specifications and all necessary communications between AGVIQ-CH2M HILL and American Water are being completed prior to utility connections being made.

Table 3-4 lists the QC procedures that will be implemented during underground piping and utility installation.

TABLE 3-4
QC Procedures for Underground Piping and Utilities

Task	Procedures/Construction Details
Material Receiving	• Visual inspection of material upon arrival to the site for damages. • Check type and quantities of arrived materials against purchase order, shipping label, and confirmation lists. Note any incorrect quantities, incorrect type and models, and missing items. Check to ensure equipment is “made in the USA”. • Visual inspection on the quality of the material if the material has manufacturer-specified grade or quality rating. • Inspect and verify the received materials that they were built or manufactured in accordance to manufacturer specifications and/or data. • Document and report material/product deficiencies and/or irregularities immediately to Project QCM.
Submittals	• Verify site layout plan. • Review and approve submittals for meters, valves, and piping. • Check plans and specifications (including subcontractor plans). • Review Submittal Register, inspect equipment against approved submittals. • Review personnel qualification and certifications, including subcontractor personnel. • Identify all associated utilities. • Obtain hydrostatic pressure testing for piping. • Update plan drawings with any known utilities.

TABLE 3-4
QC Procedures for Underground Piping and Utilities

Task	Procedures/Construction Details
Installation	• Measure trench depth and slope to ensure design elevations achieved. • Update red-lined drawings with field measurements and new piping routings. • Verify placement of detectable warning tape. • Observe placement of pipe bedding in required lift thicknesses and compaction meets design specifications. • Select density test locations and review field density test results; ensure testing frequency meets specification. • Identify all associated utilities. • Observe positioning of backflow prevention devices; ensure testing within 30 days of operation. • Perform red-lined updates of field drawings. • Oversee performance of hydrostatic testing. • Oversee performance of pipe leakage testing. • Oversee performance of valve testing. • Oversee bacteriological disinfection of newly installed piping. • Ensure installation of ancillary equipment in accordance with manufacturer literature. • Function test entire system sequence of operation.

3.6 Concrete Work

Civil construction activities will be performed to prepare the subgrade for installation of the building slab and various equipment pads. Grading to establish final elevations and proof rolling will be performed to establish firm, unyielding surfaces. Installation of foundations and slabs will begin once grade surfaces meet the specification density and slope requirements.

Structural foundations will be compacted to not less than 95% of maximum dry density (ASTM D 698). To establish grades, or repair poor subgrade soils, fill will be placed in uniform lifts. Aggregate and fill materials will be procured meeting design specifications.

The design drawings outline the construction details while the specifications provide the submittal requirements. Inspections will be performed to observe construction methods, bracing, shoring, rigging, formwork, and other work aids required to safely perform the work.

3.6.1 Preparatory Phase

The preparatory phase will consist of evaluating submittals, testing facilities and samplers' qualifications, the project schedule, and relevant sections of the design drawings and specifications. The work activities of the respective subcontractors will be discussed. The testing requirements for the subgrade, concrete, aggregate, fill, and any other materials will be reviewed. As with all work activities, the relevant AHAs and the site-specific APP will be reviewed.

3.6.2 Initial Phase

As the civil construction activities progress, the Project QCM will conduct initial inspections and monitor the work completed to verify conformity with the design and specifications. Scheduling with the laboratory performing the concrete testing will be coordinated.

The focus of the initial phase is on the workmanship applied in forming the foundations, the concrete pour, and performance of concrete testing. Any deficiencies noted will be documented and corrected as necessary.

3.6.3 Follow-up Phase

The Project QCM will be responsible for the ongoing inspection of civil construction activities. Surveillance will verify that the work is being completed in accordance with the design and specifications.

Table 3-5 lists the QC procedures that will be implemented during civil construction.

TABLE 3-5
QC Procedures for Civil Construction

Task	Inspection/Construction Control
Civil Construction	• Maintain chronological journal of visual observations as work activities progress and document with photo log. • Verify that the utility locate is performed and site drawings are marked up. • Evaluate subgrade contour and soil/aggregate condition suitable for foundation support. • Verify subgrade density testing. • Ensure borrow sources approved and map of locations on file. • Receive/ inspect the forms for foundations and slabs. • Verify that the testing facility is accredited for concrete test methods. • Ensure stability of forms and plumb. • Inspect erosion and sediment controls; document results. • Obtain mix design for concrete. • Oversee collection of concrete test cylinders and onsite sampling/testing. • Obtain delivery tickets for concrete; record field conditions, sketch locations of pour. • Verify detail and layout of walkway and foundations. • Inspect materials and equipment upon delivery. • Assess compaction effort for foundation granular fill.

3.7 Process Equipment, Piping and Valves

Once the foundation has been installed and cured, installation of the carbon vessels and associated piping and equipment can proceed. Equipment installation will commence with the delivery of the GAC system through completion of the field activities associated with the system installation. Equipment installation consists of the following construction components:

- Ensure crane lift plan is approved and reviewed prior to delivery of GAC vessels.
- Receive the GAC system. Unload and install activated carbon units, piping, and accessories prior to making connections to the existing system.
- Furnish and install all piping, valves, monitoring equipment (flow and pressure), and appurtenances for the full scale LPGAC systems to function.

- Supply all piping, valves, monitoring equipment (flow and pressure), and appurtenances to be installed on the equipment pad, as outlined on drawing PID-2. The Subcontractor will be responsible for installing all equipment per the manufacturer's recommendations.
- Supply all piping, valves, monitoring equipment (flow and pressure), and appurtenances (including bolts to connect piping to equipment on the equipment pad) to be installed outside of the equipment pad as outline on drawing PID-2. Pipe supports will be installed as indicated on the drawings and as needed.
- Supply and install the storage tank and appurtenances for collection of backwash water.
- Supply and install the chemical metering pumps, chemical tanks (sodium hypochlorite solution and phosphate solution) and all appurtenances for chemical treatment.
- Supply and install the building and all appurtenances that the treatment system will be housed in.

3.7.1 Preparatory Phase

The preparatory phase for the process equipment, piping and valves dfow will focus on the H&S requirements for lifting and hoisting using cranes (inspection, rigging competent person, operator qualifications, etc.) and forklifts, submittals for equipment, communications, reviewing the electrical wiring and structure grounding requirements, and coordinating the material and equipment deliveries.

3.7.2 Initial Phase

This phase includes overseeing the assembly of the system in accordance with the project plans and specifications. Inspections by AGVIQ-CH2M HILL staff will routinely survey submittal status, material and equipment delivery, installations (torque, plumb check, spacing, balance; etc.), and testing as required. Subject matter experts (electrical, treatment systems, etc.) will be scheduled to inspect specific work elements for added measures of quality assurance.

The Project QCM will maintain routine communication with the subcontractor responsible for QC throughout the installation leading up to the pre-final inspection.

3.7.3 Follow-up Phase

This phase includes routine inspections and observations of the materials, workmanship, and quality checks per the project plans and specifications.

Table 3-6 lists the QC procedures that will be implemented during installation of the process equipment, piping and valves.

TABLE 3-6
QC Procedures for Installation of Process Equipment

Task	Inspection/Construction Control
Process Equipment Installation	• Receive materials list and inspect materials received against specifications. • Check type and quantities of arrived materials against purchase order, shipping label, and confirmation lists. Note any incorrect quantities, incorrect type and models, and missing items. Check to ensure equipment is “made in the USA”. • Visual inspection on the quality of the material if the material has manufacturer-specified grade or quality rating • Inspect and verify the received materials that they were built or manufactured in accordance to manufacturer specifications and/or data • Obtain certificate of compliance and MSDS for chemicals prior to acceptance. • Document results (alignment, bearing temperature, shaft rotation, etc.) of motor run-ins coupled and uncoupled. • Review and approve subcontractor lift plan. • Verify proper grounding and bonding of equipment. • Observe and test bolts: torque, spacing, type, length, spacers, washers, etc. • Observe and inspect hydrostatic tank testing. • Verify locations of anchors and dowels conform with specifications. • Ensure system piping flushed to remove rust or foreign matter. • Inspect anchor bolt installation: type, location, torque, and material type. • Observe testing of accessories in accordance with manufacturer’s instruction; record test results and observations.

3.8 Pre-Engineered Building

The pre-engineered building will be installed by the vendor in accordance with the building installation instructions.

3.8.1 Preparatory Phase

The preparatory phase for the pre-engineered building will focus on the H&S requirements for lifting and hoisting, communications, appointing the competent person for rigging, reviewing the wiring and structure grounding requirements, and coordinating the material deliveries. Other topics will include a discussion of submittal status, material and equipment delivery, inspections (torque, plumb check, spacing; heating, ventilating, and air conditioning test and balance; etc.), and function testing of building components.

3.8.2 Initial Phase

This phase includes overseeing the assembly of the building in accordance with the building specifications. The Project QCM will maintain routine communication with the subcontractor responsible for QC throughout the installation leading up to the pre-final inspection.

3.8.3 Follow-up Phase

The Project QCM will provide continuous oversight of the installation activities to verify that the work is completed in accordance with requirements listed in the design and specifications, or communicated and agreed upon during the preparatory phase meeting. Deficiencies will be noted and corrected.

Table 3-7 lists the QC procedures that will be implemented during installation of the pre-engineered building.

TABLE 3-7
QC Procedures for Pre-engineered Building

Task	Procedures/Construction Details
Installation	• Review and approve submittals for color samples, signage, fire extinguishers, lighting, doors, windows, etc. • Receive materials list and inspect materials received against specifications. Check to ensure equipment is “made in the USA”. • Ensure building coating is correct color and uniformity of application. • Observe and test bolts: torque, spacing, type, length, spacers, washers, etc. • Verify locations of anchors; anchor and dowel conform with specifications. • Verify span of overhead door materials and compare with door opening. • Check louvers for type, style and dimensions. • Inspect anchor bolt installation: type, location, torque, and material type. • Inspect wiring and cable installation. • Function test door and windows; inspect roof penetrations. • Monitor piping installation and ancillary (fire extinguisher, backflow preventer, etc.) sprinkler system components. • Observe testing of accessories in accordance with manufacturer’s instruction; record test results and observations. • Perform walk through inspection of building for signage. • Inspect building ground and down conductors installation.

3.9 Electrical and Instrumentation

Wires and cables will be installed following substantial installation of building components. Conduits and cable trays will initially be installed in coordination with mechanical components. Testing will begin with continuity testing once a substantial amount of the cables are installed. Additionally, motor leads will be evaluated and wiring of control panels will take place concurrently. Instrumentation and electrician leads will be delegated to coordinate various inspections and testing of per the electrical design details and specifications.

Red-lined drawings will be maintained by the subcontractor and reviewed by quality inspectors. Calibration records instrumentation will be obtained and archived by the project QCM.

3.9.1 Preparatory Phase

During this phase, the drawings and specifications for electrical and instrumentation will be reviewed. The preparatory phase will be revisited at the time the electrical system becomes energized; the focus will be on the H&S provisions. The status of submittals will be reviewed, calibrations and function testing details, and forms for recording the results of various zero checks, function testing, and field testing will be discussed.

3.9.2 Initial Phase

Inspections, observations, and documentation of testing will take place throughout the initial and follow-up phases. When deemed necessary, the Project QC Manger will propose

revisiting the preparatory phase prior to energizing the system and initiating system shakedown.

3.9.3 Follow-up Phase

The Project QCM will provide continuous oversight of the installation activities to verify that the work is completed in accordance with requirements listed in the design and specifications.

Table 3-8 lists the QC procedures that will be implemented during electrical and instrumentation installation.

TABLE 3-8
QC Procedures for Electrical and Instrumentation

Task	Procedures/Construction Details
Material Receiving	• Visual inspection of material upon arrival to the site for damages. • Check type and quantities of arrived materials against purchase order, shipping label, and confirmation lists. Note any incorrect quantities, incorrect type and models, and missing items. Check to ensure equipment is “made in the USA”. • Visual inspection on the quality of the material if the material has manufacturer-specified grade or quality rating. • Inspect and verify the received materials that they were built or manufactured in accordance to manufacturer specifications and/or data. • Document and report material/product deficiencies and/or irregularities immediately to Project QCM.
Submittals	• Obtain calibration records for metering devices. • Obtain documentation of electrician qualifications and experience. • Review Submittal Register, inspect equipment against approved submittals.
Installation	• Observe continuity, function testing, and other field testing. • Demonstrate that flow and pressure measuring devices are accurate/calibrated. • Perform red-lined updates of field drawings. • Ensure calibration equipment has documentation of calibration. • Review field recording forms for completeness. • Visually equipment ground and bonding.

3.10 Final Exterior Work

AGVIQ-CH2M HILL will be responsible for starting up of the system and initial check-out. Equipment testing, prove out, and startup testing in accordance with the Design Package. Since the finished water will be used for distribution to the public, maintaining or sterilizing

3.10.1 Preparatory Phase

During this phase, the specifications and manufacturer’s literature, status of submittals, a review of the testing (electrical, mechanical, pipe leakage, hydrostatic test, etc.) requirements, and the project APP will be reviewed. Coordination of utility connects or disconnects, communications with American Water water treatment plant personnel and facility operations will be performed. Also, the project schedule will be reviewed.

3.10.2 Initial Phase

Inspections, observations, and documentation of testing will take place throughout the initial and follow-up phases. When deemed necessary, the Project QC Manger may propose revisiting the preparatory phase to eradicate inefficiencies or quality workmanship concerns.

3.10.3 Follow-up Phase

The Project QCM will provide continuous oversight of the installation activities to verify that the work is completed in accordance with requirements listed in the design and specifications, or communicated and agreed upon during the preparatory phase meeting. Deficiencies will be noted and corrected.

Table 3-9 lists the QC procedures that will be implemented during final exterior work activities.

TABLE 3-9
QC Procedures for Final Exterior Work

Task	Procedures/Construction Details
Pre-final Utilities Review	• Coordinate with National Grid and LIPA; power and gas. • Review red-lined drawings of underground utilities. • Set up and wire emergency generator. • Verify wiring diagrams for motor control center. • Verify ground resistance test satisfactory and documented. • Ensure signage installed per specification and code requirements. • Obtain documentation of field tester(s)/inspector(s); ascertain compliant with electrical and gas code, respectively. • Review each line of Divisions 26 and 33 specifications; ensure field testing and documentation obtained. • Perform checks of as-built drawings. • Schedule pre-final inspection of exterior work.

3.11 System Startup and Testing

System startup requires a substantial amount of testing, both instrument and function, to shake down the installed system prior to startup. This will involve revisiting prior DFOW activities. Provisions for preserving the operability of the treatment system in its original design, while integrating the full scale system and ancillary components are of paramount importance. The specification testing requirements required for pre-commissioning will be performed. Once all electrical, water, and gas distribution testing is completed, the system components will be brought online after completing line disinfection, testing lines and vessels under hydrostatic and supply pressure, and verifying baseline service conditions (water quality, valve sequencing check, chemical quality, etc.). Examples of controls include ground fault circuits, system interlocks, the programmable logic controller; and signage for voltage, labeling, noise protection, and etc.

Startup will follow a logical approach to ensure protection of workers and the environment. The pre-start safety orientation will kick off the commissioning operations. Equipment testing, prove out, and startup testing in accordance with the Design Package. Since the

finished water will be used for distribution to the public, maintaining or sterilizing equipment surfaces in contact with the water is critical.

Turnover of the system shall be performed after the punch list has been completed, the system has been started up and the system has been proven to operate in accordance with the specifications for at least 24 hours. Training of American Water staff will be performed during the turnover period.

3.11.1 Preparatory Phase

During this phase, the specifications for electrical (including backup power), mechanical, and gas; project schedule, vendor deliveries, and final system punch list items will be reviewed. Coordination of utility connects or disconnects, communications with American Water water treatment plant personnel and facility operations will be performed. The team will discuss the benefit of daily progress/production meetings to ensure details of the work progress are communicated amongst the team and stakeholders.

3.11.2 Initial Phase

Documentation of the results of function testing, testing, and observations is critical during this phase. When deemed necessary, the Project QC Manger may propose revisiting the preparatory phase to eradicate inefficiencies or quality workmanship concerns.

3.11.3 Follow-up Phase

The Project QCM will provide continuous oversight of the shakedown testing activities to verify that the work is completed in accordance with requirements listed in the design and specifications, or communicated and agreed upon during the preparatory phase meeting. Deficiencies will be noted and corrected.

Table 3-10 lists the QC procedures that will be implemented during system startup and testing.

TABLE 3-10
QC Procedures for System Startup and Testing

Task	Procedures/Construction Details
System Startup	• Record final system line leakage and pressure test results; obtain signature by lead parties. • Collect samples of sterilized water main line; ship to offsite laboratory. • Verify bacterial testing results meet project specifications. • Ensure multiple pH measurements of potable water within piping; document locations and results. • Record results of function testing system; all sequences. • Observe collection of system samples to ensure operating within system design parameters. • Update vendor and parts list; post in control room. • Verify that the O&M manual includes vendor- and supplier-provided cut sheets, maintenance schedules, and repair procedures for the various pieces of equipment installed in the system. • Ensure draft and final versions of the O&M manual are prepared during the installation process. • During the first month of O&M activities, ensure that weekly visits are made to optimize system performance and that subsequent site visits occur to check routine system operations every other week.

3.12 Site Restoration

Site restoration will be initiated upon substantial completion of the sytem install. Restoration primarily consists of landscape plantings and placement of asphalt and curbing. Asphalt and curbing installation shall take place prior to the landscaping for logistical reasons. Most erosion and sediment control features shall be removed with completion of the asphalt placement.

3.12.1 Preparatory Phase

The preparatory phase will include a review of the specification sections pertaining to asphalt, curbing, and landscape, the project schedule, submittal register, and coordination with subcontractors and vendors. Asphalt placement schedule and submittals will also be reviewed.

3.12.2 Initial Phase

The Construction Manager and project QCM will perform inspections to confirm that the work items are being installed to the satisfaction of AGVIQ-CH2M HILL, the Navy and American Water.

3.12.3 Follow-up Phase

The Project QCM will provide continuous oversight of site restoration activities to verify that the work is completed in accordance with the requirements provided in design specifications. Deficiencies will be noted and corrected.

Table 3-11 lists the QC procedures that will be implemented during site restoration.

TABLE 3-11
QC Procedures for Site Restoration

Task	Inspection/Construction Control
Site Restoration	• Obtain asphalt mix design. • Verify subgrade meets the density and slope specified in the design. • Measure and record asphalt temperature and placement thickness. • Verify asphalt compacted in accordance with specifications; protect from traffic until recommended temperature reached. • Obtain seeding certificate of compliance and product data for fertilizer. • Maintain laboratory analytical results for topsoil. • Monitor seeding, mulch, and fertilizer cast rates for conformance with mix design. • Document depth of watering; ensure even application until successful establishment of landscape plants and grass cover. • Obtain shipping list for landscape plantings. • Inspect plants upon delivery; reject distressed plants. • Observe plant spacing, depth, and watering. • Inspect Work areas to ensure all temporary facilities, equipment, and materials are safely removed from the site. • Verify all site restoration work is completed and site has been restored to pre-construction condition. • Inspect Work areas provided to ensure proper housekeeping and cleaning.

3.13 Demobilization

Demobilization includes removal of the temporary LPGAC system, equipment, ersosion and sediment controls, and temporary utilities. Dismantling the temporary treatment

system will take place when the system is no longer needed. The equipment pad shall be demolished and disposed offsite as well. The carbon shall be regenerated at a recycle/disposal facility after removing from the vessels.

Pre-final inspection of the site will be performed by theConstruction Manager and the Project QCM. Equipment and personnel will demobilize from the site following the completion of the work activities identified in the design and specifications. The Project QCM will verify that the project objectives associated with construction have been met. A final inspection will be conducted to verify completion of all project activities. Findings, should any be identified, will be tracked, resolved, and documented during a final site walk-through inspection that will include facility operations personnel and other stakeholders.

3.13.1 Preparatory Phase

The preparatory phase will include a review of the project schedule and any action items documented over the course of the project. Unresolved actions will be documented and a corrective action plan will be prepared by the responsible party(ies).

3.13.2 Initial Phase

The Construction Manager and QCM will perform inspections to confirm that the work items have been completed to the satisfaction of AGVIQ-CH2M HILL, American Water, and the Navy.

3.13.3 Follow-up Phase

The Project QCM will provide continuous oversight of demobilization activities to verify that the work is completed in accordance with the requirements provided in plan documents. Deficiencies will be noted and corrected.

Table 3-12 lists the QC procedures that will be implemented during demobilization.

TABLE 3-12
QC Procedures for Demobilization

Task	Inspection/Construction Control
Demobilization	• Ensure completion of Special Inspections and Test Matrix and project date for Quality Control Project Summary Report submittal. • Verify all waste is removed from the site and properly disposed. • Inspect Work areas to ensure all temporary facilities, equipment, and materials are safely removed from the site. • Verify all site restoration work is completed and site has been restored to meet design requirements. • Inspect Work areas provided to ensure proper housekeeping and cleaning. • Verify completion of inspection when work is complete. • Review Punch lists on outstanding items. • Verify Final Inspections--all task order areas. • Document Orderly site demobilization. • Collate site records & documents. • Ensure Records and documentation transfer to home office. • Perform purchase order closeouts. • Review Final reports & deliverables.

3.14 Pre-Final Inspection

The Navy may perform a pre-final inspection to verify that the facility or work area is complete and ready to be occupied. A government "pre-final punch list" may be developed as a result of this inspection. Each deficiency noted in the punch list will reference the applicable specification paragraph, or drawing number that the deficiency stems from. The Project QCM will ensure that items on this list are corrected before notifying the Navy that a final inspection with the stakeholders can be scheduled. Items noted on the "pre-final" inspection will be corrected in a timely manner and will be accomplished within the time slated for completion of the entire work or a particular increment thereof if the project is divided into increments by separate completion dates.

3.15 Final Acceptance Inspection

The Project QCM, Construction Manager, American Water and Navy representatives will be in attendance at the final acceptance inspection. Other government personnel and stakeholders may be in attendance. A final acceptance inspection will be considered closed when the work has been accepted by the Navy technical representative or designated representative.

4.0 Testing Requirements

AGVIQ-CH2M HILL will conduct QA for the project and the Subcontractor shall conduct QC as detailed in the project specifications. AGVIQ-CH2M HILL will provide a laboratory to conduct water quality analytical tests to determine compliance with the specifications for the project. This laboratory will analyze liquid and solid samples to assess compliance with project specifications. Concrete and material testing shall be the responsibility of the Subcontractor, and shall be performed per the design specifications.

Laboratories performing testing or analysis of materials and environmental samples, or craftsman performing independent testing will be certified or qualified to perform the respective testing. This section summarizes the onsite field testing planned for the project. Details of equipment, materials, products, and construction activities are outlined in the 100% Design Documents. Samples of media requiring definitive chemical analyses will be performed by an approved offsite laboratory.

Individuals performing sampling shall provide evidence of meeting the experience and training requirements in the Navy's *Installation Restoration Program Chemical Data Quality Manual* (IR CDQM) (FESC SP-2056-ENV, Naval Facilities Engineering Service Center [NFESC], 1999).

4.1 Certification of Chemical Laboratories

Environmental testing laboratories that will be used for this TO will function as a subcontractor to AGVIQ-CH2M HILL. The analytical laboratory, yet to be contracted, will be NFESC-approved, will maintain Department of Defense Environmental Laboratory Analytical Program (DOD ELAP) accreditation, and will be certified by the state of New York Department of Health for all sample analyses.

4.2 Certification of Concrete Laboratories

Concrete will be sampled and field tested onsite and also tested offsite at an approved laboratory. Testing laboratory(ies) used will be certified by the National Institute of Standards and Technology, the National Voluntary Laboratory Accreditation Program, the American Association of State Highway and Transportation Officials, or the American Association for Laboratory Accreditation; or they may be actively participating in an another accreditation program that may be evaluated for acceptance.

4.3 Test Plan and Log

The general testing requirements are shown in Table 4-1. The Testing Plan and Log (provided in Attachment A) will be used to record the results of testing. Detailed records of testing will be included in the CQCR as testing is performed and will be documented in the Monthly Summary Report of Field Tests.

TABLE 4-1
Testing Requirements

Test/Inspection	Requirement/Reference	Frequency
Hydrostatic Testing of Piping Systems	Not less than 1.5 times the design pressure /ASME B31.3	Once
Hydrostatic Testing of GAC Vessels	125 PSI for 1 hour	Once
Pipe leakage Tests	200 PSIG Pressure for a minimum 2 hours with no less than 5 PSI drop in pressure	Once, after completion of hydrostatic pressure tests
Valve Operation Test	Open and Close smoothly with operating pressure on one side and atmospheric pressure on the other and in both directions for two-way valve applications	Once
Laboratory Density Testing	Maximum dry density test (ASTM D 698)	One per each type of material to be used for bedding
Field Compaction Testing (slab sub grade)	6 inch lifts compacted to 95% of maximum dry density (ASTM D 1556/2922)	Once per lift of every 100 SF of slab
Field Compaction Testing (Trench bedding and backfill)	9 inch lifts compacted to 95% of maximum dry density (ASTM D 1556/2922) for bedding (90% for backfill)	Once per lift of every 250 LF of trench bedding/backfill material
Concrete Samples for Testing	Collect fresh samples of concrete to perform the tests specified / ASTM C 172. ASTM C31/31M for making test specimens	As needed
Concrete Slump Testing	4 inches (+/- 1 inch) / ASTM C 143/143M	At commencement of placement when test cylinders are made for each batch (minimum) or every 20 CY (maximum)
Concrete Temperature Testing	When ambient temperature is 41 degrees F or below and 80 degrees F or above (specification Section 3.9.8 and 3.10.3.2 of Section 03 30 00 Cast in Place Concrete	for each batch (minimum) or every 20 CY (maximum) until the specified temperature is obtained and whenever test cylinders and slump tests are made
Concrete Air Content	6 % (ASTM C 173/173M or ASTM C 231)	Same as slump testing
Cast-in-Place Concrete: Concrete Pad (Slab on Grade)	Compressive Strength: 4,500 psi @ 28 days ASTM C39 / C 39M	See Section 3.10.3.3 of the project specifications Section 03 30 00 Cast in Place Concrete
Wires and Cables	Continuity – megger test, grounding resistance, hand-off-auto function test, record voltage	During installation, prior to energizing system, then prior to startup.
Asphalt	Temperature, thickness	Prior to-, during, and following placement
Instrument Calibration	Per manufacturer's recommendations	Prior to installation, then after repairs or replacement.
Treatment System Equipment Startup and Testing	Function test valves, meters, gauges, switches and controls	Per the work plan, design drawings and specifications, and in accordance with the O&M manual.
Influent and effluent system sampling	Bacteria, VOCs (TCE), arsenic, iron	Per the work plan and specifications (Sections 4.1.7 and 4.1.8 of Work Plan)

5.0 Project Meetings

5.1 Pre-construction Meeting

The PM will schedule and administer a pre-construction meeting at the site after Notice to Proceed and before the start of construction at the site. During the conference, ground rules and understandings will be established with the Navy, American Water representatives and its stakeholders, and AGVIQ-CH2M HILL. The purpose of this meeting is to ensure that all parties involved in the project understand and agree on the project goals and objectives, schedule, submittal requirements, documentation requirements, change management processes and procedures, construction means and methods, reporting and communication requirements, H&S requirements and protocols, etc.

The meeting agenda will include the following:

- Designation of responsible personnel
- Lines of authority and communication
- H&S requirements and procedures
- Use of the site for storage, vehicle parking, access routes, and other site requirements
- Coordination with other contractors and owner
- Temporary facilities and controls provided by AGVIQ-CH2M HILL
- Field offices
- Survey, containment facility, and layout
- Security and housekeeping procedures
- Procedures for processing field decisions, submittals, substitutions, applications for payments, proposal requests, field orders, work change directives, change orders, and closeout procedures
- Progress schedules
- Procedures for testing and inspection
- Procedures for maintaining record documents

Minutes of the meeting will be prepared by the AGVIQ–CH2M HILL representative and distributed to the participants and those affected by decisions made. At a minimum, the AGVIQ-CH2M HILL project team and major subcontractors will be in attendance at this meeting.

5.2 Coordination and Mutual Understanding Meeting

Before the start of any onsite activities, the PM and Project QCM shall meet with the Navy's CO or designated representative to review the QCP and the QC Program required by the contract. The purpose of the meeting will be to confirm that the Project QCM and Navy's CO or designated representative clearly understands and agree on:

- Specific QC points of concern on the features of work
- Forms to be used on the project and the correct protocol for use of each form
- Administration of both onsite and offsite work
- Duties and responsibilities of all AGVIQ-CH2M HILL personnel on the site

The meeting shall be attended by the PM, Project QCM, Site Superintendent, and SSHO. The meeting can also be combined with the pre-construction conference. Minutes of the meeting shall be prepared by the Project QCM and signed by both the Navy's CO or designated representative and AGVIQ-CH2M HILL's representative.

5.3 QC Meeting

After the start of site work, the Project QCM shall conduct QC meetings at a frequency established as necessary by the pace of the work, or as required by the Navy's CO or designated representative. Typically, meetings are expected to occur at least weekly or more frequently, depending on the project needs. Conducting the meetings and preparing the meeting minutes are responsibilities of the Project QCM. Annotation of conducting the meeting will be made in the daily contractor QC report. The meeting shall be attended by the Site Superintendent, SSHO, and the foreman responsible for the upcoming work. The Navy's CO or designated representative shall be invited to all meetings. To optimize time, these meetings should be held in conjunction with other meetings (for example progress meetings, weekly safety meetings) where possible. As a minimum, the following shall be accomplished at each meeting:

- Review of previous meeting minutes
- Review of the project schedule
  - Work or testing accomplished since the last meeting
  - Rework items identified since the last meeting
  - Rework items completed since the last meeting
- Submittal status
  - Submittals reviewed since the last meeting
  - Submittals expected within the next 2-week window
- Review of the work scheduled over the next 2-week window
  - Establish completion targets for any outstanding rework
  - Identify and schedule any DFOWs requiring preparatory phase activities
  - Identify and schedule any DFOWs requiring initial phase activities
  - Identify and schedule any DFOWs requiring follow-up phase activities
  - Identify any testing required in support of or confirming remedial activities
  - Review status of any offsite activities
  - Identify any special documentation requirements for either production or QC
  - Address and resolve any production or QC problems
- Identify any activities or items that may require revising this QCP and annotate any recommendations
- Identify any production or QC procedures that may be less effective than anticipated and may require revising the project delivery or Contingency Plan and annotate any recommendations
- Identify any safety concerns relative to any work activity

6.0 Reporting, Field Records, and Construction Documentation

Implementation of this QCP is documented and reported to the Navy CO or designated representative using a series of reports and deliverables. These deliverables, the parties responsible for preparing them, and their frequency and content are listed in Table 6-1. Examples of these forms and reports are included in Attachment A.

TABLE 6-1
Reporting and Field Documentation Required

Report or Documentation Requirement	Completed By	Delivered To	Frequency	Report Description
Contractor Production Report	Site Superintendent	Navy FEAD	Daily, for each TO – original and one copy due by 10 am next working day after each day that work is performed	Documents daily construction activity on each site. Specific report procedures in standard operating procedure (SOP) PM-019.
CQCR	Project QCM	Navy FEAD	Daily, for the preceding business day - original and one copy due by 10 am next working day after each day that work is performed	Documents the daily qc activity for each to. Includes the contractor production reports. Specific procedures in SOP PM-019.
Testing Plan and Log	Project QCM	Navy FEAD	Monthly – due by end of each month	Defines and records results of all onsite testing, for each to be maintained at time of testing, or when laboratory results are received. Specific details for use of the plan and log in SOP PM-026.
Monthly Summary of Field Tests	Project QCM	Navy FEAD	Monthly, attached to the last CQCR submitted for each reporting period – original and one copy due at the end of each month	Summarizes all testing activity conducted for the reporting period with test results (pass/fail) specific details for use of this report in SOP PM-010.
QC Meeting Minutes	Project QCM	Navy FEAD	As attachment to appropriate CQCR – due within 2 calendar days of the meeting	Minutes of any to QC meeting held. Specific preparation and content requirement in SOP PM-016.

TABLE 6-1
Reporting and Field Documentation Required

Report or Documentation Requirement	Completed By	Delivered To	Frequency	Report Description
Rework Items List	Project QCM	Navy FEAD	Monthly, attached to the last CQCR submitted for each reporting period – one copy by last working day of the month	Documents re-work items not corrected on same day as discovery. Includes items identified by both CH2M HILL and Navy CO or designated representative. Specific information on use and preparation is provided in SOP PM-004.
Submittal Register	Project QCM and Site Superintendent	Navy FEAD	Maintained through life of TO	A part of each TO's Construction Quality Plan; may also be provided by Navy CO for deliverables. Specific to the construction activity for that Task Order. Specific information provided in SOP PM-018.
As-built Records (red-line mark ups)	Project QCM and Field Engineer	Navy FEAD	Maintained in field through life of each to certify complete and accurate by Project QCM upon completion. Included in construction completion report	Requirements specified in each TO's Construction Quality Plan; to be maintained at job site and inspected by QC personnel to ensure daily upkeep. Certificate of accuracy required from Project QCM, to Navy CO or COR (SOP PM-023).
Photographic Record	Site Superintendent and Field Engineer	Navy FEAD	Maintained in field through life of TO	Photographic record showing construction progress, special situations. Specific requirements for photographic documentation, processing, storage, reference SOP PM-014 for details.
Transportation and Disposal Log	Project QCM	Navy Transportation and Disposal Coordinator	Monthly and maintained in field through life of TO	Tracks waste on the project from generation to final disposition. Specific information on use and preparation is provided in SOP ER-003.

7.0 QC Documentation

7.1 Contractor Production Report

Contractor Production Reports (CPRs) are required for each day that work is performed and will be attached to the CQCR prepared for the same day. The CPR is the daily record of operations on the job site and must be kept current. These reports are the official record of work performance and compliance with project plans, drawings, and specifications. It is therefore critical that the reports are correct and timely.

The CPRs will account for each work day throughout the life of the contract. The reporting of work will be identified by terminology consistent with the construction schedule. CPRs will be prepared, signed, and dated by the Site Superintendent and will contain the following information:

a) Date of report, report number, name of contractor, contract number, title, location of contract, and Site Superintendent present.

b) Weather conditions in the morning and in the afternoon, including maximum and minimum temperatures.

c) A list of contractor and subcontractor personnel on the work site, their trades, employer, work location, description of work performed, and hours worked.

d) A list of job safety actions taken and safety inspections conducted. Indicate that safety requirements have been met, including the results of the following:

    1) Was a job safety meeting held? (if YES, attach a copy of the meeting minutes)

    2) Were there any lost time accidents? (if YES, attach a copy of the completed Occupational Safety and Health Administration report.)

    3) Was trenching, scaffold, high-voltage electrical, or high work done? (If YES, attach a statement or checklist showing inspection performed.)

    4) Was hazardous material or waste released into the environment? (If YES, attach description of incident and proposed action.)

e) A list of equipment and material received each day that is incorporated into the job.

f) A list of construction and plant equipment on the work site during the number of hours used, idle, and down for repair.

g) A "Remarks" section containing pertinent information such as directions received, problems encountered during construction, work progress and delays, conflicts or errors in the drawings or specifications, field changes, safety hazards encountered, instruction given and corrective actions taken, delays encountered, and a record of visitors to the work site.

The CPR form provided in Attachment A will be used on this project.

7.2 Contractor Quality Control Report

The CQCR documents the quality activities on the project. CQCRs are required for each day that work is performed. The CQCR is the daily records of QC actions performed on the job site and must be kept current. These reports are the official record of work performance and compliance with project plans, drawings, and specifications. It is therefore critical that the reports are correct and timely.

Each work day throughout the life of the contract is accounted for in the CQCR. The reporting of work will be identified by terminology consistent with the construction schedule. CQCRs are prepared, signed, and dated by the Project QCM and will contain the following information:

- Identify the control phase and DFOW.
- Results of the preparatory phase meetings held, including the location of the DFOW and a list of personnel present at the meeting. Verify in the report that for this DFOW, the drawings and specifications have been reviewed, submittals have been approved, materials comply with approved submittals, materials are stored properly, preliminary work was done correctly, the testing plan has been reviewed, and work methods and schedule have been discussed.
- Results of the initial phase meetings held, including the location of the DFOW and a list of personnel present at the meeting. Verify in the report that for this DFOW the preliminary work was done correctly, samples have been prepared and approved, the workmanship is satisfactory, test results are acceptable, work is in compliance with the contract, and the required testing has been performed. Include a list of personnel who performed the tests.
- Results of the follow-up phase inspections held, including the location of the DFOW. Verify in the report for this DFOW that the work complies with the contract as approved in the initial phase and that required testing has been performed. Include a list of personnel who performed the tests.
- Results of the three phases of control for offsite work, if applicable, including actions taken.
- List rework items identified, but not corrected by close of business.
- As rework items are corrected, provide a revised rework items list along with the corrective action taken. (Note: All rework will be non-fee bearing).
- A “Remarks” section containing pertinent information such as directions received, QC problem areas, deviations from the QCP, construction deficiencies encountered, QC meetings held, acknowledgment that as-build drawings have been updated, corrective direction given by the Project QCM, and corrective action taken.
- CQCR certification

The CQCR form and Preparatory Phase Report included in Attachment A will be used on this project.

7.3 Project Files

Documentation generated by the QC system must be maintained in an orderly fashion. It is suggested that the Project QCM maintains a series of 3-ring binders for ready reference. These should be arranged by category and tabbed to include the following items:

- CPR
- CQCR
- H&S Reports
- Rework items lists
- Testing plan and log
- Monthly summary of field tests
- Submittal Register
- Contract modifications and RFIs arranged in numerical order
- Correspondence
- Non-compliance notices and corrective actions
- Photos and photo logs

7.4 Field Documentation Operating Procedures

The objective of the field documentation operating procedures is to ensure that appropriate project information is documented in logbooks during construction. This documentation is important for communicating activities with other project team members and the Navy personnel.

QC observations, inspections, and records of general QC activities on a regular basis are as follows:

- Record daily progress and associated QA and QC sampling
- Record construction operations, sequence, staging, and so forth
- Describe deviations from expected conditions, unexpected problems, and their resolution

7.5 Field Logbook

The Project QCM will maintain a record of daily QC activities during construction in a field logbook that will be available upon request for review. Information recorded in the CPR and CQCR will be supplemented with information contained in the logbook, but the intent is not to repeat information. As an operating procedure for logbook entries, the following items will be recorded, at a minimum:

- Date, project name, and location
- Daily start time
- Summary of weather conditions

- General description of work activities, size of work crew, and the equipment and personnel onsite
- Duration of lunch break
- Start time and duration of downtime resulting from equipment breakdown or weather
- Summaries of QC meetings and actions recommended to be performed
- QC-testing equipment and personnel
- Identification of work locations
- Description of materials delivered to the site, including QC data provided by the suppliers
- Record of decisions made regarding defective work, corrective measures implemented, or both
- Field tests
- Sampling activities
- Signature or initial at the bottom of each page of the field log. Each entry should be dated in order to show that notes are being taken on a daily basis. A line-through will be placed on any portion of a logbook page that is unused. No correction fluid may be used.

The Project QCM will sign or initial the bottom of each page of the field log and date the entry in order to show that notes are being taken on a daily basis. A line-through will be placed on any portion of a logbook page that is unused.

8.0 Construction QC Submittals

Construction QC submittals are generated by either the Project QCM or the subcontractor during or immediately before construction to demonstrate compliance with the project plans. Submittal requirements shall be tabulated in the Submittal Register according to the requirements identified in the project plans.

The QCM will monitor submittal activities to verify:

- Submittal completeness
- Required submittal inclusion
- Submittal schedule status
- Current submittal status
- Resubmittals

The QCM will log and track submittals in the Submittal Register. Specific responsibilities regarding submittals are as follows:

- Coordinating submittal actions
- Maintaining necessary submittal records in an organized fashion
- Maintaining and tracking submittals in the Submittal Register
- Reviewing and certifying submittals for compliance with the project plans, drawings, and specifications
- Approving submittals except those designated to be approved by the Navy and stakeholders
- Checking material and equipment delivered to the project for compliance with the project plans, drawings, and specifications

Certain designated submittals require approval by authorities other than the QCM (such as the PM, technical lead and lead engineer, or other qualified persons). In such cases, the QCM forwards the submittal to the PM or project engineer who routes the submittal to the appropriate approver.

The Site Superintendent/Construction Manager and Project QCM are responsible for coordinating the submittal transmittal and approval process and for following through to ensure that the process does not adversely affect the project schedule.

8.1 Submittal Review and Control

AGVIQ-CH2M HILL will control and schedule submittals and will document the process in the Submittal Register. The Project QCM is responsible for updating the Submittal Register at least once a week and forwarding a copy of the submittal register to the PM and Program Quality Manager at the end of each month of project work. Each submittal will be routed on

a standard submittal form. Units of weights and measures used on the submittals will be consistent with those used in the project documents.

Each submittal will be reviewed for completeness and compliance with contract requirements by individuals qualified to perform the review of that specific item. The submittal reviewers and approvers will be designated before construction.

The Project QCM will certify that the submittal is in compliance with the project requirements. Submittals that do not comply with the requirements will be returned to the originator for correction and re-submittal. Substitutions or variations of specified requirements will be clearly noted. Certification of the approved submittals will be indicated by signing or initialing and dating the submittal form by the Project QCM. Submittals include the following:

- Personnel qualifications
- Product data
- Permits
- Samples
- Catalog cuts and pages
- Production, inspection, and test reports
- Material certifications
- Progress reports, safety reports, and manpower reports
- Red-line drawing and as-built or certified data
- QC records and certifications
- Sample and test results
- QC reports
- Construction photographs and photo logs
- Contract closeout documents

9.0 Change Control

Changes to final designs, final project plans, and field changes are subject to design verification measures commensurate with those applied to the draft project plans. The PM approves work plan changes in consultation with the technical lead or lead engineer.

RFIs will be used to communicate and document clarifications as well as modifications requested by the subcontractor. The RFIs will be tracked and logged by the Project QCM to ensure that each RFI is fully addressed and that changes to the plans, drawings, and specifications are completely and accurately documented.

RFIs requesting or resulting in changes to the plans, drawings, or specifications are to be forwarded on to the Navy for review and approval by the design engineer.

9.1 Construction Changes

Changes to materials, supplies, work approaches, and corrective actions during construction will be documented in an overall effort to support sound engineering judgment and cost-effective project delivery. Changes during construction will be documented using the RFI process.

The RFI process involves either the subcontractor or the Project QCM identifying the situation in the field that requires change. When a change is identified by the subcontractor, the subcontractor reports the concern to the Project QCM. The Project QCM then prepares an internal RFI, identifying the concern, and forwards it to the PM. The PM reviews and either approves or forwards to the relevant personnel needed for approval. The RFI will contain the TO number, an RFI identification number, and a title to facilitate RFI tracking. The RFIs are numbered sequentially for individual TOs and filed at the job site with the PM and the design team. The response should include a narrative explanation of the resolution, with any drawings or specifications required to complete the work as attachments. The response is returned to the PM and forwarded to the Project QCM and Construction Manager for field implementation.

The RFI process is a field construction tool for documenting changed field conditions or other issues that may require a deviation from project requirements identified in the drawings and specifications. The RFI is intended to obtain input and concurrence from the lead engineer responsible for the development of the project plans. Approval of the RFI by the lead engineer does not constitute approval for AGVIQ-CH2M HILL or its subcontractors to perform work that is outside of the project scope or budget. If issues identified in the RFI may require a change to the project scope, schedule, or budget, this should be clearly conveyed in the RFI. In such instances, it is the responsibility of the PM to work closely with the Contract Administrator to seek and obtain proper approval from the Navy (according to established contractual procedures) before implementing the change recommended in the RFI.

10.0 Noncompliance and Corrective Actions

The Project QCM will notify the subcontractor of any detected noncompliance with the project requirements. The subcontractor will take immediate corrective action after receipt of such notice. Such notice, when delivered to the subcontractor at the work site, will be deemed sufficient notification. If the subcontractor fails or refuses to comply promptly, the Project QCM may issue an order stopping all or part of the work until satisfactory corrective action has been taken. Noncompliance notification or stop work orders will be documented in the Daily Report. Completion of corrective action will be noted on the CQCR. Verification of the corrective action and its results will be performed by the Project QCM and documented in the CQCR.

10.1 Corrective Measure Plan

Resolution of failing test results or noncompliance reports will be completed through a corrective measure plan. The corrective measure plan will be developed and documented by the Project QCM in conjunction with the PM. The agreed-upon plan will be implemented and documented by the Project QCM, who also will be responsible for its completion.

Attachment A
Project QC Forms

Testing Plan and Log

AGVIQ CH2M HILL SMALL BUSINESS RAC		TO No.: WE23		TO Title: Full Scale Permanent LPGAC Wellhead Treatment System				Location: Nassau County, NY		
Spec Section and Paragraph	Test Required	Proposed Lab	Sampled By	Tested By	Test Location	Frequency	Date Test Made	Test Results	Date Results Forwarded	Remarks
	Leakage				system					
	Hydrostatic				water main					
	Hydrostatic				gas					
	Hydrostatic				system					
	Hydrostatic				LPGAC vessels					
	Hydrostatic				chem tanks					
	Hydrostatic				backwash tank					
	Hydrostatic				water htr					
	Elect				MCC grnd					
	Megger				cables					
	Resist.				motor leads					
	Elect				rotation check					
	GFCI				receptacles					
	Voltage				Gen Set					
	Voltage				MCC					
	Density				subgrade					
	Proctor				fill					
	Density				grade					
	Concrete				comp stren					
	Concrete				slump					
	Concrete				air content					
	Aggregate				gradation					
	Fill				chem quality					
	Topsoil				organic content					
	Potable water				pH					
	Potable water				Bacteria					

AGVIQ CH2M HILL

Photo Log

TO Number	Project Number	Project Name	Site	Film Cassette Number	Photo Number	Date	Time	Task and Description	View Direction	Taken By

CONTRACTOR PRODUCTION REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

DATE		
CONTRACT NO	TITLE AND LOCATION	REPORT NO
CONTRACTOR	SUPERINTENDENT	
AM WEATHER	PM WEATHER	MAX TEMP (F) / MIN TEMP (F)

WORK PERFORMED TODAY

Schedule Activity No.	DEFINABLE FEATURE OF WORK, WORK LOCATION AND DESCRIPTION	EMPLOYER	NUMBER	TRADE	HRS

JOB SAFETY

WAS A JOB SAFETY MEETING HELD THIS DATE? (If YES attach copy of the meeting minutes)	☐ YES	☐ NO	TOTAL WORK HOURS ON JOB SITE, THIS DATE, INCL CON'T SHEETS
WERE THERE ANY LOST TIME ACCIDENTS THIS DATE? (If YES attach copy of completed OSHA report)	☐ YES	☐ NO	CUMULATIVE TOTAL OF WORK HOURS FROM PREVIOUS REPORT
WAS CRANE/MANLIFT/TRENCHING/SCAFFOLD/HV ELEC/HIGH WORK/ HAZMAT WORK DONE? (If YES attach statement or checklist showing inspection performed.)	☐ YES	☐ NO	
WAS HAZARDOUS MATERIAL/WASTE RELEASED INTO THE ENVIRONMENT? (If YES attach description of incident and proposed action.)	☐ YES	☐ NO	TOTAL WORK HOURS FROM START OF CONSTRUCTION

Schedule Activity No.	DEFINABLE FEATURE OF WORK AND LIST SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED ☐ SAFETY REQUIREMENTS HAVE BEEN MET.

EQUIPMENT/MATERIAL RECEIVED TODAY TO BE INCORPORATED IN JOB (INDICATE SCHEDULE ACTIVITY NUMBER)

Schedule Activity No.	Submittal #	Definable Feature of Work and Description of Equipment/Material Received

CONSTRUCTION AND PLANT EQUIPMENT ON JOB SITE TODAY. INDICATE HOURS USED AND SCHEDULE ACTIVITY NUMBER.

Schedule Activity No.	Owner	Definable Feature of Work and Description of Construction Equipment Used Today (incl Make and Model)	Hours Used

Schedule Activity No.	DEFINABLE FEATURE OF WORK AND REMARKS

CONTRACTOR/SUPERINTENDENT DATE

CONTRACTOR PRODUCTION REPORT

(CONTINUATION SHEET)

CONTRACT NO	TITLE AND LOCATION	DATE
		REPORT NO

WORK PERFORMED TODAY

Schedule Activity No.	DEFINABLE FEATURE OF WORK, WORK LOCATION AND DESCRIPTION	EMPLOYER	NUMBER	TRADE	HRS

Schedule Activity No.	DEFINABLE FEATURE OF WORK AND LIST SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED

EQUIPMENT/MATERIAL RECEIVED TODAY TO BE INCORPORATED IN JOB (INDICATE SCHEDULE ACTIVITY NUMBER)

Schedule Activity No.	Submittal #	Definable Feature of Work and Description of Equipment/Material Received

CONSTRUCTION AND PLANT EQUIPMENT ON JOB SITE TODAY. INDICATE HOURS USED AND SCHEDULE ACTIVITY NUMBER.

Schedule Activity No.	Owner	Definable Feature of Work and Description of Construction Equipment Used Today (incl Make and Model)	Hours Used

Schedule Activity No.	DEFINABLE FEATURE OF WORK AND REMARKS

INCLUDE ALL PERSONNEL WORK HOURS IN THE WORK PERFORMED SECTION ON THIS SHEET
INTO THE FRONT CONTRACTOR PRODUCTION REPORT

CONTRACTOR QUALITY CONTROL REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

DATE

REPORT NO

PHASE	CONTRACT NO	CONTRACT TITLE

PREPARATORY

WAS PREPARATORY PHASE WORK PREFORMED TODAY? YES ☐ NO ☐

IF YES, FILL OUT AND ATTACH SUPPLEMENTAL PREPARATORY PHASE CHECKLIST.

Schedule Activity No.	Definable Feature of Work	Index #

INITIAL

WAS INITIAL PHASE WORK PREFORMED TODAY? YES ☐ NO ☐

IF YES, FILL OUT AND ATTACH SUPPLEMENTAL INITIAL PHASE CHECKLIST.

Schedule Activity No.	Definable Feature of Work	Index #

FOLLOW-UP

WORK COMPLIES WITH CONTRACT AS APPROVED DURING INITIAL PHASE? YES ☐ NO ☐

WORK COMPLIES WITH SAFETY REQUIREMENTS? YES ☐ NO ☐

Schedule Activity No.	Definable Feature of Work, Description of Work, Testing Performed & By Whom, Definable Feature of Work, Specification Section, Location and List of Personnel Present

REWORK ITEMS IDENTIFIED TODAY (NOT CORRECTED BY CLOSE OF BUSINESS)

Schedule Activity No.	Definable Feature of Work and Description

REWORK ITEMS CORRECTED TODAY (FROM REWORK ITEMS LIST)

Schedule Activity No.	Definable Feature of Work and Description

REMARKS (Also Explain Any Follow-Up Phase Checklist Item From Above That Was Answered "NO"), Manuf. Rep On-Site, etc.

Schedule Activity No.	Definable Feature of Work and Description

On behalf of the contractor, I certify that this report is complete and correct and equipment and material used and work performed during this reporting period is in compliance with the contract drawings and specifications to the best of my knowledge except as noted in this report.

AUTHORIZED QC MANAGER AT SITE DATE

GOVERNMENT QUALITY ASSURANCE REPORT

DATE

QUALITY ASSURANCE REPRESENTATIVE'S REMARKS AND/OR EXCEPTIONS TO THE REPORT

Schedule Activity No.	Definable Feature of Work and Description

GOVERNMENT QUALITY ASSURANCE MANAGER DATE

CONTRACTOR QUALITY CONTROL REPORT

(CONTINUATION SHEET)
(ATTACH ADDITIONAL SHEETS IF NECESSARY)

DATE

REPORT NO.

PHASE	CONTRACT NO	CONTRACT TITLE

FOLLOW-UP

WORK COMPLIES WITH CONTRACT AS APPROVED DURING INITIAL PHASE? YES ☐ NO ☐

WORK COMPLIES WITH SAFETY REQUIREMENTS? YES ☐ NO ☐

Schedule Activity No.	Definable Feature of Work, Description of Work, Testing Performed & By Whom, Definable Feature of Work, Specification Section, Location and List of Personnel Present

REMARKS (Also Explain Any Checklist Item From Above That Was Answered "NO"), Manuf. Rep. On-Site, etc.

Schedule Activity No.	Definable Feature of Work and Description

SMALL BUSINESS RAC	**PREPARATORY PHASE REPORT**	REPORT NO:	REPORT DATE: REVISION NO: REVISION DATE:
PROJECT NO:	DEFINABLE FEATURE OF WORK:	SITE/ACTIVITY:	

PERSONNEL PRESENT

NAME	POSITION	COMPANY/GOVERNMENT

SUBMITTALS

REVIEW SUBMITTALS AND/OR SUBMITTAL REGISTER.	HAVE ALL SUBMITTALS BEEN APPROVED? YES ☐ NO ☐
IF NO, WHAT ITEMS HAVE NOT BEEN SUBMITTED?	
ARE ALL MATERIALS ON HAND? YES ☐ NO ☐	
IF NO, WHAT ITEMS ARE MISSING?	
CHECK APPROVED SUBMITTALS AGAINST DELIVERED MATERIAL. (THIS SHOULD BE DONE AS MATERIAL ARRIVES).	
COMMENTS:	

MATERIAL STORAGE

ARE MATERIALS STORED PROPERLY? YES ☐ NO ☐	
IF NO, WHAT ACTION IS TAKEN?	

SPECIFICATIONS

REVIEW EACH PARAGRAPH OF SPECIFICATIONS.
DISCUSS PROCEDURE FOR ACCOMPLISHING THE WORK.
CLARIFY ANY DIFFERENCES.

PRELIM WORK & PERMITS

ENSURE PRELIMINARY WORK IS CORRECT AND PERMITS ARE ON FILE.	
IF NO, WHAT ACTION IS TAKEN?	

CH2M HILL **RAC 4**	**PREPARATORY PHASE REPORT**	REPORT NO:	REPORT DATE: REVISION NO: REVISION DATE:
PROJECT NO:	DEFINABLE FEATURE OF WORK:	SITE/ACTIVITY:	

TESTING

IDENTIFY TEST TO BE PERFORMED, FREQUENCY, AND BY WHOM.

TEST	FREQUENCY	PERFORMER

WHEN REQUIRED?

WHERE REQUIRED?

REVIEW TESTING PLAN.

HAVE TEST FACILITIES BEEN APPROVED?

TEST FACILITY	APPROVED?
	YES ☐ NO ☐
	YES ☐ NO ☐

SAFETY

ACTIVITY HAZARD ANALYSIS APPROVED? YES ☐ NO ☐

REVIEW APPLICABLE PORTION OF EM 385-1-1 AND AHA.

MEETING COMMENTS

NAVY/ROICC COMMENTS DURING MEETING.

OTHER ITEMS OR REMARKS

OTHER ITEMS OR REMARKS:

QC REPRESENTATIVE'S NAME	QC REPRESENTATIVE'S SIGNATURE		DATE	

Instructional Notes for Rework Item List

WebCM Version of Rework Item List:
The areas in Blue with a white background need to be filled in by the QA Rep. The areas in Red with a gray background are locked and cannot be edited. Other users at other steps in the process will fill in these fields. Those fields that have an asterisk next to them are required.
Make sure that the Contract Information is correct. If the non-editable information is not, contact the Web-CM specialist about the discrepancy.
In the Rework Item Detail, fill in all the appropriate information for the rework item. Do not leave any fields in blue blank and provide a detailed description of the item in the area provided.
Once completed, click on the Save button. At this point the information will be saved. A new page will appear. Follow the instructions provided on that page and continue with logging the rework item.

MS-Word Version of Report and WebCM Excel Importable Forms:
The QC Manager shall maintain a list of work that does not comply with the Contract, identifying what items need to be reworked, the date the item was originally discovered, the date the item will be corrected by, and the date the item was corrected. There is no requirement to report a rework item that is corrected the same day it is discovered. Attach a copy of the "Rework Items List" to the last daily Contractor QC Report of each month. The Contractor shall be responsible for including on this list items needing rework including those identified by the Contracting Officer.

REWORK ITEMS LIST

Contract No. and Title:

Contractor:

NUMBER	DATE IDENTIFIED	DEFINABLE FEATURE OF WORK AND DESCRIPTION	CONTRACT REQUIREMENT (Spec. Section and Par. No., Drawing No. and Detail No., etc.)	ACTION TAKEN BY QC MANAGER	RESOLUTION	DATE COMPLETED

AGVIQ CH2M HILL

Photo Log

TO Number	Project Number	Project Name	Site	Film Cassette Number	Photo Number	Date	Time	Task and Description	View Direction	Taken By

SAMPLE RFI FORM

Date
RFI Number

To: Responsible Party Name, Title and Company

Contract Title
Contract Number
Location

Subj: Detailed Description of Issue

Referenced Drawing Number and Specification Section

Information or Clarification Required

Contractor's Proposed Solution

Initiated By: Contractor Responsible for Identifying Issue Date
Signed By: Superintendent or QC Manager Date

Date Response Required By:

Government Response

Detailed Technical Response

This response is/is not considered a construction contract change:

Information Furnished By: Name Date

TRANSMITTAL OF CONTRACTOR'S SUBMITTAL
(ATTACH TO EACH SUBMITTAL)

DATE: _____

To:	Mr. Chris Shukis, PWD FEAD NLON (NAVFAC MIDLANT) christopher.shukis@navy.mil	From:	(Contractor)
CC:	gregory.pearman@marines.usmc.mil Lora.Fly@navy.mil	CC:	Jim.Nicotri@ch2m.com rgrogan@tikigaq.com smatney@tikigaq.com Graham.Sharkey@CH2M.com Amy.Wolff@ch2m.com

SUBMITTAL INFORMATION		
Submittal No.:		
☐ New Submittal	☐ Resubmittal	
Project:	Interim Emergency Wellhead Treatment Aqua-NY Water Treatment Facility	
Project No.:	N62470-08-D-1006, TO No.: WE23	
Specification Section No.:		
Date of Submittal:		

SUBMITTAL TYPE:		
☐ Shop Drawing	☐ Sample	☐ Informational
☐ Material Data	☐ Proposed Substitution	☐ Other

The following items are hereby submitted:

Number of Copies	Description of Item Submitted (Type, Size, Model Number, Etc.)	Spec. and Para. No.	Drawing or Brochure Number	Contains Variation to Contract	
				No	Yes
				☐	☐

The following information about the submission is hereby provided:

Pressure Reducing Valve

CONTRACTOR hereby certifies that (i) CONTRACTOR has complied with the requirements of Contract Documents in preparation, review, and submission of designated Submittal and (ii) the Submittal is complete and in accordance with the Contract Documents and requirements of laws and regulations and governing agencies.

By: _____
CONTRACTOR (Authorized Signature)

Construction Contract
Turnover & Close-out Checklist

Contract No. _____ Building No: _____ BOD: _____

Project Title/Location: _____

Note: Many turnover items, such as training & warranties, include multiple occurrences; the contractor's submittal and testing logs contain detailed information. This checklist is a tool for wrapping up the contract, not managing the acceptance and turnover.

	Turnover Item	Action	Initial	Date	Transferred To:
1	Final inspection(s) performed	CM / ET			
2	Punchlist & clean-up complete	CM / ET			
3	Acceptance letter to contractor	CM			
4	Transfer letter to client	CM			
5	Record Drawings (As-Builts) accepted / forwarded Hardcopy _____ Electronic _____	ET / CM			
6	O&M manuals accepted, / forwarded Hardcopy _____ Electronic _____	ET / CM			
7	Warranties accepted / forwarded	ET / CM			
8	Special tools, materials, spare parts turned over	ET			
9	Keys turned over	ET			
10	TABS / ACATS complete / accepted	ET / CM			
11	Second Season TABS is pending No_____ Yes If yes, when?_____	ET / CM			
12	Contractor-supplied training complete	ET			
13	Systems (other than HVAC) tested / accepted	ET			
14	Waste Management Plan & Records submitted	ET			
15	Production/QC Reports through BOD	ET			
16	Approved submittals transferred Hardcopy _____ Electronic _____ N/A _____*(Submittals are part of OMSI package)*	ET			
17	Personnel passes returned	ET			
18	Government-furnished utilities account closed	ET			
19	DD1354 accepted / forwarded	CM			
20	Environmental permits / reporting satisfied	ET / CM			
21	Hazardous materials disposal records complete	ET			

Construction Contract
Turnover & Close-out Checklist

	Turnover Item	Action	Initial	Date	Transferred To:
	Overseas Projects				
	Mixed Commission Requirements (Italy)				
	Administrative Requirements				
1	Enter BOD into eContracts within 10 days of BOD	CM			
2	Contractor evaluation input complete DB _____ *(Include DOR Dunns No in Block 20)* DBB _____	CM	_____	_____	
3	A/E evaluation input complete	CM	_____	_____	
4	Complete Final Approved Design (Drawings & Specs)	CM	_____	_____	
5	CM files incorporated into official file	CM	_____	_____	
6	Electronic CM / ET files "archived"	CM / ET	_____	_____	
7	All modifications complete	CM / AQ	_____	_____	
8	Claims resolved N/A _____ Yes _____	AQ / CM	_____	_____	
	Contract Closeout (Refer to BMS Sections B-1.7 and S-17 for complete requirements)				
1	Payrolls complete	AQ			
2	Contractor Evaluation in CCASS	AQ			
	Copy to Contractor by letter				
3	A/E Evaluation in ACASS	AQ			
	Copy to A/E by letter				
4	Final Release and Final Invoice received and processed.	AQ			
5	Final Subcontracting Report Submitted NA _____	AQ			
6	Contract Completion Statement DD1594 Completed in SPS	AQ			
7	Contract closed out in FIS	AQ			
	Contracts that are part of a Military Construction Project	**Project No. _____**			
	Notify PM/DM construction contract is closed out in FIS	AQ / CM			
	Refer to BMS B-11 (under construction)				

Contract No. _____