



November 14, 2012

Ms. Lora Fly
NAVFAC MIDLANT
9742 Maryland Avenue
Norfolk, VA 23511-3095

Subject: Contract No. N62470-08-D-1006
Task Order (TO) No. WE23 - Interim Wellhead Treatment System
Naval Weapons Industrial Reserve Plant (NWIRP) Bethpage - Bethpage, NY
FINAL Construction Closeout Report for the Installation of Interim Emergency
Treatment Liquid-Phase Granular Activated Carbon Units

Dear Ms. Fly:

AGVIQ-CH2M HILL Constructors Inc. Joint Venture III (AGVIQ-CH2M HILL) is pleased to provide one (1) hard copy and one (1) electronic copy on CD of the *FINAL Construction Closeout Report for the Installation of Interim Emergency Treatment Liquid-Phase Granular Activated Carbon Units at the New York American Water Company facility* (FINAL CCR) in Levittown, New York for your files.

The hard copy of the FINAL CCR contains the body of the report only with all appendices included on the CD.

Should you have any questions or require additional information, please call me at (617) 626-7042.

Sincerely,

AGVIQ-CH2M HILL Constructors Inc. Joint Venture III

Jim Nicotri
Senior Project Manager

cc: Christopher Shukis/NSB New London (1 Hard Copy/1 CD)
Greg Pearman/NWIRP Beth Page (1 Hard Copy/1 CD)
William Cords/NAVAIR (1 Hard Copy/1 CD)
Al Taormina/ H&S Environmental (2 Hard Copies/2 CDs)
Carol Stein/USEPA Region II (1 Hard Copy/2 CDs)
Steven Scharf /NYSDEC (1 Hard Copy/1 CD)
Henry Wilkie/NYSDEC (1 Hard Copy/1 CD)
Glenn Wagner/TetraTech (1 Hard Copy)

**Final
Construction Closeout Report
Installation of Interim Emergency Treatment
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**

November 2012

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**1000 Abernathy Road, Northpark 400
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Atlanta, GA 30328**

**Submitted to
U.S. Naval Facilities
Engineering Command
Mid Atlantic Division**

November 2012

Prepared/Approved By



Jim Nicotri, Project Manager

November 13, 2012
Date

Approved By:



Sam Naik, Deputy Program Manager

November 13, 2012
Date

Client Acceptance:



U.S. Navy Responsible Authority

November 14, 2012
Date



Certificate of Completion

AGVIQ-CH2M HILL Constructors, Inc. Joint Venture III, attests that, to the best of its knowledge and belief, the installation of interim emergency treatment, liquid-phase granular activated carbon units at the New York American Water Company, Seamans Neck Road Water Plant, Naval Weapons Industrial Reserve Plant (NWIRP) Bethpage, New York, conducted in accordance with the Work Plan under Task Order No. WE23 for Contract No. N62470-08-D-1006, has been completed and is in compliance with the contract.



Don Conger, Project QC Manager

November 13, 2012
Date



Russell Ford, Senior Technical Consultant

November 13, 2012
Date

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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
AQUA-NY	Aqua New York, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DIP	ductile iron pipe
FEAD	Facilities Engineering and Acquisition Division
GAC	granulated activated carbon
LPGAC	liquid-phase granulated activated carbon
MIDLANT	NAVFAC Mid-Atlantic Division
NAVFAC	United States Navy, Naval Facilities Engineering Command
NCDHS	Nassau County Department of Health Services
NWIRP	Naval Weapons Industrial Reserve Plant
psi	pounds per square inch
PVC	polyvinyl chloride
PWD	Public Works Department
QC	Quality Control
ROD	Record of Decision
ROICC-ET	Navy Resident Officer in Charge of Construction Engineering Technician
Well No. 3	American Water water supply well N-8480

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), Northeast Integrated Product Team to install interim emergency liquid-phase granular activated carbon (LPGAC) units at the New York American Water Company (American Water) Seamans Neck Road Water Plant, in Levittown, New York. This work was completed under Response Action Contract No. N62470-08-D-1006, Task Order No. WE23.

This Construction Closeout Report includes a summary of construction activities, as well as appendixes that provide the primary project data. The appendixes include: the building permit from the Town of Hempstead, the engineering plan approval from the Nassau County Department of Health Services (NCDHS), testing results and submittals, as-built drawings and technical specifications, redzone checklist, weekly summary reports, daily summary and safety reports, operations and maintenance manual, crane lift plan, project photographs, waste management documentation, and the construction completion certificate from the Town of Hempstead.

1.1 Project Background

This project consisted of construction and startup of a temporary well-head treatment remedy for American Water water supply well N-8480 (Well No. 3) at the Seamans Neck Road Water Plant.

The interim emergency treatment system was constructed to protect public health until the final well head treatment system is constructed and placed in operation. The Navy is conducting this action under the Navy's Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) authority and the approved Record of Decision (ROD) document. In accordance with the ROD, the Navy is conducting this action since an imminent threat exists to the public water supply system.

2.0 Description of Activities

This section describes the construction activities performed for this project in general, and then the specific sequence is discussed.

2.1 Pre-Mobilization Coordination

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

2.1.1 Procurement

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

- General Contractor (Construction Services/System Installation) – Phillip Ross Industries
- Analytical Laboratory – EcoTest Laboratories
- Granulated Activated Carbon (GAC) System Rental – Calgon Corporation

2.1.2 Regulatory Interaction and Permitting

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

A building permit to construct the temporary system was issued by the Town of Hempstead on February 22, 2012 (Appendix A).

An engineering approval of plans and technical specifications was issued from the NCDHS on March 16, 2012 (Appendix A).

2.1.3 Submittals

AGVIQ-CH2M HILL controlled and scheduled submittals, and documented the process in the Submittal Register (Appendix B).

2.2 Mobilization and Site Preparation

A pre-construction meeting was held on March 1, 2012, with all of the necessary facility personnel, Construction Manager, Project Quality Control (QC) Manager, Field Engineer, Site Safety and Health Officer, Subcontractor Superintendant, and other stakeholders to review specific logistics and facility operations that the construction crew needed to be cognizant of during the construction process.

All necessary equipment and personnel were mobilized to the site prior to commencement of construction activities. The initial mobilization included setting up the Construction Staging Area. Project photographs are included in Appendix C.

Site preparation activities included underground utility locates and the initial setup of erosion and sediment controls for site grading. Underground utilities were located and

marked using American Water facility records, and a third party utility locator service. Erosion and sediment control measures were installed as needed for the civil construction of the temporary equipment pad and the grading around the pad. The primary erosion control mechanism for this project were silt fences.

2.3 Underground Piping and Utilities

Trenching to install underground piping occurred while the concrete equipment pad was curing. Work included excavation for 12-inch influent and effluent ductile iron pipe (DIP). Hand excavation was performed around the existing 12-inch Well No. 3 main taking precaution to avoid undermining the piping.

Since Well No. 3 was not being used, a shutdown was not required to make the connection to the main. AGVIQ-CH2M HILL's subcontractor installed the tees and associated shut-off valves in the water main as well as the remaining piping, fittings, valves, associated appurtenances, and tie-in piping to the LPGAC system. Once all underground work was complete, the trenches were backfilled using the excavated material, and compacted in six inch lifts up to the surface.

2.4 Concrete Work

Minor grading (leveling of the equipment pad site), and fortifying of the subgrade was made to the ground surface in preparation for installing the temporary LPGAC equipment pad, as well as the stable base for the 20,000-gallon Backwash Waste Holding Tank (also referred to as the frac tank).

Installation of the foundation began once site preparation was completed. Activities included:

- Installed concrete pad (slab on grade) as shown in the design drawings. The concrete pad was constructed as described in the design specification Section 01 01 00 and drawings (Appendix D). The concrete pad was allowed to cure for over 14 days prior to placing a load on the pad.
- A compressive strength of 3,825 psi (or 85 percent of the design strength) is required prior to placing a load on the concrete pad. 7-day, 14-day, and 28-day cylinder break tests were performed on both the concrete footer and the top of pad to periodically test the strength of the curing concrete. According to the 14-day cylinder break test results, both the concrete footer and top of pad achieved 85 percent of the design strength.
- In addition, according to the 28-day cylinder break testing results, both the concrete footer and top pad show that the concrete cured to greater than 100 percent of its design strength (Appendix B).
- Prepared a stable base and installed the temporary 20,000-gallon frac tank for draining the LPGAC tanks.

2.5 Process Equipment, Piping and Valves

Upon curing of the concrete pad and completion of the underground piping installation, the temporary LPGAC vessels were delivered and lifted onto the pad and associated piping assembled.

Per the crane lift plan (Appendix E), AGVIQ-CH2M HILL's subcontractor received and unloaded the LPGAC system. The three adsorber vessels were each lifted (individually) onto the equipment pad and anchored into place.

After the LPGAC system was set and secured into place, AGVIQ-CH2M HILL assembled the piping, valves, monitoring equipment, and appurtenances as supplied by the LPGAC equipment supplier.

In addition, the frac tank was delivered to the site, and the 8-inch polyvinyl chloride (PVC) backwash waste piping was installed as shown on the redlined project drawings (Appendix D).

Construction was completed on April 16, 2012, and startup activities began.

2.6 System Startup and Testing

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

Startup activities included backwashing the carbon, and disinfecting and sanitizing the piping, tanks, and carbon. Field QC tests performed included pipe leakage tests and valve testing, as well as a full NCDHS required laboratory analysis of the treated and untreated well water.

All Field QC tests (pipe leakage, hydrostatic, valve testing, and GAC pipe and testing) were performed in accordance with the required specifications and passed. Results are provided in Appendix B.

2.7 Demobilization

After construction was completed and startup finished, demobilization activities began and included:

- General site cleanup including equipment and materials laydown area
- Removal of all temporary construction features and reinstallation of construction entrance fence
- Removal of erosion and sediment control measures
- Raking, seeding, watering, and protecting disturbed area around the completed equipment pad

- Final inspection with Navy Resident Officer in Charge of Construction Engineering Technician (ROICC-ET)

2.8 System Operations and Maintenance

The temporary system will be operated and maintained by AGVIQ-CH2M HILL during the installation of the full scale LPGAC system. The operation and maintenance manual is provided in Appendix F. Because of the nature of the LPGAC system, few operational adjustments or maintenance will be required. Backwashing of the carbon beds may be required, and will be performed by AGVIQ-CH2M HILL only if the pressure drop across the system increases to 15 pounds per square inch (psi), per the Tetra Tech NUS, Inc. Engineers Report. AGVIQ-CH2M HILL will monitor the differential pressure indicator throughout operation of the temporary system.

2.9 Temporary LPGAC System Removal

Temporary LPGAC system removal will not take place until the temporary system is no longer needed. It is expected that Well No. 3 will be shut down as demand decreases sometime between October and December 2012. AGVIQ-CH2M HILL will perform this work before demobilization from the full scale project. A description of this task will be provided in the full scale system Work Plan. If needed, the temporary LPGAC system will be winterized so it can be available in the spring 2013 if the full scale system is not finished in time.

3.0 Project Progress

A full accounting of the project progress can be found in both the daily and weekly reports in Appendixes G and H, respectively. Safety reports for the project are provided in Appendix I. A summary of the project as it progressed from March through May 2012 is listed below. The final project schedule is included as Figure 3-1. A redzone checklist is provided in Appendix J and a Waste Documentation Report is included in Appendix K. The Certificate of Completion for the project is presented in Appendix L.

March 5-9, 2012	Mobilized to the site, installed the construction entrance, excavated for the GAC system concrete pad, installed rebar, and poured the concrete pad frost walls.
March 12-16, 2012	Installed the rebar and poured concrete for the top slab of the GAC system concrete pad. Formworks were stripped, and the excavation was backfilled.
March 19-23, 2012	The concrete equipment pad was allowed to cure.
March 26-30, 2012	The concrete equipment pad was allowed to cure. PVC piping was installed to the frac tank and to the blowoff pit.
April 2, 2012	The rigging equipment was delivered to the site. AGVIQ-CH2M HILL was informed by Calgon that the GAC system delivery would be delayed back 1 day because of problems with the trucking permits crossing New York City.
April 3, 2012	Buried pipe installation work began for the Well No. 3 tie-in. The area was excavated, the required section of pipe was cut, and the new section of pipe, valves, and fittings were installed.
April 4, 2012	Work was completed on the Well No. 3 tie-in piping. The section of pipe installed was pressure tested, and the excavation was backfilled and compacted.
April 5, 2012	The Calgon GAC vessels and piping were delivered and installed. Work included a crane lift to place the three vessels, as well as three confined space entries to ensure all components inside the tanks did not come loose during shipping. The crew worked a 12-hour day to set the tanks and install all of the associated piping, accessories, valves, fittings, gauges, and meters. The tanks were also filled with clean water. Greg Pearman, Navy ROICC-ET with the Public Works Department/Facilities Engineering and Acquisition Division (PWD/FEAD) was onsite and conducted a complete crane inspection prior to lift activities.

April 6, 2012	Final connections were made between the GAC system and the frac tank. All bolts on the GAC system were tightened, and the entire system (tanks, piping, valves, and all fittings) was pressure tested.
April 9-13, 2012	The entire system, piping and vessels, was chlorinated (disinfected).
April 16-20, 2012	The carbon was delivered and installed in the tanks on Monday, April 16. The remainder of the week was spent backwashing and sterilizing the system. On Friday, April 20, a full set of NCDHS required laboratory sampling was performed.
April 23-27, 2012	Results from AGVIQ-CH2M HILL's laboratory analysis sampling performed on Friday, April 20 were received on Wednesday, April 18. All results came back within acceptable parameters, and were forwarded on to the NCDHS. Representatives from the NCDHS were onsite on April 25 to perform their final inspection.
April 30 - May 4, 2012	Representatives from the NCDHS visited the site on Monday, April 30 to perform their laboratory analysis sampling.
May 11, 2012	NCDHS reviewed their sampling results, and gave approval to startup the GAC system.
May 14, 2012	The GAC system was put online.
June 20, 2012	A power outage shut the interim emergency treatment system down, and after a few minutes, a backup generator turned on and provided power to restart the system. Upon restart, a pressure wave (water hammer) caused the rupture disks to fail on two of the three carbon adsorption vessels, which released water to the site.
July 11, 2012	The Navy approved changes to replace the rupture disks with pressure relief valves (PRV's); in the event of a water hammer, these would release pressure temporarily without releasing a lot of water.
July 20 - 21, 2012	The installations/modifications were completed and the system was restarted. A pressure test was performed on each of the new PRV's and all three passed. The system has been operating as intended since.

WE23 AQUA GAC System Construction NWIRP Beth Page, NY

ID	WBS #	Task Name	Working Days	% Complete	Start	Finish	Slack	CFR 2, 20
18		WE23 AQUA GAC System Construction	602 dys	25%	3/14/11	8/6/13	0 dys	4/22 4/23 5/6 5/13
22	NEW	Interim Emergency Treatment System	355 dys	73%	6/30/11	11/30/12	0 dys	
23		Define Treatment System	60 dys	100%	6/30/11	9/23/11	0 dys	
24		Interim System Not Required	0 dys	100%	9/23/11	9/23/11	0 dys	
25		Emergency System Re-Activated	1 dy	100%	10/31/11	10/31/11	0 dys	
26		TINUS Prepare Draft Design Package for Emergency System	32 dys	100%	11/1/11	12/16/11	0 dys	
27		Project Team Review Draft Design Package	1 dy	100%	12/19/11	12/19/11	0 dys	
28		TetraTech Revise and Prepare Submittals to Town	1 dy	100%	12/20/11	12/20/11	0 dys	
29		Interim System Permitting	60 dys	100%	12/14/11	3/16/12	0 dys	
40	05.26.23.10	Interim System Work Plans	35 dys	100%	12/22/11	2/17/12	0 dys	
47	05.26.23.10	Interim System Procurement	31 dys	100%	12/21/11	2/10/12	0 dys	
54		Prep & Ship Emergency GAC System to Site	35 dys	100%	2/13/12	4/2/12	0 dys	
55	05.26.23.05	Construction	39 dys	100%	2/13/12	4/6/12	0 dys	
73	04.11.13.00	Start-Up Temp System	25 dys	100%	4/9/12	5/11/12	0 dys	100%
74		Sterilize Emergency System	5 dys	100%	4/9/12	4/13/12	0 dys	
75		GAC Delivery - Fill System with GAC	1 dy	100%	4/16/12	4/16/12	0 dys	
76		Backwash GAC Vessels	1 dy	100%	4/17/12	4/17/12	0 dys	
77		Sanitize System (Caustic Wash)	2 dys	100%	4/18/12	4/19/12	0 dys	
78		Testing and Lab Analysis	2 dys	100%	4/20/12	4/23/12	0 dys	100%
79		DOH Inspection	1 dy	100%	4/25/12	4/25/12	0 dys	100%
80		DOH Take Samples	1 dy	100%	4/30/12	4/30/12	0 dys	100%
81		DOH Lab Analysis and Review	9 dys	100%	5/1/12	5/11/12	0 dys	100%
82		DoH Approval to Operate	0 dys	100%	5/11/12	5/11/12	0 dys	100%
83		System Ready for operation	0 dys	100%	5/11/12	5/11/12	0 dys	100%

Project: 2012-05-04_WE23_interim System
 Dater: 5/11/12

2012-05-04_WE23_interim System_Schedule_Update.mpp

Page 1 of 1

5/11/12

Legend:

- Critical
- Critical Split
- Critical Progress
- Task
- Split
- Task Progress
- Summary
- Project Summary
- External Task
- External Milestone
- Deadline

FIGURE 3-1
Final Project Schedule



November 14, 2012

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NAVFAC MIDLANT
9742 Maryland Avenue
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The hard copy of the FINAL CCR contains the body of the report only with all appendices included on the CD.

Should you have any questions or require additional information, please call me at (617) 626-7042.

Sincerely,

AGVIQ-CH2M HILL Constructors Inc. Joint Venture III

A handwritten signature in black ink that reads 'Jim Nicotri'. The signature is written in a cursive, slightly slanted style.

Jim Nicotri
Senior Project Manager

cc: Christopher Shukis/NSB New London (1 Hard Copy/1 CD)
Greg Pearman/NWIRP Beth Page (1 Hard Copy/1 CD)
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