IN0021539
Martin Co.

DEPARTMENT OF THE NAVY
NAVAL SURFACE WARFARE CENTER
CRANE DIVISION
300 HIGHWAY 361
CRANE INDIANA 47522-5001

IN REPLY REFER TO:

5090
Ser 1023/054
18 Jun 2024

Indiana Department of Environmental Management
Office of Water Quality, Permits Branch
100 North Senate Avenue
Indianapolis, IN 46204

SUBJ: RESPONSE TO IDEM NONCOMPLIANCE LETTER FOR NPDES PERMIT IN0021539

Naval Surface Warfare Center, Crane Division (NSWC Crane) is submitting the enclosed documentation in response to the Indiana Department of Environmental Management Inspection Summary/ Noncompliance Letter received on 5 June 2024. This submittal includes the response to the Compliance Evaluation Inspection Summary with supporting documentation.

If you require any further information, my point of contact is Brandy Ranard, telephone 812-854-3382 or email brandy.s.ranard.civ@us.navy.mil.

Sincerely,

JOHNSON.DOUGLAS.G.1096383742 Digitally signed by JOHNSON.DOUGLAS.G.1096383742 Date: 2024.06.18 13:06:00 -04'00'

DOUGLAS G. JOHNSON
Environmental Protection Manager
By direction of the
Commanding Officer

Enclosure: 1. Noncompliance Letter Response

Copy to:
CAAA (M. Brindle)
CJSETO (L. Moon)

Noncompliance Letter Response

Attachments (A) Project Management Plan
(B) FY24 Quarterly Reports

Naval Surface Warfare Center - Crane Division (NSWC) Crane is providing the following response to IDEM's letter of noncompliance dated 05 June 2024.

1. **Concern:** The Best Management Practice (BMP) Plan generated an unsatisfactory rating. Part I. A. 8. [2] of the Permit requires that the facility shall revise and implement a program of best management practices (BMPs) and any other methods deemed to be feasible to reduce the concentration of the affected pollutants below the applicable goal value. Based on the continued exceedances of the effluent goal limits for Copper, Zinc, and Cadmium at Outfalls 002, 004, 008, and 012, the facility's BMP plan must be improved. The following exceedances of effluent goals were reported during this twelve-month review period:
    a. Outfall 002 exceeded effluent goals eight times for Cadmium with concentrations as high as 8 times the goal; eight times for Zinc with concentrations approximately 6 times the goal; and eight times for Copper with concentrations as high as 10 times the goal.
    b. Outfall 008 exceeded effluent goals six times for Zinc at a concentration as high as 2 times the goal; and six times for Cadmium at concentrations > 4 times the goal.
    c. Outfall 012 exceeded effluent goals two times for Cadmium at a concentration approximately 2 times the goal.

Response: NSWC Crane is currently in a Federal Facility Compliance Agreement (FFCA) with the Environmental Protection Agency (EPA) to reduce and maintain the concentrations of Cadmium, Copper, and Zinc from Outfalls 002, 008, and 012 below their respective permitted daily maximum goal values through the incorporation of BMPs or a combination of BMPs. The FFCA included a timeline for implementation of a proposed treatment strategy to provide a solution for reducing metals concentrations in the sediment ponds. This timeline allowed for the development of an effective treatment strategy and testing the strategy to ensure efficacy prior to full-scale implementation.

To implement the FFCA for treatment of the sediment ponds, Crane Army Ammunition Activity (CAAA) reached out to the US Army Corps of Engineers (USACE) to assist with obtaining a contract with an organization that can provide a solution for reducing metals concentrations in the sedimentation ponds.

The contractor chosen by USACE created a pilot study based on bench testing and a new study was initiated to determine what type of treatment should be used to reduce the metal concentrations. The recommendation derived from the pilot study was to treat the final sedimentation pond water with a combination of sodium hydrosulfide and sodium hydroxide,

starting with treatment of Pond 2. Chemicals were premixed before arriving on site to avoid mixing errors and to lessen potential safety hazards. Application of the premixed chemical was conducted during two sites visits and proved to be unsuccessful.

After the first application, there was no noticeable difference in the concentration of metals. The contractor later determined that the pH in Pond 2 was not in the correct range for the solution to precipitate metals at the time of the first application.

During the second application, it was found that the premixed chemical solution had crystallization in the bottom of the storage container and within the solution. The contractor continued with the addition of chemical to Pond 2, but laboratory results did not show improvement in the metal concentration levels. The contractor requested to continue treatment with the crystallized product, but NSWC Crane did not want to continue the study with an unreliable chemical and requested new batches to be ordered. Initially, the crystallization was thought to be caused by low temperatures during storage but after new batches of premixed chemical were requested and received on two separate occasions, it was determined that crystallization was also happening during shipment of the premixed chemicals. This resulted in stopping treatment until another solution can be found.

The contractor has recently suggested to perform bench studies on a different chemical called Aetfloc that could possibly work for the treatment of the sedimentation pond water. Aetfloc is a sulfur-based compound that removes heavy metals and is more environmentally friendly than the sodium sulfide mixture. Samples have been collected from Pond 2 and shipped to the contractor for bench scale analyses using Aetfloc. NSWC Crane is currently pursuing other opportunities for treatment in parallel with the current contract while awaiting the bench scale results. The contract period of performance ends September 2024.

The Project Management Plan submitted by the selected contractor for the pilot study is included as Attachment A. Quarterly reports have been submitted to the EPA since the FFCA was signed in October 2022 and the FY24 quarterly reports are included in Attachment B.

Attachment A

U.S. Army Corps of Engineers, Fort Worth District
819 Taylor Street, Fort Worth, TX 76102-0300

FINAL

Project Management Plan

Implementing Federal Facility Compliance Agreement with EPA Related to Clean Water Act, Crane Army Ammunition Activity, IN

December 2022

Contract No: W9126G-22-D-0017

Task Order No.: W9126G22F0246

Prepared by:

Auxilio Management Services
51 West 4th Avenue
Denver, CO 80223

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FINAL PROJECT MANAGEMENT PLAN
Implementing Federal Facility Compliance Agreement with EPA Related to Clean Water Act
Crane Army Ammunition Activity, IN

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ACRONYMS AND ABBREVIATIONS

A-E	Architect-Engineer
AHA	Activity Hazard Analysis
APP	Accident Prevention Plan
Auxilio	Auxilio Management Services
CAAA	Crane Army Ammunition Activity
COR	Contracting Officer's Representative
CQCP	Contractor Quality Control Plan
CWA	Clean Water Act
DoD	Department of Defense
EDWOSB	Economically Disadvantaged Women-Owned Small Business
FFCA	Federal Facility Compliance Agreement
H&S	Health and Safety
HASP	Health and Safety Plan
HTRW	Hazardous, Toxic, and Radioactive Waste
IN	Indiana
OSHA	Occupational Safety and Health Administration
P.E.	Professional Engineer
PgM	Program Manager
PM	Project Manager
PMP	Project Management Plan
PMP	Project Management Professional
POC	Point of Contact
PWS	Performance Work Statement
QA	Quality Assurance
QC	Quality Control
RPEC	Regional Planning and Environmental Center
SAP	Sampling and Analysis Plan
SHM	Safety and Health Manager
SOP	Standard Operating Procedure
SSHO	Site Safety and Health Officer
TCE	Trichloroethylene
TO	Task Order
U.S.	United States
USACE	United States Army Corps of Engineers

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CHAPTER 1
INTRODUCTION

As required by the Performance Work Statement (PWS) dated 10 August 2022, Auxilio Management Services (Auxilio) has developed this Project Management Plan (PMP) for Implementing Federal Facility Compliance Agreement (FFCA) with EPA Related to Clean Water Act (CWA), Crane Army Ammunition Activity (CAAA), Indiana (IN). This work will be completed under a contract with the U.S. Army Corps of Engineers (USACE), Tulsa District, Contract Number W9126G-22-D-0017, Task Order (TO) W9126G22F0246 (USACE 2022). The USACE Regional Planning and Environmental Center (RPEC) is performing contract oversight. Auxilio has been contracted to support CAAA in meeting the requirements of the FFCA. The project will include regulatory support, data review, feasibility study and alternative selection for meeting the discharge goals, remedial design for a pilot study, followed by a pilot study, and design for implementation to all three sedimentation ponds depending on pilot success.

The PMP is a living document that specifies the management, administrative, and technical details of work execution, including project organization, staffing, status reporting, deliverables, schedule, and payment milestones. The following sub-elements are included within this PMP:

- Scope Management
- Requirements Management
- Resource Management
- Schedule Management
- Cost Management
- Quality Management
- Safety and Health Management
- Communications Management
- Risk Management
- Procurement Management
- Security Management
- Change Control

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CHAPTER 2
SCOPE MANAGEMENT

2.1 PROJECT CHARTER / OBJECTIVES

Auxilio was awarded TO W9126G22F0246 under Contract Number W9126G-22-D-0017 on September 30, 2022.

The overall objective of this TO is to support CAAA in meeting the requirements of the FFCA.

2.2 TECHNICAL APPROACH

2.2.1 Task Order Kick-Off Meeting (Task 1)

Auxilio will facilitate a project kickoff meeting via teleconference. The Kick-Off Meeting will identify all points of contact (POC), discuss the TO requirements, initiate data gathering efforts, and discuss other pertinent issues. Auxilio will prepare a meeting agenda and meeting minutes. The Task Order Kick-Off Meeting was held on October 17, 2022.

2.2.2 Regulatory Support (Task 2)

Auxilio will support CAAA in preparing documents relevant to the FFCA, including a work plan with cost components and a schedule.

Auxilio will facilitate and attend up to two in-person meetings with regulators in Indianapolis, IN. Auxilio will prepare minutes for regulatory meetings held.

2.2.3 Project Management (Task 3)

Project management includes task management, activity and financial tracking and reporting, subcontractor management, and general client communications. It also includes preparation of monthly reports, invoices, and project schedules.

Auxilio will prepare a Project Management Plan (this document), including a project schedule, management and technical approach, and resources required for planning, execution, and completion of each task's performance objectives.

Auxilio will provide up to 18 Monthly Project Management Reports, electronically in a pdf format, to provide updates on the status of the project. Monthly reports will be non-technical documents that summarize the progress made during the previous month in achieving milestones, indicate which milestone activities will be started the next reporting period, identify problems encountered in performing the work, and identify any schedule delays that are anticipated or have occurred.

Auxilio will complete Contractor Manpower Reporting requirements for the labor executed during each Government fiscal year.

2.2.4 Contractor Quality Control Plan (Task 4)

Auxilio will prepare a Contractor Quality Control Plan (CQCP) summarizing how the tasks will be managed to maintain quality throughout the TO. The CQCP will include quality control procedures for field

documentation, sample collection, personnel training, subcontractor management, and document preparation.

2.2.5 Health and Safety Plan and Accident Prevention Plan (Task 5)

Auxilio will prepare a Health and Safety Plan / Accident Prevention Plan (HASP/APP) including relevant Activity Hazard Analyses (AHA). The HASP/APP will address the occupational safety and health hazards associated with the field activities performed as part of this TO.

2.2.6 Sampling and Analysis Plan (Task 6)

Auxilio will prepare a Sampling and Analysis Plan (SAP), describing the sampling and analysis procedures of the project. The SAP will include sampling locations, sampling requirements, sample collection handling and documentation procedures, field quality control, chemical data quality objectives, and laboratory analytical and preparation procedures.

2.2.7 Site Characterization and Data Collection and Analysis (Task 7)

Auxilio will characterize the CAAA project site per the PWS requirements. Literature review and historical data will be used for site characterization – no on-site visit will be performed as part of this subtask.

Auxilio will review the FFCA, existing permits, and other relevant information. Auxilio will also collect and evaluate discharge water quality data. Auxilio will facilitate a debrief meeting to be held via teleconference to review the collected data and identify any data gaps remaining. Auxilio will prepare meeting minutes and will submit a Summary of Findings Technical Memorandum documenting the results of the data collection survey.

2.2.8 Feasibility Study (Task 8)

Auxilio will evaluate and propose Best Management Practices through a Feasibility Study. Up to four potential alternatives will be evaluated as provided in the PWS. A Technical Working Meeting will be held via teleconference to present the Draft Feasibility Study and solicit additional input.

2.2.9 Remedial Design (Task 9)

Auxilio will develop a remedial design for the sodium sulfide treatment of ponds according to PWS requirements. A Technical Working Meeting will be held via teleconference to present the Draft Remedial Design and solicit additional input.

2.2.10 Treatment System Work Plan (Task 10)

Auxilio will prepare a Treatment System Work Plan in accordance with the design document.

2.2.11 Treatment System Implementation and Monitoring (Task 11)

Auxilio will identify application locations, and CAAA personnel will apply limestone at Pond 2 to alter the pH of the pond water. Auxilio will construct the treatment system, and at least one month following the limestone application, Auxilio will apply sodium sulfide for precipitation of metal sulfides from the pond water. Auxilio will collect water parameters. CAAA staff will collect water samples after 1 day, 2 days, 4 days, and 16 days of application of sodium sulfide. A Complete Treatment System Report will be submitted documenting the field activities and analytical results.

2.2.12 Standard Operation Procedures (Task 12)

Auxilio will develop Standard Operating Procedures (SOP) for implementation of the Best Management Practices and their maintenance, including operations during periods of high flow due to precipitation.

2.2.13 Training of Installation Staff (Task 13)

Auxilio will provide training to CAAA staff in the operation and maintenance of the treatment system. Training will be provided on-site during a one-day training event.

2.2.14 Comprehensive Report (Task 14)

Auxilio will prepare a Comprehensive Report describing all project actions and results and providing recommendations for future applications.

2.2.15 Adaptation of Pilot Design, Implementation, and Monitoring at Ponds 4 and 8 (Option Task 1)

If awarded, Auxilio will adapt the remedial design for Pond 2 and prepare a remedial design for Pond 4 and Pone 8 for the sodium sulfide treatment of ponds according to PWS requirements. A Technical Working Meeting will be held via teleconference to present the Draft Remedial Design and solicit additional input.

Auxilio will identify application locations, and CAAA personnel will apply limestone at Pond 4 and Pond 8 to alter the pH of the pond water. Auxilio will construct the treatment systems, and at least one month following the limestone application, Auxilio will apply sodium sulfide for precipitation of metal sulfides from the pond water. Auxilio will collect water parameters. CAAA staff will collect water samples after 1 day, 2 days, 4 days, and 16 days of application of sodium sulfide. A Complete Treatment System Report will be submitted documenting the field activities and analytical results.

2.3 ASSUMPTIONS

Table 2.1 includes the TO assumptions made for this project:

Table 2.1. TO Assumptions

No.	Task	Assumption	Submitted
1	11	Auxilio assumes that no more than 100 tons of limestone will be applied to alter the pH in the 3 ponds.	Auxilio Proposal submitted 9/15/2022.
2	11	Auxilio assumes that no metals analyses will be performed following limestone applications.	Auxilio Proposal submitted 9/15/2022.
3	11	Auxilio assumes that no more than 10,000 pounds of sodium sulfide will be applied to the pond water.	Auxilio Proposal submitted 9/15/2022.
4	11	Auxilio assumes that metal sulfide precipitants will not be removed but will remain on the floor on the ponds.	Auxilio Proposal submitted 9/15/2022.
5	Option 1	Auxilio assumes that no more than 100 tons of limestone will be applied to alter the pH.	Auxilio Proposal submitted 9/15/2022.

No.	Task	Assumption	Submitted
6	Option 1	Auxilio assumes that no metals analyses will be performed following limestone applications.	Auxilio Proposal submitted 9/15/2022.
7	Option 1	Auxilio assumes that no more than 10,000 pounds of sodium sulfide will be applied to the pond water at each of Pond 4 and Pond 8.	Auxilio Proposal submitted 9/15/2022.
8	Option 1	Auxilio assumes that metal sulfide precipitants will not be removed but will remain on the floor on the ponds.	Auxilio Proposal submitted 9/15/2022.

CHAPTER 3
REQUIREMENTS MANAGEMENT

3.1 PROJECT DELIVERABLES

Successful completion of TO requirements is measured through submittal and acceptance of project deliverables. The following project deliverables are required as part of this TO as awarded on September 30, 2022:

Table 3.1. Project Deliverables

Task	Deliverable
1	Kickoff Meeting Agenda Kickoff Meeting Minutes
2	Regulatory Support Meeting Minutes
3	Project Management Plan Monthly Project Management Reports Contractor Manpower Reporting
4	Contractor Quality Control Plan
5	Health and Safety Plan / Accident Prevention Plan
6	Sampling and Analysis Plan
7	Site Characterization Memorandum Data Collection Debrief Meeting Minutes
8	Feasibility Study
9	Remedial Design
10	Treatment System Work Plan
11	Complete Treatment System Report
12	Standard Operating Procedures
13	Training Materials
14	Comprehensive Report
Option 1	Remedial Design Complete Treatment System Report

USACE is anticipated to provide a consolidated set of comments for each document. Responses to comments will be prepared and incorporated into the subsequent version of the document.

Auxilio will maintain project-related information to ensure that pertinent documentation and data are available for project reviews and to provide a record of the approach to support final decisions. Documents generated by Auxilio will be maintained in multimedia form. Final electronic document files will be in text-searchable PDF format.

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CHAPTER 4
RESOURCE MANAGEMENT

4.1 PROJECT TEAM

Auxilio is the Prime Contractor for this TO. Founded in 2009, Auxilio is an Economically Disadvantaged Women-Owned Small Business (EDWOSB), certified by the U.S. Small Business Administration since November 2, 2011. Headquartered in Denver, Colorado, Auxilio provides Architect-Engineer (A-E) Hazardous, Toxic, and Radioactive Waste (HTRW)/Environmental Services, Environmental Consulting Services, Engineering Services, Remediation Services, and Unexploded Ordnance Support Services for both Government and commercial clients. Since its inception, Auxilio has successfully performed over $25M in environmental consulting services contracts for Federal clients, including the USACE Tulsa, Omaha, Louisville, Fort Worth, Sacramento, and Huntsville Districts; the U.S. Army Environmental Command; Beale Air Force Base; the Pueblo Chemical Depot; the U.S. Geological Survey; and the National Institute of Standards and Technology.

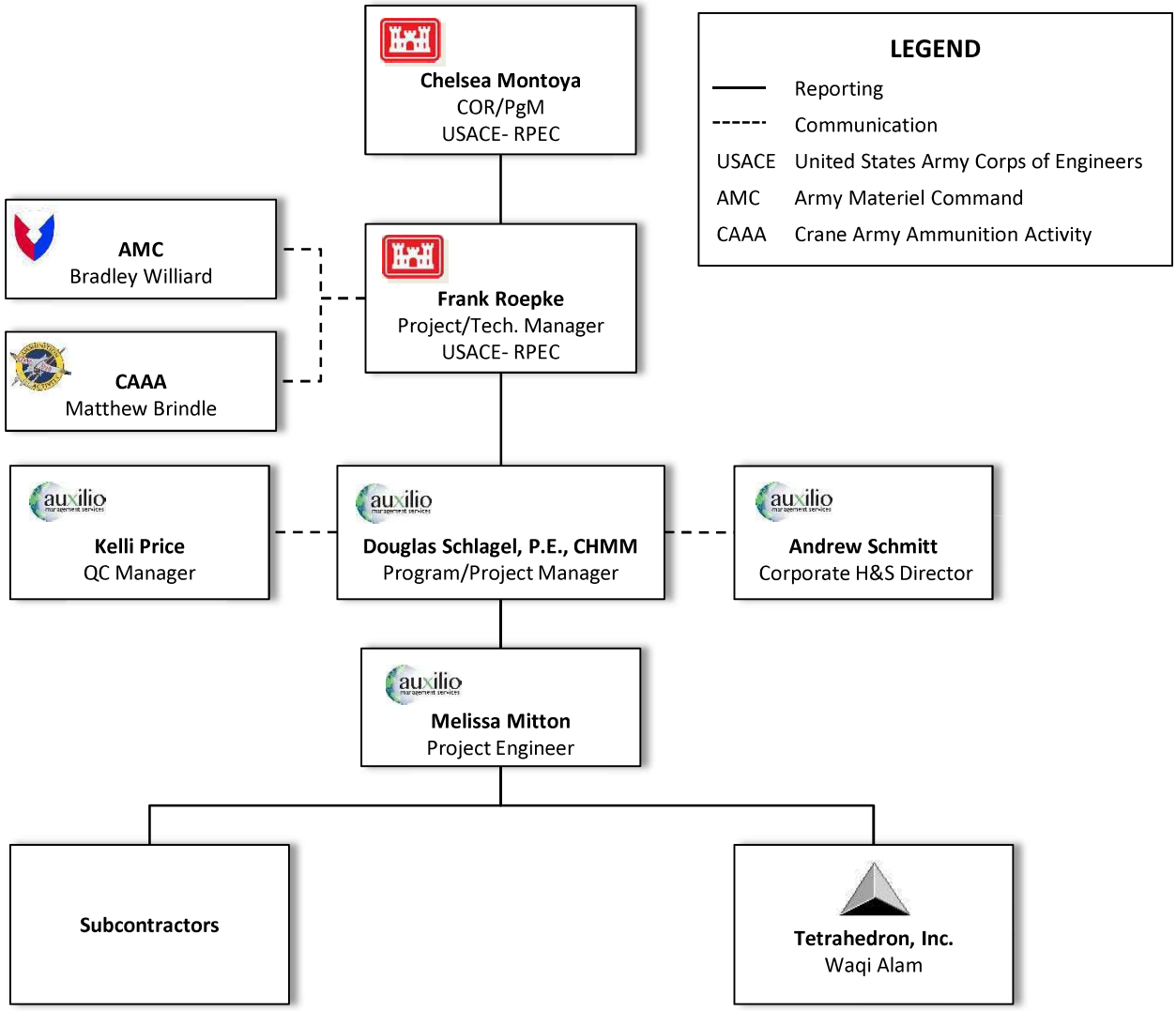
As necessary, Auxilio may subcontract specialty services in support of this TO. Auxilio will subcontract services to Tetrahedron, Inc. as they have provided similar services previously at CAAA and are familiar with project requirements.

Auxilio has proposed key personnel for execution of this TO. Our Program/Project Manager (PgM/PM) is Mr. Douglas Schlagel, P.E., PMP, CHMM. Mr. Schlagel is employed by Auxilio and has extensive experience managing programs and contracts with USACE and other Government clients, including several environmental sampling and monitoring projects. Mr. Schlagel will serve as the single POC for the TO, and is responsible for the management of work, approved plans, and Federal, State, and local laws and regulations.

4.2 ORGANIZATION AND INTEGRATION

Auxilio Team personnel will work with the USACE RPEC, USACE Fort Worth District, CAAA personnel, and other project stakeholders to achieve project objectives. The organizational chart for the project is presented in Figure 4-1. This organizational chart depicts the integration of our Team across the multiple project tasks within the TO, including lines of reporting and communication.

Figure 4.1. Organizational Chart



4.3 TECHNICAL INTERFACES

The contact information for personnel responsible for ensuring the execution of the project is provided in Table 4-1, including names, titles, addresses, and contact information. Each position within the Team organization carries with it a defined set of responsibilities and authorities. The roles and responsibilities of key Auxilio Team personnel are specified below.

Table 4.1. Points of Contact

Name/Role	Affiliation	Telephone	E-mail
Chelsea Montoya USACE COR/PgM	USACE	505.382.0310	chelsea.r.montoya@usace.army.mil

Name/Role	Affiliation	Telephone	E-mail
Frank Roepke USACE PM/Technical Manager	USACE	918.669.7444	frank.roepke@usace.army.mil
Matthew Brindle CAAA Environmental Coordinator	CAAA	812.854.8625	matthew.d.brindle.civ@army.mil
Bradley Williard AMC Support	AMC	256.450.8252	bradley.s.williard.civ@army.mil
Kelli Price President/CEO	Auxilio	720.327.1068	kprice@auxiliomanagement.com
Douglas Schlagel PgM/PM	Auxilio	303.999.2145	dschlagel@auxiliomanagement.com
Melissa Mitton, P.E. Project Engineer	Auxilio	303.999.2160	mmitton@auxiliomanagement.com
Waqi Alam Subcontractor	Tetrahedron	410.837.0512	waqi.alam@tetrahedron-inc.com

As shown in Figure 4-1, the Auxilio PgM/PM will be responsible for overall project management and will be the primary POC for the USACE. The PgM/PM will manage and integrate Team members, oversee the preparation of reports, and oversee cost and schedule control.

The Management Team is supported by independent Safety and Health and Quality Control (QC) reporting lines. Auxilio maintains a staff of professionals to provide the project with independent oversight, guidance, and audit resources. These personnel will conduct safety and health and QC inspections or surveillance to evaluate if operations are being conducted in accordance with plans, USACE requirements, Occupational Safety and Health Administration (OSHA) regulations, and other applicable requirements.

The Management Team also includes personnel for contract administration and project controls to assist in project execution. Project execution is directed by the Management Team located in Auxilio's Denver, Colorado office.

- **Program/Project Manager**: The PgM/PM, Douglas Schlagel, P.E., PMP, CHMM, is responsible for overall management of the Program and ensuring contractual requisites, such as cost, schedule, technical, and quality goals, are met. The PgM/PM develops and enforces systems for administrative QC and TO closeout and may conduct status meeting with the USACE Contracting Officer's Representative (COR)/PM as necessary. The PgM/PM also has overall responsibility for completion of the project in accordance with contract and regulatory requirements. The PgM/PM is responsible for planning and oversight of the project activities and acts as an interface between the field staff, subcontractors and USACE PM. The PgM/PM has ultimate responsibility for the implementation of the project tasks and the safety and health of project workers in accordance with TO budget/schedule/safety/quality goals and will communicate project status to the USACE. The PgM/PM is responsible for development of project planning documents, field activities, sample analysis and data validation, and reporting, cost and schedule reporting.
- **Quality Control (QC) Manager**: The QC Manager, Kelli Price, supports the PgM/PM and project staff in planning and implementing USACE QC methods and develops QC Plans and reviews to

ensure compliance. The QC Manager will also inspect operating procedures for compliance with the QCP.

- **Corporate Health and Safety (H&S) Director**: The Corporate H&S Director is responsible for Auxilio's corporate health and safety needs. The Corporate H&S Director provides occupational safety and health support to the Site Safety and Health Officer (SSHO) and other project personnel.
- **Project Engineer**: The Project Engineer, Melissa Mitton, P.E., is responsible for overseeing project field tasks (including elements of subcontractor management) and project document development. The Project Engineer will provide Quality Control review of engineering calculations prior to field implementation and document preparation. The Project Engineer reports to the Program/Project Manager.

Subcontracts will be prepared by the PgM/PM to reflect detailed scope, performance objectives, and specifications. Provisions of the basic contract (including specified FAR clauses, safety and health requirements, and Quality Assurance [QA]/QC requirements) will be 'Flowed-down' to the subcontractor. Other provisions will install strict procedures for implementing change orders, expediting disputes, and implementing corrective actions. The performance baseline will be developed jointly with key Team subcontractors, and discrete tasks and milestones will be formally entered into the management control system. Performance against the fiscal and project schedule baseline will be monitored informally by the PgM/PM on a weekly basis, and formally each month as part of the total project status review.

4.4 PHYSICAL RESOURCES

Physical resources may also be obtained and/or expended during execution of this TO. Physical resources may include the following:

- Travel Resources
- Pond Treatment Chemicals
- Sampling Equipment and Containers
- Hardcopy Deliverables

CHAPTER 5
SCHEDULE MANAGEMENT

The Base TO period of performance is 18 months from the award date, through March 29, 2024. If Option Task 1 is awarded, the period of performance will be extended by 12 months.

The Auxilio PgM/PM will regularly monitor project schedule performance against the established baseline.

5.1 INTEGRATED MASTER SCHEDULE

A complete activity-based schedule that fully supports the technical approach and outlines the due dates for all milestones is included as Figure 5-1. The project schedule will be updated and submitted with the Monthly Project Management Report as necessary when significant changes are made. The schedule will include all events that impact the project and will be updated for actual starts and finishes.

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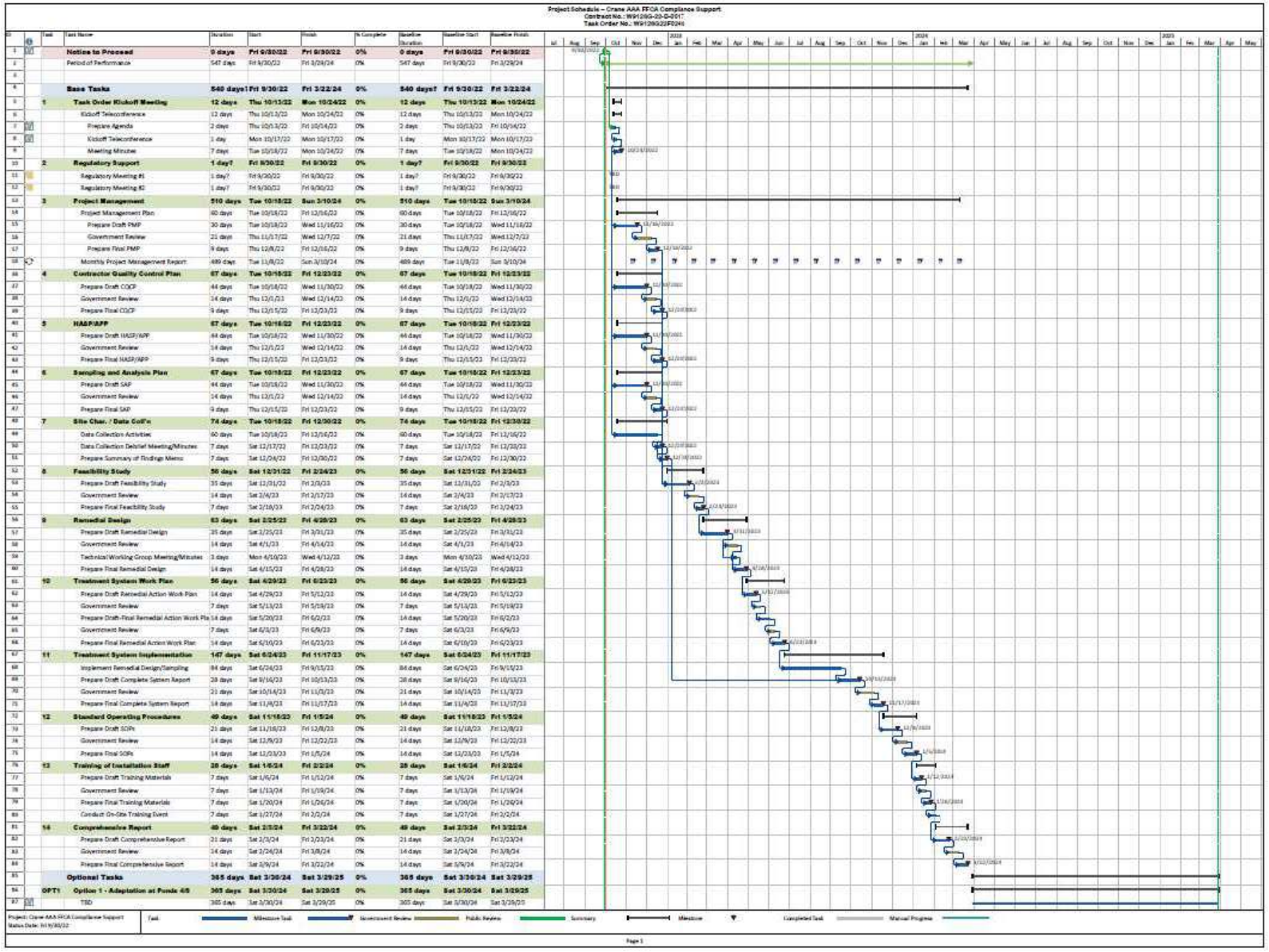
Figure 5-1. Integrated Master Schedule



Attachment (a)

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Attachment (a)

CHAPTER 6
COST MANAGEMENT

This TO is a fixed price TO with project milestones to be invoiced upon completion.

The COR, or designee, will be responsible for contract management, inspection, oversight, review, and approval activities. Milestones, as project tasks, were identified in Auxilio's proposal (Auxilio 2022) and will be used to track project progress. The payment schedule for major task and subtask milestones is summarized in the Milestone Payment Schedule, included below. Certification of payment and project completion by the USACE is contingent upon Auxilio performing in accordance with the terms and conditions of the contract, the PWS, and associated amendments and options.

The Auxilio PgM/PM will regularly monitor project cost performance with the established baseline.

6.1 PROJECT TASKS

The following Milestone Payment Schedule (without cost) was submitted as part of Auxilio's proposal and forms the basis for invoicing costs to the Government for the TO.

Table 6.1. Milestone Payment Schedule

CLIN	Milestone Description	Expiration Date to Exercise Option	Unit of Issue	Quantity
TASK 1 – KICK-OFF MEETING				
0001AA	Kick-Off Meeting Agenda	At Award	JB	1
0001AB	Draft Kick-Off Meeting Minutes	At Award	JB	1
0001AC	Final Kick-Off Meeting Minutes	At Award	JB	1
TASK 2 – REGULATORY SUPPORT				
0002AA	First Regulatory Meeting Minutes	At Award	JB	1
0002AB	Second Regulatory Meeting Minutes	At Award	JB	1
TASK 3 – PROJECT MANAGEMENT				
0003AA	Draft PMP	At Award	JB	1
0003AB	Final PMP	At Award	JB	1
0003AC	Monthly Project Management Reports	At Award	EA	18
TASK 4 – QUALITY CONTROL PLAN				
0004AA	Draft CQCP	At Award	JB	1
0004AB	Final CQCP	At Award	JB	1
TASK 5 – HASP/APP				
0005AA	Draft HASP/APP	At Award	JB	1
0005AB	Final HASP/APP	At Award	JB	1
TASK 6 – SAMPLING AND ANALYSIS PLAN				
0006AA	Draft SAP	At Award	JB	1
0006AB	Final SAP	At Award	JB	1
TASK 7 – SITE CHARACTERIZATION/DATA ANALYSIS				
0007AA	Site Characterization Final Memorandum	At Award	JB	1
0007AB	Data Collection and Analysis Meeting Minutes	At Award	JB	1
TASK 8 – FEASIBILITY STUDY				
0008AA	Draft Feasibility Study	At Award	JB	1
0008AB	Final Feasibility Study	At Award	JB	1

CLIN	Milestone Description	Expiration Date to Exercise Option	Unit of Issue	Quantity
TASK 9 – REMDIAL DESIGN				
0009AA	Draft Remedial Design	At Award	JB	1
0009AB	Final Remedial Design	At Award	JB	1
TASK 10 – TREATMENT SYSTEM WORK PLAN				
0010AA	Draft Treatment System Work Plan	At Award	JB	1
0010AB	Final Treatment System Work Plan	At Award	JB	1
TASK 11 – TREATMENT SYSTEM IMPLEMENTATION AND MONITORING				
0011AA	Draft Complete Treatment System Report	At Award	JB	1
0011AB	Final Complete Treatment System Report	At Award	JB	1
TASK 12 – STANDARD OPERATING PROCEDURES				
0012AA	Draft Standard Operating Procedures	At Award	JB	1
0012AB	Final Standard Operating Procedures	At Award	JB	1
TASK 13 – TRAINING OF INSTALLATION STAFF				
0013AA	Draft Training Materials	At Award	JB	1
0013AB	Final Training Materials	At Award	JB	1
TASK 14 – COMPREHENSIVE REPORT				
0014AA	Draft Comprehensive Report	At Award	JB	1
0014AB	Final Comprehensive Report	At Award	JB	1
OPTION TASK 1 – REMEDIAL DESIGN PONDS 4 AND 8				
1001AA	Monthly Project Management Reports		EA	18
1001AB	Draft Remedial Design		JB	1
1001AC	Final Remedial Design		JB	1
1001AD	Draft Complete Treatment System Report		JB	1
1001AE	Final Complete Treatment System Report		JB	1

CHAPTER 7
QUALITY MANAGEMENT

7.1 CONTRACTOR QUALITY MANAGEMENT PLAN

To ensure the success of the project and meet client goals, work performed under this contract will adhere to Auxilio's comprehensive quality management system and project-specific requirements. This system provides relevant QA/QC procedures from project planning through implementation, delivery, and customer satisfaction assessment.

Auxilio prides itself on providing high-quality products and services that meet project scope, within a specified budget and schedule, and with a focus on exceeding client expectations. We understand that under this TO, our performance will be measured not only on technical completion, but also in the achievement of task-specific quality objectives. Therefore, it is our goal to meet the contract performance requirements while attaining the highest performance rating for each evaluation criteria.

The Auxilio Team will perform a multi-level QC review of project deliverables prior to submittal. These reviews will be performed by a variety of subject matter experts and will be documented on QC review forms.

The Auxilio PgM/PM or designee will work directly with the USACE and other key stakeholders to develop project expectations and ensure that program requirements are met. Project plans and deliverables will be reviewed to ensure they meet contractual requirements. Changes to documents will be communicated to project personnel.

7.2 PERFORMANCE OBJECTIVES

Performance objectives for this TO are described in Chapter 2 of this PMP and in Table 7.1.

Table 7.1. TO Performance Objectives

Task	Task/Option Description	Performance Objective	Performance Standard
1	Task Order Kick-Off Meeting	Complete Kickoff Meeting	Government review and approval through the USACE COR.
2	Regulatory Support	Attend up to 2 Regulatory Support Meetings	Government review and approval through the USACE COR.
3	Project Management	Complete PMP Complete Monthly Project Management Reports Complete Contract Manpower Report	Government review and approval through the USACE COR.
4	CQCP	Complete CQCP	Government review and approval through the USACE COR.

Task	Task/Option Description	Performance Objective	Performance Standard
5	HASP/APP	Complete HASP/APP	Government review and approval through the USACE COR.
6	SAP	Complete SAP	Government review and approval through the USACE COR.
7	Site Characterization	Characterize Site and Complete Site Characterization Memorandum	Government review and approval through the USACE COR.
7	Data Collection and Analysis	Collect Data, Analyze Data, and Complete Debrief Meeting	Government review and approval through the USACE COR.
8	Feasibility Study	Complete Feasibility Study	Government review and approval through the USACE COR.
9	Remedial Design	Complete Remedial Design	Government review and approval through the USACE COR.
10	Treatment System Work Plan	Complete Treatment System Work Plan	Government review and approval through the USACE COR.
11	Treatment System Implementation and Monitoring	Install Treatment System Operate Treatment System, including Sampling and Analysis Complete Treatment System Report	Government review and approval through the USACE COR.
12	Standard Operating Procedures	Complete Standard Operating Procedures	Government review and approval through the USACE COR.
13	Training of Installation Staff	Complete Training Materials Provide Training to Staff	Government review and approval through the USACE COR.
14	Comprehensive Report	Complete Comprehensive Report	Government review and approval through the USACE COR.
Option 1	Adaptation of Pilot Design, Implementation, and Monitoring at Ponds 4 and 8	Complete Remedial Design Install Treatment System Operate Treatment System, including Sampling and Analysis Complete Treatment System Report	Government review and approval through the USACE COR.

CHAPTER 8
SAFETY AND HEALTH MANAGEMENT

Safety and health are paramount during execution of projects. Auxilio places the highest priority on the safety and health of our employees and subcontractors, both in the field and in the office. Safety and health compliance is one of the critical performance metrics that Auxilio measures during each project. It is essential that safety and health be considered from initial planning to work execution and completion to ensure the corporate goal of 100% safety, 100% of the time. All project personnel have the authority and responsibility to stop unsafe work and to conduct work activities in compliance with established safety and health procedures.

Auxilio has prepared an Accident Prevention Plan addressing the safety and health aspects of this specific project.

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CHAPTER 9
COMMUNICATIONS MANAGEMENT

This chapter describes the coordination and communication with stakeholders that is necessary to ensure the successful completion of the TO. Key stakeholders will be kept informed of project status, existing or potential issues, and changes required to manage the project. The Auxilio Team participated in a Kickoff Meeting conducted via teleconference on October 17, 2022 (refer to Section 2.2.1).

9.1 PROJECT COMMUNICATIONS

Project communications may take on several forms and may be recurring or as needed for a specific issue. All associated USACE RPEC and Fort Worth District personnel, all associated CAAA personnel, and the Auxilio PgM/PM (Douglas Schlagel) will be copied on all project correspondence.

9.1.1 Monthly Project Management Reports

Auxilio will provide monthly status reports to update the USACE and CAAA personnel on the progress and status of the project. Monthly Project Management Reports will provide summary information, including milestone payment summaries, activities conducted, and progress achieved under each task, and technical, schedule, regulatory, or other project-related issues.

9.1.2 Telephone Conferences / Informal Meetings

Team teleconferences and meetings may be conducted as needed. Minutes of telephone conferences and meetings will be documented and summarized in the Monthly Project Management Reports.

Auxilio will provide a written record of discussions, verbal directions, and telephone conversations on significant matters relative to the PWS. These "Conversation Records" will identify participating personnel, subject discussed, and any conclusions reached.

9.1.3 Public Involvement

Auxilio will not make available or publicly disclose any data or reports generated under this contract unless specifically authorized by the USACE PM or designee. If any person or entity requests information about the subject of this project or work being conducted, Auxilio will refer them to the USACE PM, or designee. Reports and other information generated under this contract are the property of the Government, and distribution to any other source by Auxilio is prohibited unless specifically authorized by the USACE PM or designee.

9.2 STAKEHOLDERS

Stakeholders identified for this TO include:

- USACE RPEC, USACE Fort Worth District
- CAAA personnel
- Navy Surface Warfare Center, Crane Division
- Regulators
- Auxilio Management Services
- Subcontractors

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CHAPTER 10
RISK MANAGEMENT

The Auxilio Team will manage risk throughout execution of the TO. Potential risks and mitigation techniques are presented in Table 10.1, as well as an evaluation of the schedule and identification of areas to accelerate the project's trajectory. The following risk matrix identifies the project risks currently identified. The risk matrix will be maintained throughout the project.

Table 10.1. Risk Matrix

ID	Task	Risk	Mitigation
1	ALL	Schedule provided in the FFCA is unattainable	Auxilio/CAAA will monitor the project schedule frequently. Should the project schedule begin to have potential impact on the FFCA schedule, CAAA will communicate with Navy for further communications with USEPA Region 5 for resolution.
2	11	Delays acquiring supplies for treatment system implementation	Auxilio will attempt to order supplies for Task 11 early in order to offset any potential delays with supply acquisition. Should schedule delays occur, Auxilio will communicate with stakeholders and attempt to recover schedule delays.

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CHAPTER 11
PROCUREMENT MANAGEMENT

Auxilio may utilize competitively selected specialty subcontractors for specific tasks and will base selection on geographical location, ability to adhere to a schedule, budget, and past performance. Auxilio has a well-established purchasing system and has numerous pre-qualified specialty subcontractors for regularly utilized services.

All contractual arrangements, pre-approvals, solicitations, and subcontract management will be processed through the Auxilio PgM/PM, who will be assisted by Auxilio's Senior Contracts Manager. Each subcontracting agreement will include clauses that will flow down from prime contract requirements to our subcontractors to ensure that contract requirements will be met. Provisions of the subcontract will also include safety and health, QA/QC, and insurance requirements. The QC Manager and Safety and Health Manager (SHM) monitor and enforce task-specific safety and health and QC requirements for assigned staff and subcontractors.

The Auxilio PgM/PM will monitor subcontractor performance with the fiscal and project schedule baseline on a weekly basis. The Auxilio PgM/PM is responsible for monitoring and administering technical, schedule, and cost performance of subcontractor work.

Other Direct Costs required by individual tasks will be procured based on need and inspected for quality by the Auxilio PgM/PM or designee.

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CHAPTER 12
SECURITY MANAGEMENT

Auxilio will safeguard project data and deliverables on our corporate networks, which are routinely managed and backed up regularly.

Team staff needing to access Department of Defense (DoD) installations will be subject to installation access requirements, including background checks.

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CHAPTER 13
CHANGE CONTROL

Auxilio will execute project activities and meet project objectives as stated in the PWS. Only the USACE KO may direct changes to the PWS. Any potential scope changes identified by Auxilio will be communicated to the USACE PM or designee. A Change Control Log will be maintained by the Auxilio PgM/PM to track project changes from identification through concurrence and resolution.

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CHAPTER 14
OTHER CONSIDERATIONS

14.1 LESSONS LEARNED

Project execution may identify successes or issues that are relevant for future projects or similar scope. A Lessons Learned Log will be maintained throughout the project, and lessons learned will also be communicated in Monthly Project Management Reports.

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CHAPTER 15
REFERENCES

Auxilio 2022. Revised Response to Task Order Proposal under Contract No. W9126G-22-D-0017, Task Order No. TBD. CWA and FFCA Services for Crane Army Ammunition Activity, IN. 26 September.

USACE 2022. Award Document and Performance Work Statement, Implementing Federal Facility Compliance Agreement with EPA Related to Clean Water Act, Crane Army Ammunition Activity, Indiana. 30 September.

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Attachment B

DEPARTMENT OF THE NAVY
NAVAL SURFACE WARFARE CENTER
CRANE DIVISION
300 HIGHWAY 361
CRANE INDIANA 47522-5001

IN REPLY REFER TO:

5090
Ser 1023/016
26 Feb 2024

United States Environmental Protection Agency
Region 5
Mr. Ray Cullen
77 West Jackson Boulevard
Chicago, IL 60604-3590

Dear Mr. Cullen:

SUBJECT: NSWC CRANE FEDERAL FACILITIES COMPLIANCE AGREEMENT
FY24 FIRST QUARTER STATUS REPORT

Naval Surface Warfare Center, Crane Division is submitting this report as the FY24 First Quarter Status Report of the Federal Facilities Compliance Agreement (FFCA).

If you require any further information, my point of contact is Brandy Ranard, telephone 812-854-3382 or email brandy.s.ranard.civ@us.navy.mil.

Sincerely,

JOHNSON.DOUGLAS.G.1096383742 Digitally signed by JOHNSON.DOUGLAS.G.1096383742 Date: 2024.02.26 16:01:51 -05'00'

DOUGLAS G. JOHNSON
Environmental Protection Manager
By direction of the
Commanding Officer

Enclosures: 1. FY24 First Quarter Status Report
2. Certification Statement

Copy to:
NAVSEA (R. Tobe, C. Parana)
NAVFAC (T. Osmon)
CAAA (M. Brindle)

FFCA FY24 First Quarter Status Report

Attachments (A) WWTP Flow Meter Installation Report
(B) Mobile Treatment Plant Draft SOP
(C) CAAA FFCA Schedule Tracking
(D) Limestone Photographs

This status report summarizes the actions taken between October 2023 and December 2023 to meet the milestones required to remain in compliance with the Federal Facilities Compliance Agreement (FFCA), signed on 03 October 2022.

I. Lift Station 17
   a. There have been no sewer system overflows at Lift Station 17 since January 2020.

II. Wastewater Treatment Plant (WWTP) Flow Meter
   a. The final inspection of the WWTP Flow Meter project was completed and accepted on 27 DEC 23.
   b. The WWTP completion report (Attachment A) was submitted to the EPA on 07 FEB 24
   c. There have been no issues with the operation of the new flow meter from 27 DEC 23 to present.

III. Sedimentation Ponds
   a. Tetrahedron made a site visit to NSA Crane on 30 October 2023 to build the mobile treatment unit. A trial run was made with pond water in order test the pump and hoses for leaks and proper operation. Adjustments were made to the original set-up and then a trial run was made using the Sodium Sulfide and Sodium Hydroxide mixture. Visually, the treatment seemed to mix well with the pond water, as a chemical reaction was apparent, picture below. A pH sample was collected with a result of 4.6 s.u. and remained the same throughout the day and days following treatment. It was determined that the pH should be above 6.0 s.u. before adding the chemical mixture. No water was discharged, and the decision was made to wait for precipitation to fill the pond to a higher level while running through new limestone channels increasing the pH to the desired level. Once these conditions are met, Tetrahedron will return to perform another trial run of the mobile treatment unit.

Sodium Sulfide Mixing Zone

b. Auxillio submitted the draft Standard Operating Procedure (SOP) for the new mobile treatment unit and a modified sampling and analysis plan for that SOP, see Attachment B.
c. Monthly Reports submitted by Auxilio Management Services included tracking of the original schedule submitted to the EPA regarding the FFCA. This schedule is included as Attachment C.
d. New limestone channels were installed above Ponds 2, 4 and 8 in November 2023, and can be seen in Attachment D. Riprap dams and limestone channels will be inspected and maintained every 6 months.

Attachment (a)
WWTP Flow Meter Installation Report

DEPARTMENT OF THE NAVY
NAVAL SURFACE WARFARE CENTER
CRANE DIVISION
300 HIGHWAY 361
CRANE INDIANA 47522-5001

IN REPLY REFER TO:

5090
Ser 1023/012
07 Feb 2024

United States Environmental Protection Agency
ATTN: Ray Cullen
Region 5
77 West Jackson Boulevard
Chicago, IL 60604-3590

SUBJECT: Wastewater Treatment Plant Flow Meter Installation Report

Naval Surface Warfare Center, Crane Division (NSWC Crane) is submitting the attached report in response to the Federal Facilities Compliance Agreement (FFCA). This report is to confirm final installation and operation of the Wastewater Treatment Plant flow meter.

If you require any further information, my point of contact is Brandy Ranard, telephone 812-854-3382 or email brandy.s.ranard.civ@us.navy.mil.

Sincerely,

JOHNSON.DOUGLAS.G.1096383742 Digitally signed by JOHNSON.DOUGLAS.G.1096383742 Date: 2024.02.07 09:08:15 -05'00'

DOUGLAS G. JOHNSON
Environmental Protection Manager
By direction of the
Commanding Officer

Enclosures: 1. Wastewater Treatment Plant Flow Meter Installation Report
2. Certification Statement

Copy to:
NAVSEA (R. Tobe, C. Parana)
NAVFAC (T. Osmon)

Wastewater Treatment Plant Flow Meter Installation Report

Attachments (A) Statement of Work
(B) Purchase Request
(C) Turnover and Acceptance of Contract

Requirement

Naval Surface Warfare Center Crane Division (NSWC) Crane is providing the following information in response to paragraph 40 of the Federal Facility Compliance Agreement between the U.S. Department of The Navy and The U.S. Environmental Protection Agency. Below is the timeline of the installation process and costs associated with the installation and operation of the flow meter for the Wastewater Treatment Plant (WWTP).

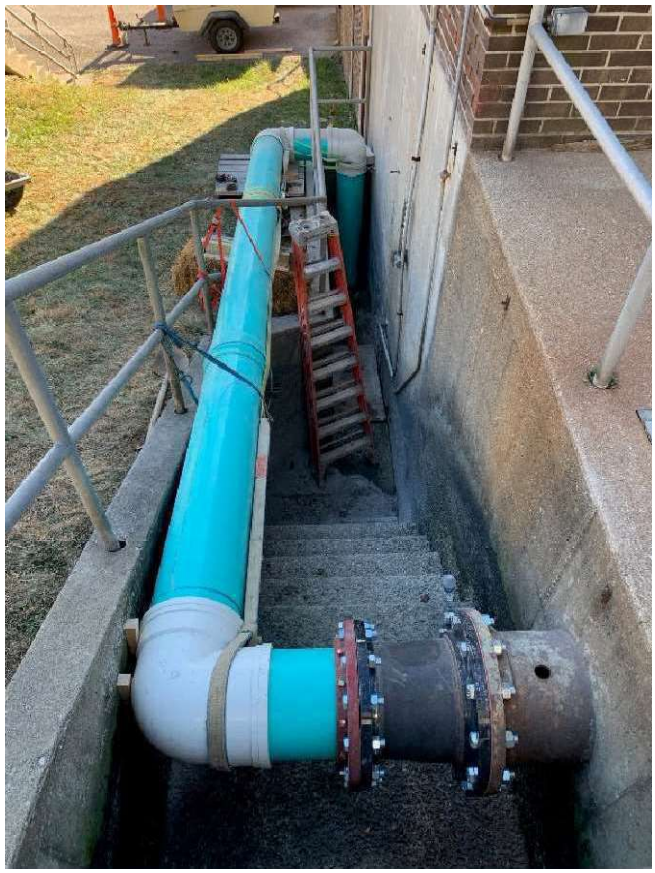
Timeline

- A statement if work was issued on March 24, 2023, and is listed as Attachment A in this report.
- The purchase request and work order for the WWTP flow meter opened on 19 MAY 23 and can be seen in Attachment B.
- Work began on 28 NOV 23 after receiving material and equipment for the project.
- On 22 DEC 23, the new flow meter was online and operating.
- The final inspection of the flow meter was completed on 27 DEC 23 and the flow meter has been operational since that time. The turnover and acceptance of contract is included as Attachment C.

Associated Costs

- Capital and Cost – The total cost of the equipment was $277,668. This amount is for a new Parshall flume and flow meter, as well as the rework of the area between the flume and cascade steps to increase the linear distance of laminar flow.
- Engineering and Labor Costs– Design of the flow meter replacement project was $24,913.43 and Post Construction Award Services was $7,744.25. This includes submittal review, RFI answers and one design change based on field conditions total cost of this portion was $32,658.
- Annual Operation and Maintenance Costs – Anticipated costs on an annual basis for preventative maintenance and operation of equipment are estimated to be $2,500 per year.
- Total Cost – The total cost of this project including the next year of operation is $340,326.

Photos of Bypass During Construction



Photos of New Flume and Flow Meter

March 24, 2023 eProject #1742646

Statement of Work for:

CNIC Waste Water Treatment Plant (WWTP) Relocate Flow Meter

This project is a design-bid-build project to perform relocation and replacement of the Parshall flume and flow meter at Naval Support Activity Crane. The flume and flow meter are located at the waste water treatment plant (B3049).

The current effluent flow measurement is through a Parshall flume located just outside the tertiary filter building. A 12-inch pipe discharges flow from the filter building onto the cascade steps. The cascade steps provide the turbulence needed to boost dissolved oxygen content in the tertiary filter effluent. The cascaded flow passes through a Parshall flume where an Endress Hauser FMU90 ultrasonic level sensor unit measures depth, which is used to calculate flow. This flow input is received through an analog input in the programmable logic controller (PLC) located in the lab area. Through an analog output from the PLC in the headworks area, the flow signal is sent to the UV system, which then switches the UV lamps on/off and sets the intensity as needed to maintain the needed level of disinfection. The 12-inch effluent pipe (buried ductile iron pipe) discharges the effluent from the Parshall flume into the UV channel for disinfection, and the disinfected UV effluent is subsequently discharged into Boggs Creek.

At the most recent regulatory inspection (June 14, 2019), the Indiana Department of Environmental Management (IDEM) and United States Environmental Protection Agency (USEPA) cited a deficiency and concern regarding the effluent flow measurement from the NSA Crane WWTP. IDEM and USEPA have concerns about the Parshall flume and ultrasonic meter being in an area with turbulent flow and potentially providing inaccurate measurements to the UV system, which in turn could result in insufficiently disinfected water. The flow meter must measure flow at a location before the UV system, to allow the UV system to properly calibrate its treatment for the flow and volume that passes through. Field constraints are present that complicate the relocation of the meter (that is, the distance of the exposed flume is very short and very turbid, and the effluent pipe between the flume and UV system is a buried ductile iron pipe). There are many major utilities either crossing or in the vicinity of this effluent pipe.

A design package has been completed to remove the existing flume and flow meter. They will be replaced by a new Parshall flume and flow meter. The area between the flume and cascade steps will be reworked to increase the linear distance of laminar flow in order to provide a more accurate reading for the flow meter.

This project includes removal and replacement of the WWTP flow meter and Parshall flume per plans and specifications included with RFP. New metering equipment shall be connected to existing monitoring systems per plans and specifications. Installation of a temporary pump around to allow WWTP to continue operating while construction is ongoing, per plans and specifications. Erosion and sediment control shall also be included per the plans and specifications.

NAVFAC is not currently aware of any permits that required to perform this work. IDEM has indicated that a new WWTP construction permit will not be required based on this work, nor a revision to the NPDES permit.

PURCHASE REQUEST

1. THIS REQUEST MUST BE ACCEPTED ON A DIRECT CITATION BASIS ONLY AND IS SUBJECT TO THE CONDITIONS LISTED ON THE REVERSE SIDE. Serial Number 14626725	2. DOCUMENT NUMBER N6101823PR00Q85

3. REFERENCE NUMBER	4. FUNDS EXPIRE ON	5. DMS RATING	6. PRIORITY	7. DATE REQUIRED	8. AMENDMENT NO.
	2023/09/30			2023/05/19	1

9. FROM	10. FOR DETAILS CONTACT:
COMMANDER NAVY INSTALLATIONS 1510 GILBERT ST NORFOLK, VA 235112737	FINANCIAL:L. PETERSON 757-444-0518 TECHNICAL:G. KING 757-645-8070

11. TO:		12. MAIL INVOICES TO:
UIC N40085	COMMANDING OFFICER - NAVFAC MID-ATLANTIC 9324 VIRGINIA AVENUE, BLDG Z140 NAVAL FACILITIES ENGINEERING COMMAND NORFOLK, VA 23511-3095 US	

13. ACCOUNTING DATA TO BE CITED ON RESULTING CONTRACTS

A. ACRN	B. APPROPRIATION	C. SUB-HEAD	D. OBJ. CLASS	E. BU. CONTROL	F. SA	G. AAA	H. TT	I. PAA	J. COST CODE	K. AMOUNT
AA	1731804	52FA	257	00520		056521	2D	STDNCH	01823PR00Q85	29,914.00

14. AMOUNTS WILL NOT BE EXCEEDED IN THE OBLIGATION DOCUMENT	L. TOTAL THIS DOCUMENT	29,914.00
	M. CUMULATIVE TOTAL	277,668.00

PROCUREMENT BY CONTRACT OF THE FOLLOWING ITEMS IS REQUESTED
THESE ITEMS [ ]ARE [X]ARE NOT INCLUDED IN THE INTERSERVICE SUPPLY SUPPORT PROGRAM AND
REQUIRED INTERSERVICE SCREENING [X]HAS [ ]HAS NOT BEEN ACCOMPLISHED

A. ACRN	B. ITEM NO.	C. FSC	D. DESCRIPTION (NAT.STOCK NO.,SPEC.AND/OR DRAWING NO.,ETC.)	E. QUANTITY	F. UNIT	G. ESTIMATED UNIT PRICE	H. ESTIMATED AMOUNT
AA				0	EA	Approx 277,668.00	29,914.00

ACQR Number: 6013069

AA 922-25.7100 Equipment Maintenance by Contract

AA J045 MAINTENANCE AND REPAIR OF PLUMBING, HEATING AND WASTE DISPOSAL EQUIPMENT

ACRN FIP (WCI/BEA/BESA/FC/SOCC/CAC/SIC/JNLU/RON/RBC)
AA FIP: N52263/ST/DN/CH/2570/C12S////
WCI: NAVY REGION MID ATLANTIC BEA: SUSTAINMENT BESA: NSA CRANE IN

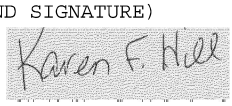
AMD TO INCREASE FUNDS IAO $29,914.00 PER APPROVED UPOBFY23-CNRMA-16575 DUE TO UNFORESEEN COST BASED ON n old as-built drawings. The A/E did not field verify dimensions of the existing concrete structure and the existing dimensions differed from what was shown on those old as-built drawings.

FY23 FUNDING PROVIDED TO RELOCATE WASTE WATER TREATMENT PLANT FLOW METER, NAVAL SUPPORT ACTIVITY CRANE INDIANA

PE: 0202578N

16. SEE ATTACHED PAGES FOR DELIVERY SCHEDULES, PRESERVATION AND PACKAGING INSTRUCTIONS, SHIPPING INSTRUCTIONS AND INSTRUCTIONS FOR DISTRIBUTION OF CONTRACTS AND RELATED DOCUMENTS.	I. GRAND TOTAL

17. TRANSPORTATION ALLOTMENT (Used if FOB Contractor's plant)

18. I CERTIFY THAT THE FUNDS CITED ARE PROPERLY CHARGEABLE FOR ITEMS REQUESTED.	AUTHORIZING OFFICIAL (NAME, TITLE AND SIGNATURE) KAREN F. HILL SUPERVISORY FINANCIAL MANAGEME 	DATE 2023/11/06

Attachment (b)

CONTINUATION SHEET	DOCUMENT NUMBER N6101823PR00Q85
	AMENDMENT NO 1

DESCRIPTION OF WORK TO BE PERFORMED AND OTHER INSTRUCTIONS (Contd.)

CONTRACT#: N40085-21-D-0108

ESTIMATED AWARD DATE: 31 MAY 2023

ARE ID#: 1986

ACQR# 5987105; EPROJECT#: 1742646

DOCUMENTATION ATTACHED:
*FUNDS REQUEST
*IGE
*SOW
*PRICE SHEET

POCs:
Contract: MELISSA WILLIS melissa.l.willis4.civ@us.navy.mil
Program: JENNIFER SHOWALTER 812-854-3329 jennifer.l.showalter2.civ@us.navy.mil

FOR OBLIGATIONAL PURPOSES, PLEASE EMAIL A COPY OF THE CONTRACT/MOD AWARD TO CNRMA_NC_OBS_DOCS@NAVY.MIL.

Funds may only be used for the description stated above. Upon receipt of the obligating document, all remaining funds will be recouped by this office.

A copy of the obligating document must be forwarded to this office NLT 6 calendar days after the contract award date per DoD FMR Vol.3, Ch.8., Section 0803, 080301 B.

CNIC POCs:
FINANCIAL:L. PETERSON 757-444-0518 larry.l.peterson.civ@us.navy.mil

TECHNICAL:G. KING 757-645-8070 glori.a.king.civ@us.navy.mil

Attachment (b)

1/2/2024

MEMORANDUM

From: NAVFAC NSA Crane Construction Manager
To: Commanding Officer, Naval Support Activity Crane (Code 41)

Subj: TURNOVER AND ACCEPTANCE OF, Contract# N4008521D0109 TASK ORDER N4008523F5419, WWTP RELOCATE FLOW METER

Encl: (1) Acceptance Letter to Contractor

WWTP RELOCATE FLOR METER was accomplished under the subject construction contract and has been accepted by the authorized representative of the Naval Facilities Engineering Command as of 12/27/2023 for use by the U.S. Government. Representatives present for the final inspection include:

Nick Bunte – CM, NAVFAC	Brandy Ranard, NSWC
Brent Pettie - ET, NAVFAC	James Huff, NAVFAC
Kevin Boyd – MasterCraft Mech.	Daniel Combess, NAVFAC
Brian Chestnut, MasterCraft Mech.	Trent Osmon, NAVFAC

1. Enclosure (1) was issued to the contractor and includes any punch-list items identified as a result of the final inspection.

2. As a result of the facility being accepted by the U.S. Government, the using activity is now responsible for its security, maintenance and operation.

3. By separate action, specific warranty documents, spare parts, keys, O&M data, as-built drawings and other items will be provided to the FMS or client in accordance with the provisions of the construction contract.

4. In accordance with the terms of the contract, materials and workmanship which have been accepted are warranted for one year, commencing on 12/27/2023. It is the Facility Manager's responsibility to ensure proper maintenance of the facility and/or equipment both during and after the warranty period. Execution of the warranty provision is initiated by the using activity through their Facility Manager. The following is the procedure for warranty work:

a. The Facility Manager contacts the maintenance provider to evaluate the issue.

b. The maintenance provider determines whether or not the issue is a maintenance issue or a warranty issue.

c. Only after a warranty problem is validated by the maintenance provider, should the Facility Manager notify their PWD Facilities Operations Specialist in order to notify the contractor when warranty work is necessary.

The PWD Client Liaison shall then notify the FEAD Contracting Officer whenever a warranty call has been placed with the contractor. The contractor shall be reminded not to proceed with any non-warranty related work and not perform any work that would result in indebtedness to them by the government. **WARNING: any work performed by the contractor that is not covered by the warranty provisions of the contract may become the financial responsibility of the using activity if directed by unauthorized personnel.** The contractor's point-of-contact for warranty work is:

MASTERCRAFT MECHAN ICAL CONTRACTORS, INC.
13980 E CAPT W J NELSON DR STE C 1
ODON IN 47562-5630
812.863.9080

5. If experiencing difficulty obtaining corrective actions under warranty or if there are any further questions concerning the subject contract, please contact the NAVFAC, PWD Crane, FEAD office at 812-854-3331, or by email at:
NRFK_NFECML_PWD_CRANE_FEAD@navy.mil

Sincerely,

Nicholas Bunte
Construction Manager

Copy to:
Client
PWO
FEAD Director
Supervisory General Engineer
Supervisory Engineering Technician
Assistant Public Works Officer
Facility Manager
Facilities Services
Facilities Services Contracts
Utilities
Official Contract File
Real Property Manager

Attachment (c)

CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

JOHNSON.DOUGLAS.G.1096383742 Digitally signed by JOHNSON.DOUGLAS.G.1096383742 Date: 2024.02.07 09:08:54 -05'00'

SIGNATURE

Environmental Protection Mgr — 2/7/24

TITLE — DATE

Enclosure (1)

Attachment (b)
Mobile Treatment Plant Draft SOP

U.S. Army Corps of Engineers, Fort Worth District
819 Taylor Street, Fort Worth, TX 76102-0300

DRAFT

Standard Operating Procedures for Mobile Treatment System

Implementing Federal Facility Compliance Agreement with EPA Related to Clean Water Act, Crane Army Ammunition Activity, IN

December 2023

Contract Number: W9126G-22-D-0017,
Task Order: W9126G22F0246

Prepared by:

Auxilio Management Services
51 West 4th Avenue
Denver, CO 80223

Tetrahedron, Inc.
1414 Key Highway, Suite B
Baltimore, MD 21230

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DRAFT

Standard Operating Procedure for Mobile Treatment System
Implementing Federal Facility Compliance Agreement with EPA Related to Clean Water Act
Crane Army Ammunition Activity, IN

TABLE OF CONTENTS

List of Figures

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STANDARD OPERATING PROCEDURE FOR MOBILE TREATMENT SYSTEM – POND 2

The following steps should be followed for operating the truck mounted Mobile Treatment System (MTS) at Pond 2. Refer to Pictures 1 through 3.

CHEMICAL TRANSFER

Step 1: Wear appropriate gear/personal protective equipment, including chemical resistant gloves, face shield/glasses, and apron, for transferring chemicals from the drum into the chemical tank on the mobile unit.

Step 2: Bring the truck mounted MTS to the loading bay of the chemical drum storage building (Building 148).

Step 3: Select the chemical drum with the appropriate blend (winter or summer) depending on the outside temperature. If the outside temperature is greater than 55 °F, use the summer blend, if available. Otherwise, use the winter blend.

Step 4: Remove the fill cap of the chemical tank and fill the chemical tank (25-gallon capacity) to near the top with a drum pump. Use caution to not overfill or spill.

Step 5: Replace the cap on the chemical tank.

EQUIPMENT PREPARATION AND MAINTENANCE

Step 1: Fill the fuel tank of the pump with gasoline.

Step 2: Park the truck mounted MTS at the pond rim with connection and the front side towards the pond. (See Picture 1).

Step 3: Connect the following hoses:

- 2.5” hose (from pond) to the pump intake line.
- 1.5” hoses (from pond) to the two (Wye) discharge lines.
- Two 0.5” hoses to chemical tank outlets.

Make sure all lines are completely drained after each use to avoid freezing and/or corrosion.

PUMP START AND INITIAL ADJUSTMENTS

Step 1: Close all valves.

Step 2: Open valve V11 (back of the pump, See Picture 3).

Step 3: Start the pump and close the exhaust plate tightly at the back of the pump. This step is for priming the pump.

Step 4: When water starts flowing out of V11, open V1 (main valve handle of the pump, See Picture 2) and V5 (drain line, See Picture 1).

Step 5: When water starts flowing from V5, close V11 and open the exhaust plate.

OPERATION AND DATA COLLECTION

Normal Conditions

Step 1: Open V6 and V7 (chemical discharge hose valves) and V8 (chemical flow control valve) (See Picture 1).

Step 2: Slowly open V8 (valve that separates the chemical portion of the MTS).

Step 3: Adjust V8 such that the flow through the rotameter is approximately 2 gallons per minute (gpm) and the pressure gauge reading is approximately 35 pounds per square inch (psi).

Step 4: Adjust V7 such that the chemical discharge rate is approximately 0.25 gpm or 16 gallons per hour (GPH) for water. For blended chemicals, increase the reading on the flow meter to approximately 0.30 gpm or 20 GPH to adjust for density differences between water and the blended chemical.

Step 5: Close V5.

Step 6: Operate until the chemical tank is empty.

Step 7: Collect water samples before and after treatment as described in the Sampling and Analysis Plan (Appendix A).

Heavy Precipitation

If heavy precipitation is anticipated, then discharge two tanks of blended chemical into the pond following the steps described above.

SHUT DOWN

Step 1: After discharge of chemicals into the pond is complete and the chemical tank is empty, continue running the system for approximately five minutes to rid any residual chemicals from the pipes and hoses.

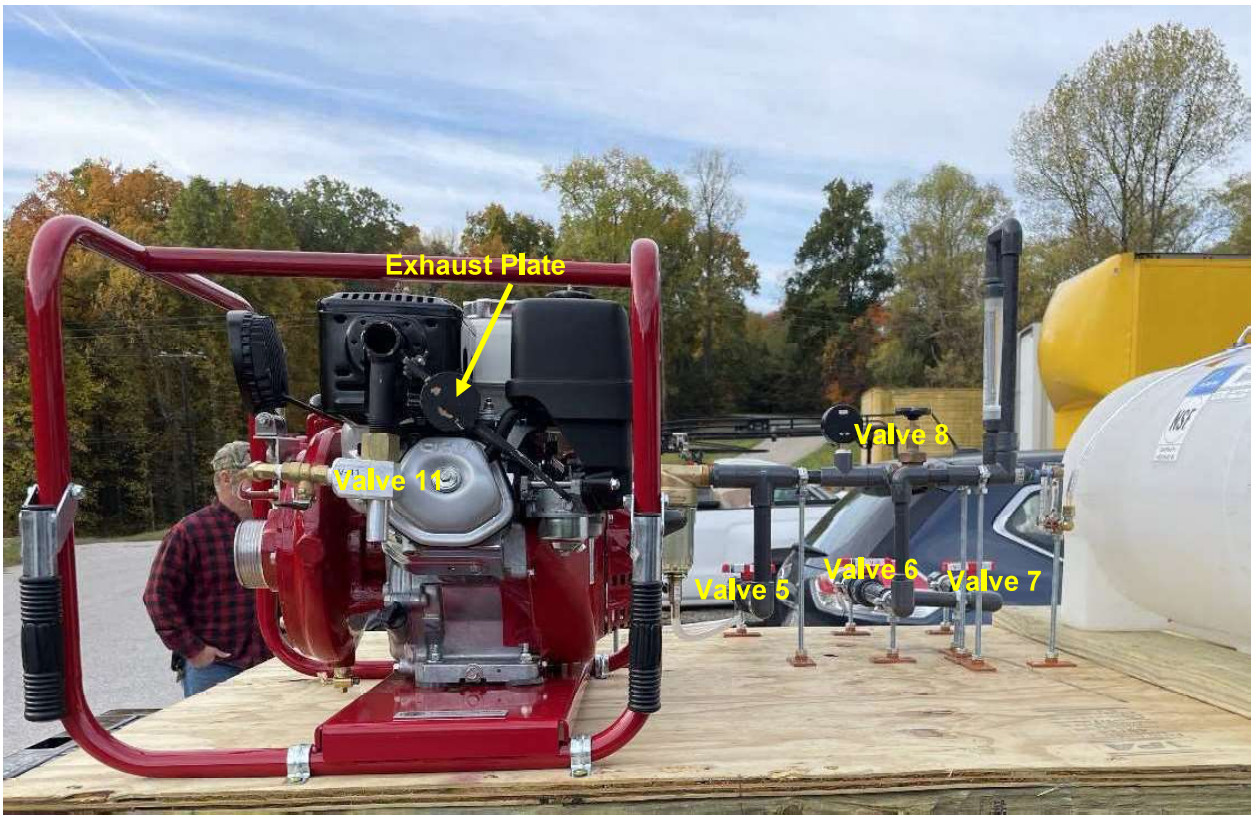
Step 2: Shut down the pump.

Step 3: Drain water from all valves including the pump by opening V10.

Step 4: Disconnect and secure all hoses. Leave the hoses at the rim of the Pond.

Picture 1: Front View of the Mobile Treatment System

Picture 2: Side View of the Mobile Treatment System



Picture 3: Back View of the Mobile Treatment System

APPENDIX A – SAMPLING AND ANALYSIS PLAN

This sampling and analysis plan is designed to determine the effectiveness of the pilot treatment system at Pond 2 and is focused on: Cd, Cu, Zn, and pH of water.

SAMPLING REQUIREMENTS

To determine if the treatment system is effective, water samples will be collected from the pond before and after treatment. The following samples will be collected:

i. Grab samples will be collected for Cd, Cu, and Zn for four (4) discharge events from Pond 2.

ii. For each discharge event, three pre-treatment samples will be collected from Pond 2 using a bailer.

iii. For each discharge event, one post-treatment (approximately 24 hours of treatment application) sample will be collected from Pond 2 using a bailer.

iv. For each discharge event, five post-treatment samples will be collected from outfall 002. Post-treatment samples will be collected after every 30 minutes of discharge.

v. A grab sample will be collected for pH whenever samples for metals (Cd, Cu, and Zn) are collected.

The sampling methodology will include the prevention of cross-contamination of samples by using disposable sampling materials or triple-rinsing sampling equipment before use.

SAMPLE ANALYSIS

Samples will be analyzed in the laboratory for Cu, Zn, and Cd by Pace Analytical Laboratory or other EPA approved laboratory. pH will be determined in the field.

Quality Control

In addition to the samples, duplicate samples (Field / Quality Control), will be collected as needed to ensure QC parameters. One set of field blanks (FB) consisting of filling the sampling bottles with deionized water in the field, and one set of QC samples, which will be a duplicate set of samples, will be sent to the laboratory with the routine samples for each event.

SAMPLE HANDLING AND PRESERVATION

Samples will be handled, preserved, and analyzed per Title 40 Code of Federal Regulations (CFR) 136. It is anticipated that fieldwork will be performed in Level D personal protective equipment. Grab samples will be collected directly in a clean 1-liter bottle, allowing the bottle to fill, and then transferring the water to the appropriate sample containers. Once grab sampling has been completed, the grab samples will be preserved using the chemical provided by the laboratory if the bottle is not already preserved, and then iced.

All sample bottles will be filled out with the time, date, site ID, sampler's initials, and any other pertinent data. The person taking the samples will wear a clean pair of disposable thin nitrile or latex gloves, and any

other PPE as required. Bottles requiring a preservative will be identified by a label on the outside of the bottle.

Table A-1 lists the required laboratory bottles, the appropriate preservatives, and holding times. The samples will be preserved and shipped as soon as possible so as not to exceed any holding times. Table A-1 shows how the tested parameters will be reported after the results are collected.

Table A-1: Sampling Parameters for Pilot Treatment System

Parameter	Method	Volume Required (mL)	Container [(a)]	Preservative
Cadmium	200.8 REV 5.4	500	P, G	HNO_3 to pH < 2, or at least 24 hours before analysis
Zinc				
Copper				
pH	Field	100	P, G	None

(a) Polyethylene (P) or glass (G). For metals, polyethylene with a polypropylene cap (no liner) is preferred.

(b) From date or time of sample collection (40 CFR Part 136.3).

SAMPLE SHIPMENT AND CHAIN-OF-CUSTODY

A Chain-of-Custody form provided by the laboratory will be completed and will accompany the samples. Samples must be traceable from the point of collection until the sampling results are reported. To do this, document who has the samples using the Chain-of-Custody procedures below. One person will be responsible for the care and custody of the samples, and for generating the Chain-of-Custody record until the samples are properly transferred or relinquished to the laboratory. Chain-of-Custody tasks include:

- Ensure that the sample labels are properly filled in.
- Complete the Chain-of-Custody form with the date, time, parameter, and sample locations for each sample, and sign the form.
- During the transfer of custody of the samples, both the persons relinquishing and receiving the cooler (including lab personnel) must record the date and time on the Chain-of-Custody form and sign it.
- Record the shipping method, courier name(s), and other pertinent information as remarks on the Chain-of-Custody form.
- The original Chain-of-Custody form remains with the samples and a copy must be provided to the facility for inclusion in project records.

Once samples have been collected, preserved, and sealed, they will also be packed in a cooler lined with a heavy-duty garbage bag. Ice will be added, and the bag will then be sealed. If the on-site samplers prefer, they can deliver the samples to the laboratory themselves the same day the sampling occurs. Before delivering the samples, the laboratory will be called at 270- 821-7375 (attention: sample arrival).

If shipping: All coolers will be secured with packaging tape and affixed with the appropriate labels and shipping forms (e.g., Federal Express). Coolers will be shipped FedEx priority overnight to Pace Analytical, 825 Industrial Road, Madisonville, KY 42431. Before shipping samples, the laboratory will be called at 270-821-7375 (attention: sample custody).

Analytical results will be recorded in Table A-2.

Table A-2: Analytical Monitoring Summary Sheet – Pond 2 Treatment

Event #: _____ Treatment Date: _____ Discharge Date: _____

Parameter	Discharge Duration (minutes)	Cumulative Discharge (Pond Level) (inches)	Results
PRE-TREATMENT SAMPLES (from the pond)			
Total Cadmium (µg/l)	0	Initial	
Total Copper (µg/l)	0	Initial	
Total Zinc (µg/l)	0	Initial	
pH	0		
Total Cadmium (µg/l)	0		
Total Copper (µg/l)	0	Initial	
Total Zinc (µg/l)	0	Initial	
pH	0	Initial	
Total Cadmium (µg/l)	0		
Total Copper (µg/l)	0	Initial	
Total Zinc (µg/l)	0	Initial	
pH	0	Initial	
POST-TREATMENT SAMPLES (after about 24 hours of treatment from Pond 2)			
Total Cadmium (µg/l)	0		
Total Copper (µg/l)	0		
Total Zinc (µg/l)	0		
pH	0		
POST-TREATMENT SAMPLES (after about 24 hours of treatment from Outfall 002)			
Total Cadmium (µg/l)	30		
Total Copper (µg/l)	30		
Total Zinc (µg/l)	30		
pH	30		
Total Cadmium (µg/l)	60		
Total Copper (µg/l)	60		
Total Zinc (µg/l)	60		
pH	60		
Total Cadmium (µg/l)	90		
Total Copper (µg/l)	90		
Total Zinc (µg/l)	90		
pH	90		
Total Cadmium (µg/l)	120		
Total Copper (µg/l)	120		
Total Zinc (µg/l)	120		
pH	120		
Total Cadmium (µg/l)	150		
Total Copper (µg/l)	150		
Total Zinc (µg/l)	150		
pH	150		

INVESTIGATIVE DERIVED WASTE (IDW)

IDW generated from decontamination and sampling (disposable equipment and PPE) can be placed in plastic trash bags and managed as non-hazardous waste materials.

RECORDKEEPING AND REPORTING

Field Documentation

The field sampling Team Leader or other designated on-site personnel will be responsible for recording and documenting relevant and appropriate information regarding project activities, sampling methods, and data collected during the performance of field activities. The following general guidelines will be followed in documenting fieldwork:

- Documentation will be maintained in a field logbook.
- Logbook documentation will preferably be completed in waterproof ink due to the potentially wet on-site conditions. Written errors will be crossed out with a single line and initialed.
- Project logbooks and other documentation (e.g., field forms and logs) will be stored in the project files after completion of the fieldwork. Copies of field notes will be made available to oversight personnel upon request.

Field logbooks will include records of pertinent activities related to specific sampling tasks.

The bound field logbook will document all field activities including sample collection, preservation, and shipment to the laboratory. Specifically, they will record the date and time samples were collected and examined, the names of personnel that collected and examined the samples, the nature of the discharge (e.g., wastewater discharge), and the visual quality of the wastewater discharge. Tetrahedron will summarize the results on data tables.

1. AMENDED SAMPLING AND ANALYSIS PLAN FOR POND 2

PILOT STUDY

Treatment will be applied to the pond approximately 24 hours before each discharge of pond water through Outfall 002. Approximately 25 gallons of blended mixture will be applied for each treatment. Two types of treatment blends will be used:

- Winter Blend: Is a 5:1 ratio blend of NaOH and NaSH each with concentrations of 25%. Applied when temperature is below 60F.
- Summer Blend: Is a 2:1 ratio blend of NaOH and NaSH each with concentrations of 25%. Applied when temperature is above 60F.

Sampling will be performed to monitor the effectiveness of the treatment system at Pond 2 pilot study. The following samples will be collected with the winter and summer blends:

- Grab samples will be collected for Cd, Cu, Zn, pH, and temperature from Pond 2 for three (3) discharge events from Pond 2.
- Approximately 6 grab samples (including 3 QC samples) will be collected from Pond 2 before treatment application with each blend.
- Approximately 12 grab samples (including 3 QC samples) will be collected from Pond 2 after treatment application to monitor its efficiency over time for each blend.

Table 1-1 shows the sequence of sampling for each treatment application before discharge event.

Table 1-1: Analytical Monitoring Requirements for Pond 2 for each Treatment Application

Parameter	Units	Sampling Time Period			
		Before Treatment	Before Treatment	Before Treatment	Before Treatment
Total Cadmium	ug/L	×	×	×	×
Total Zinc	ug/L	×	×	×	×
Total Copper	ug/L	×	×	×	×
pH	S.U.	×	×	×	×

Table 1-2 shows the number of samples to collected.

Table 1-2: CAAA SAMPLING AND ANALYSIS - PILOT STUDY POND 2			
Number of Samples (3 samplings after each treatment)			
Winter Blend (5:1 - NaOH:NaSH)- Temperature at Application Below 60F			
Event	Location/Samples	Parameters	# of Samples
Pre-treatment (3 applications)	Pond 02 (3+3 QC)	Cd, Cu, Zn, pH, and Temperature	6
After Application (3 applications)	Pond 2 (3 samples +1 QC each application)	Cd, Cu, Zn, pH, and Temperature	12
		Total	18
Summer Blend (2:1 - NaOH:NaSH) - Temperature at Application Above 60F			
Event	Location/Samples	Parameters	# of Samples
Pre-treatment (3 applications)	Pond 02 (3x1+3 QC)	Cd, Cu, Zn, pH, and Temperature	6
After Application (3 applications)	Pond 2 (3 samples +1 QC each application)	Cd, Cu, Zn, pH, and Temperature	12
		Total	18
		Grand Total	36

1.1 Sample Analysis

For complete analysis of Cu, Zn, and Cd in the laboratory, samples will be submitted to Pace Analytical.

1.1.1 Quality Control

For each pre-treatment sample, a QC sample will be collected and sent to the laboratory for analysis.

For each discharge event, a QC sample will be collected after 24 hours of treatment and sent to the laboratory for analysis.

1.2 Sample Handling and Preservation

Samples will be handled, preserved, and analyzed per Title 40 Code of Federal Regulations (CFR) 136. It is anticipated that fieldwork will be performed in Level D Personal Protective Equipment (PPE). Grab samples will be collected directly in a clean 1-liter bottle, allowing the bottle to fill, and then transferring the water to the appropriate sample containers. Once grab sampling has been completed, the grab samples will be preserved using the chemical provided by the laboratory if the bottle is not already preserved, and then iced or refrigerated.

All sample bottles will be filled out with the time, date, site ID, sampler's initials, and any other pertinent data. The person taking the samples will wear a clean pair of disposable thin nitrile or latex gloves, and any other PPE as required. Bottles requiring a preservative will be identified by a label on the outside of the bottle.

Table 1-3 lists the required laboratory bottles, the appropriate preservatives, and holding times. The samples will be preserved and shipped as soon as possible so as not to exceed any holding times. Table 1-1 shows how the tested parameters will be reported after the results are collected.

Table 1-3 Sampling Parameters for Pilot Treatment System

Parameter	Method	Volume Required (mL)	Container [a]	Preservative
Total Cadmium	200.8 REV 5.4	500	P, G	HNO_3 to pH < 2, or at least 24 hours before analysis
Total Zinc				
Total Copper				
pH	Field	100	P, G	None

(a) Polyethylene (P) or glass (G). For metals, polyethylene with a polypropylene cap (no liner) is preferred.
(b) From date or time of sample collection (40 CFR Part 136.3).

1.2.1 Investigative Derived Waste (IDW)

IDW generated from decontamination and sampling (disposable equipment and PPE) can be placed in plastic trash bags and managed as non-hazardous waste materials.

1.3 Sample Shipment and Chain-of-Custody

A Chain-of-Custody form provided by the laboratory will be completed and will accompany the samples. Samples must be traceable from the point of collection until the sampling results are reported. To do this, document who has the samples using the Chain-of-Custody procedures below. One person will be responsible for the care and custody of the samples, and for generating the Chain-of-Custody record until the samples are properly transferred or relinquished to the laboratory. Chain-of-Custody tasks include:

- Ensure that the sample labels are properly filled in.
- Complete the Chain-of-Custody form with the date, time, parameter, and sample locations for each sample, and sign the form.
- During the transfer of custody of the samples, both the persons relinquishing and receiving the cooler (including lab personnel) must record the date and time on the Chain-of-Custody form and sign it.
- Record the shipping method, courier name(s), and other pertinent information as remarks on the Chain-of-Custody form.
- The original Chain-of-Custody form remains with the samples and a copy must be provided to the facility for inclusion in project records.
-

Once samples have been collected, preserved, and sealed, they will also be packed in a cooler lined with a heavy-duty garbage bag. Ice will be added and the bag will then be sealed. If the on-site samplers prefer, they can deliver the samples to the laboratory themselves the same day the sampling occurs. Before delivering the samples, the laboratory will be called at 270- 821-7375 (attention: sample arrival).

If shipping: All coolers will be secured with packaging tape and affixed with the appropriate labels and shipping forms (e.g., Federal Express). Coolers will be shipped FedEx priority overnight to Pace Analytical, 825 Industrial Road, Madisonville, KY 42431. Before shipping samples, the laboratory will be called at 270-821-7375 (attention: sample custody).

1.4 RECORDKEEPING AND REPORTING

1.4.1 FIELD DOCUMENTATION

The field sampling Team Leader or other designated on-site personnel will be responsible for recording and documenting relevant and appropriate information regarding project activities, sampling methods, and data collected during the performance of field activities. The following general guidelines will be followed in documenting fieldwork:

- Documentation will be maintained in a dedicated field logbook.
- Logbook documentation will preferably be completed in waterproof ink due to the potentially wet on-site conditions. Written errors will be crossed out with a single line and initialed.
- Project logbooks and other documentation (e.g., field forms and logs) will be stored in the project files after completion of the fieldwork. Copies of field notes will be made available to oversight personnel upon request.

Field logbooks will include records of pertinent activities related to specific sampling tasks. They will be bound books with hard covers and sequentially numbered pages. The front of each book will contain the logbook number, project number, and site name. Logbooks will be numbered sequentially if more than one is used. The books will remain on-site or in the custody of the field Team Leader until they are completed, after which they will be stored in the project files.

The bound field logbook will document all field activities including sample collection, preservation, and shipment to the laboratory. Specifically, they will record the date and time samples were collected and examined, the names of personnel that collected and examined the samples, and the visual quality of the pond water. Tetrahedron will summarize the results on data tables, as given below.

1.4.2 ANALYTICAL RESULTS

Analytical results will be recorded in Table 1-4 (Winter Blend) and Table 1-5 (Summer Blend)

Table 1-4 Analytical Monitoring Summary Sheet – Pond 2 Treatment (Winter Blend)

Discharge Event #: ___1_____Pond Level (inches): _____Treatment Date: _____

Parameter	Duration after Treatment (Hours)	Results
Total Cadmium (µg/l)	Pre-treatment	
Total Copper (µg/l)	Pre-treatment	
Total Zinc (µg/l)	Pretreatment	
pH	Pretreatment	
Total Cadmium (µg/l)	Pretreatment	
Total Copper (µg/l)	Pretreatment	
Total Zinc (µg/l)	Pretreatment	
pH	Pretreatment	
Total Cadmium (µg/l)	1	
Total Copper (µg/l)	1	
Total Zinc (µg/l)	1	
pH	1	
Total Cadmium (µg/l)	2	
Total Copper (µg/l)	2	
Total Zinc (µg/l)	2	
pH	2	
Total Cadmium (µg/l)	24	
Total Copper (µg/l)	24	
Total Zinc (µg/l)	24	
pH	24	

Discharge Event #: ___2_____Pond Level (inches): _____Treatment Date: _____

Parameter	Duration after Treatment (Hours)	Results
Total Cadmium (µg/l)	Pre-treatment	
Total Copper (µg/l)	Pre-treatment	
Total Zinc (µg/l)	Pretreatment	
pH	Pretreatment	
Total Cadmium (µg/l)	Pretreatment	
Total Copper (µg/l)	Pretreatment	
Total Zinc (µg/l)	Pretreatment	
pH	Pretreatment	
Total Cadmium (µg/l)	1	
Total Copper (µg/l)	1	
Total Zinc (µg/l)	1	
pH	1	

Parameter	Duration after Treatment (Hours)	Results
Total Cadmium (µg/l)	2	
Total Copper (µg/l)	2	
Total Zinc (µg/l)	2	
pH	2	
Total Cadmium (µg/l)	24	
Total Copper (µg/l)	24	
Total Zinc (µg/l)	24	
pH	24	

Discharge Event #: ___3_____Pond Level (inches): _____Treatment Date: _____

Parameter	Duration after Treatment (Hours)	Results
Total Cadmium (µg/l)	Pre-treatment	
Total Copper (µg/l)	Pre-treatment	
Total Zinc (µg/l)	Pretreatment	
pH	Pretreatment	
Total Cadmium (µg/l)	Pretreatment	
Total Copper (µg/l)	Pretreatment	
Total Zinc (µg/l)	Pretreatment	
pH	Pretreatment	
Total Cadmium (µg/l)	1	
Total Copper (µg/l)	1	
Total Zinc (µg/l)	1	
pH	1	
Total Cadmium (µg/l)	2	
Total Copper (µg/l)	2	
Total Zinc (µg/l)	2	
pH	2	
Total Cadmium (µg/l)	24	
Total Copper (µg/l)	24	
Total Zinc (µg/l)	24	
pH	24	

Table 1-5 Analytical Monitoring Summary Sheet – Pond 2 Treatment (Summer Blend)

Discharge Event #: 4 Pond Level (inches): _____ Treatment Date: _____

Parameter	Duration after Treatment (Hours)	Results
Total Cadmium (µg/l)	Pre-treatment	
Total Copper (µg/l)	Pre-treatment	
Total Zinc (µg/l)	Pretreatment	
pH	Pretreatment	
Total Cadmium (µg/l)	Pretreatment	
Total Copper (µg/l)	Pretreatment	
Total Zinc (µg/l)	Pretreatment	
pH	Pretreatment	
Total Cadmium (µg/l)	1	
Total Copper (µg/l)	1	
Total Zinc (µg/l)	1	
pH	1	
Total Cadmium (µg/l)	2	
Total Copper (µg/l)	2	
Total Zinc (µg/l)	2	
pH	2	
Total Cadmium (µg/l)	24	
Total Copper (µg/l)	24	
Total Zinc (µg/l)	24	
pH	24	

Discharge Event #: 5 Pond Level (inches): _____ Treatment Date: _____

Parameter	Duration after Treatment (Hours)	Results
Total Cadmium (µg/l)	Pre-treatment	
Total Copper (µg/l)	Pre-treatment	
Total Zinc (µg/l)	Pretreatment	
pH	Pretreatment	
Total Cadmium (µg/l)	Pretreatment	
Total Copper (µg/l)	Pretreatment	
Total Zinc (µg/l)	Pretreatment	
pH	Pretreatment	
Total Cadmium (µg/l)	1	
Total Copper (µg/l)	1	
Total Zinc (µg/l)	1	
pH	1	

Parameter	Duration after Treatment (Hours)	Results
Total Cadmium (µg/l)	2	
Total Copper (µg/l)	2	
Total Zinc (µg/l)	2	
pH	2	
Total Cadmium (µg/l)	24	
Total Copper (µg/l)	24	
Total Zinc (µg/l)	24	
pH	24	

Discharge Event #: ____6_____Pond Level (inches): _____Treatment Date: _____

Parameter	Duration after Treatment (Hours)	Results
Total Cadmium (µg/l)	Pre-treatment	
Total Copper (µg/l)	Pre-treatment	
Total Zinc (µg/l)	Pretreatment	
pH	Pretreatment	
Total Cadmium (µg/l)	Pretreatment	
Total Copper (µg/l)	Pretreatment	
Total Zinc (µg/l)	Pretreatment	
pH	Pretreatment	
Total Cadmium (µg/l)	1	
Total Copper (µg/l)	1	
Total Zinc (µg/l)	1	
pH	1	
Total Cadmium (µg/l)	2	
Total Copper (µg/l)	2	
Total Zinc (µg/l)	2	
pH	2	
Total Cadmium (µg/l)	24	
Total Copper (µg/l)	24	
Total Zinc (µg/l)	24	
pH	24	

Attachment (c)
CAAA FFCA Schedule Tracking

Crane AAA FFCA Schedule Tracking

Project Start: 9/30/2022
Schedule Update: 1/8/2024

Activity	FFCA Schedule from Start [weeks]	FFCA Complete By	Current Schedule Complete By	Notes
Kickoff Meeting	1	10/7/2022	10/24/2022	
Regulatory Support	3	10/21/2022	TBD	
Work Plans (Draft)	5	11/4/2022	12/20/2022	
Comments on Work Plans	7	11/18/2022	2/16/2023	
Work Plans (Final)	8	11/25/2022	3/10/2023	
Data Collection and Analysis	12	12/23/2022	12/16/2022	
Site Characterization (Draft)	14	1/6/2023	12/29/2022	
Comments on Site Characterization	16	1/20/2023	1/20/2023	
Site Characterization (Final)	17	1/27/2023	1/23/2023	
Feasibility Study (Draft)	20	2/17/2023	3/22/2023	
Comments on Feasibility Study	22	3/3/2023	4/26/2023	
Feasibility Study (Final)	23	3/10/2023	4/28/2023	
Remedial Design (Draft)	29	4/21/2023	6/23/2023	
Comments on Remedial Design	31	5/5/2023	7/17/2023	
Remedial Design (Draft Final)	34	5/26/2023	7/31/2023	
Comments on Remedial Design	36	6/9/2023	8/8/2023	
Remedial Design (Final)	38	6/23/2023	8/29/2023	
Treatment System Work Plan (Draft)	40	7/7/2023	8/31/2023	
Comments on Treatment System Work Plan	41	7/14/2023	9/14/2023	
Treatment System Work Plan (Draft Final)	43	7/28/2023	9/22/2023	
Comments on Treatment System Work Plan	44	8/4/2023	10/4/2023	
Treatment System Work Plan (Final)	45	8/11/2023	10/5/2023	
Implementation and Monitoring	57	11/3/2023	3/15/2024	
Treatment System Report (Draft)	60	11/24/2023	1/12/2024	
Comments on Treatment System Report	62	12/8/2023	2/2/2024	
Treatment System Report (Draft Final)	64	12/22/2023	2/16/2024	Only Draft/Final per PWS
Comments on Treatment System Report	66	1/5/2024	2/16/2024	Only Draft/Final per PWS
Treatment System Report (Final)	68	1/19/2024	2/16/2024	
Standard Operating Procedures (Draft)	71	2/9/2024	12/11/2023	
Comments on Standard Operating Procedures	73	2/23/2024	1/12/2024	
Standard Operating Procedures (Final)	75	3/8/2024	2/2/2024	
Training Materials (Draft)	76	3/15/2024	2/23/2024	
Comments on Training Materials	77	3/22/2024	3/1/2024	
Training Materials (Final)	78	3/29/2024	3/8/2024	
Training of Installation Staff	79	4/5/2024	3/15/2024	
Comprehensive Report (Draft)	82	4/26/2024	4/5/2024	
Comments on Comprehensive Report	84	5/10/2024	4/19/2024	
Comprehensive Report (Final)	86	5/24/2024	4/26/2024	

Attachment (d)
Limestone Photographs

Limestone Added above Pond 2

Limestone Added above Pond 8

Limestone Added above Pond 4

DEPARTMENT OF THE NAVY
NAVAL SURFACE WARFARE CENTER
CRANE DIVISION
300 HIGHWAY 361
CRANE INDIANA 47522-5001

IN REPLY REFER TO:

5090
Ser 1023/043

13 May 2024

United States Environmental Protection Agency
Region 5
Mr. Ray Cullen
77 West Jackson Boulevard
Chicago, IL 60604-3590

Dear Mr. Cullen:

SUBJECT: NSWC CRANE FEDERAL FACILITIES COMPLIANCE AGREEMENT
FY24 SECOND QUARTER STATUS REPORT

Naval Surface Warfare Center, Crane Division is submitting this report as the FY24 Second Quarter Status Report of the Federal Facilities Compliance Agreement (FFCA).

If you require any further information, my point of contact is Brandy Ranard, telephone 812-854-3382 or email brandy.s.ranard.civ@us.navy.mil.

Sincerely,

JOHNSON.DOUGLAS.G.1096383742 Digitally signed by JOHNSON.DOUGLAS.G.1096383742 Date: 2024.05.13 17:14:04 -04'00'

DOUGLAS G. JOHNSON
Environmental Protection Manager
By direction of the
Commanding Officer

Enclosure: 1. FY24 Second Quarter Status Report
2. Certification Statement

Copy to: NAVSEA (R. Tobe, C. Parana)
NAVFAC (T. Osmon)
CAAA (M. Brindle)

FFCA FY24 Second Quarter Status Report

Attachments (A) Field Activity Logs
(B) Result Analysis Spreadsheet
(C) Jar Test Assessment
(D) CAAA FFCA Schedule Tracking

This status report summarizes the actions taken between January 2024 and March 2024 to meet the milestones required to remain in compliance with the Federal Facilities Compliance Agreement (FFCA), signed on 03 October 2022.

I. Lift Station 17
   a. There have been no sewer system overflows at Lift Station 17 since January 2020.

II. Wastewater Treatment Plant (WWTP) Flow Meter
   a. There have been no issues with the operation of the new flow meter from 27 DEC 23 to present.

III. Sedimentation Ponds
   a. Tetrahedron, Inc., a sub-contractor of Auxilio, conducted a site visit to NSA Crane on 12 - 13 February 2024 to initiate treatment of Pond 2, utilizing the mobile treatment unit. Tetrahedron provided field activity logs for activities that took place while on site and can be seen in Attachment A. The following actions took place during the site visit:
      i. Maintenance – A new chemical flow meter was installed on the mobile treatment system to allow for larger capacity; A rusted tee section located after the pump was replaced with stainless steel.
      ii. Treatment – during the loading process of the 5:1 winter blend of sodium hydrosulfide and sodium hydroxide, operators recognized that the solution was partially crystalized. Tetrahedron made the decision to continue with treatment using the crystalized solution. 25 gallons of the 5:1 winter blend was added to Pond 2
      iii. Sample Collection – Samples were collected from Pond 2 before and after the treatment process and then collected every thirty minutes from the outfall location.
      iv. Analysis – Tetrahedron made the following determinations from the Result Analysis spreadsheet, seen as Attachment B.
         1. Sample results for the winter blend application of Feb. 13, 2024, show little improvement. Tetrahedron conducted jar tests using the crystalized solution with some reduction of metals, however the post treatment samples of the pond did not reflect this.

2. Effectiveness of the crystallized winter blend could have resulted in poor performance. (Winter blend is NaOH and NaHS in 5:1 ratio, while summer blend is in 2:1 ratio)
3. Initial concentrations of the metals to be treated (Cd, Cu, and Zn) were several times higher than historical values, which was the basis of design of the pilot.
4. Jar tests were conducted by the chemical manufacturer, Brenntag, with fresh (non-crystallized) winter and summer blends to determine if the cause of the poor performance was due to the crystallized product. Tetrahedron performed an assessment of the jar test results and determined that the winter blend provided the best removal percentage of metals, contradictory of what Tetrahedron initially anticipated. Correspondence on these topics is included as Attachment C.

b. Plan Ahead – Another site visit will be conducted once the new chemical order has arrived, and the mobile treatment unit will be run again. Repeating this process will take additional time and will delay the original completion date of the pilot study. A completion date of 24 May 24 was originally projected and has been pushed out to 14 July 24. See complete schedule in Attachment D.
c. Auxilio Management Services submitted a draft Implementation and Monitoring System Report for review and comments. Crane provided comments back to Auxilio, currently waiting to receive final report.

Field Activity Log

Crane Army Ammunition Activity – Demolition Pond 2 Treatment

February 12, 2024

10:30 (EST) – Meeting/conference call with stakeholders to discuss current objects and expectations for treatment of Pond 2. The treatment application was scheduled for 13:00, but no later than 14:00 as application of the solution takes about 2 hours to achieve desired results. Access to the pond is not available until 11:00.

At about 12:30, it was found that the treatment chemicals in the 55-gallon drums had formed crystals (frozen) due to low temperatures. This caused the spray nozzles to become clogged, which would limit the flow the chemicals into the pond. While the chemicals are not supposed to freeze down to 5°F, recent weather events in Crane had been around 0°F. The drums were stored in a barn house which does not have insulation.

Treatment chemicals are recommended to be stored in magazine/igloos to limit the potential of future freezing events.

By 14:15, the nozzles were cleared of blockages though it was after the time window for application to the pond. While the pump and nozzles were working after the cleaning, some crystals were still observed in the chemical drum. Tetrahedron has contacted the supplier of the chemicals to determine if the efficacy of the chemicals will be impacted from the freezing event.

If the supplier confirms no impact on chemical performance, application of the chemicals will be re-attempted after 11:00, February 13,2024.

Atachment (a)

Field Activity Log

Crane Army Ammunition Activity – Demolition Pond 2 Treatment

February 13, 2024

Chemical manufacturer (Brenntag) informed the night before that winter chemical blend may still work though some of it had crystalized. And to dissolve the crystal back into solution, the temperature has to be above 86F and the blend should be agitated.

10 am (EST) - Though the temperature only increased to about 40F, we were able to break most of the crystals by agitating the blend for about 20 minutes by recirculating the chemical in the drum with a pump.

10:30 am – Conducted a jar test by adding about 10 drops of chemical in a sample bottle containing pond water. Color change was observed, indicating that some chemical reaction was taking place. Sent the bottle for lab analysis along with another bottle that had no chemical added, for comparison.

10:45 am – The chemical tank was filled with 25 gallons of the blend, ready for application.

11 am – We were informed that the chemical application to the pond that was supposed to start at 11 am will be delayed because the pond was not accessible due to demolition related activities.

12:30 pm – Access to the pond was granted.

12:45pm – The treatment system was started and tested by circulating pond water without chemical.

1 pm - Pre-treatment water samples were collected by CAAA staff from the pond to be sent to the lab. The pH was 6.44. Sampling location was the pond discharge point.

1: 30 pm - The treatment system was started and chemical was added to the pond mixing with re-circulated water. Took about 2 hours to apply 25 gallons of chemicals.

3:30 pm – System shut down and the treatment truck driven back to storage by CAAA staff.

February 14, 2024

Post treatment samples to be taken at 1 pm by CAAA staff.

From:	Waqi Alam
To:	Brindle, Matthew D CIV USARMY CRANE ARMY AMMO ACT (USA); Ranard, Brandy Sue CIV USN NSWC CD CRANE IN (USA); Parana, Carly A CIV USN COMNAVSEASYSCOM DC (USA); Montoya, Chelsea R CIV USARMY CESWF (USA); Doug Schlagel; Williard, Bradley S (Brad) CIV USARMY USAMC (USA); ehsanur.quabili@tetrahedron-inc.com; Hyndman, Kaleb T CIV USARMY CRANE ARMY AMMO ACT (USA); Roepke, Frank W CIV USARMY CESWF (USA)
Cc:	Daniel Ewald; Renee Bouwkamp
Subject:	[Non-DoD Source] Update - Additional tests for Pond 2 Pilot
Date:	Thursday, February 29, 2024 11:43:11 AM
Attachments:	Result Analysis - 1st Round 2-29-24.xlsx

Here is an update/observation on Pond 2 pilot study:

1. We received sample results for the winter blend application of Feb. 13, 2024 to Pond 2. Results show little improvement. Synopsis in Excel is attached.

2. Effectiveness of the crystallized winter blend could have resulted in poor performance. (Winter blend is NaOH and NaHS in 5:1 ratio, while summer blend is in 2:1 ratio)

3. Initial concentrations of the metals to be treated (Cd, Cu, and Zn) were several times higher than historical values, which was the basis of design of the pilot.

Therefore, before we ship new supply of products and apply to the pond, we would like to determine the cause of the poor performance. For this, we recommend conducting jar tests with fresh (non-crystallized) winter and summer blends. One set of jar tests will be conducted by the chemical manufacturer (Brenntag) and one by us. Conducting these tests and getting lab results back will take 3-4 weeks which possibly could delay the completion of the pilot study. But it is essential to make sure that non-crystallized blend is able to reduce the concentrations of metals (that are now much higher than historical values).

Please advise. Thanks,

Waqi

Waqi Alam, Ph.D.

President
Tetrahedron, Inc.
410-837-0512 (o)
www.tetrahedron-inc.com

On 2/26/2024 10:04 AM, Brindle, Matthew D CIV USARMY CRANE ARMY AMMO ACT (USA) wrote:

> Yes, we have access to the earthen covered storage that will regulate the temperature. It wont freeze in there and stay lower in the summer temperatures as well.
>
> ---
>
> **From:** Waqi Alam <waqi.alam@tetrahedron-inc.com>
> **Sent:** Thursday, February 22, 2024 3:55 PM
> **To:** Ranard, Brandy Sue CIV USN NSWC CD CRANE IN (USA) <brandy.s.ranard.civ@us.navy.mil>; Parana, Carly A CIV USN COMNAVSEASYSCOM DC

(USA) <carly.a.parana.civ@us.navy.mil>; Montoya, Chelsea R CIV USARMY CESWF (USA) <Chelsea.R.Montoya@usace.army.mil>; Doug Schlagel <dschlagel@auxiliomanagement.com>; Williard, Bradley S (Brad) CIV USARMY USAMC (USA) <bradley.s.williard.civ@army.mil>; ehsanur.quabili@tetrahedron-inc.com; Hyndman, Kaleb T CIV USARMY CRANE ARMY AMMO ACT (USA) <kaleb.t.hyndman.civ@army.mil>; Roepke, Frank W CIV USARMY CESWF (USA) <Frank.Roepke@usace.army.mil>; Brindle, Matthew D CIV USARMY CRANE ARMY AMMO ACT (USA) <matthew.d.brindle.civ@army.mil>
Cc: Daniel Ewald <daniel.ewald@tetrahedron-inc.com>; Renee Bouwkamp <renee.bouwkamp@tetrahedron-inc.com>
Subject: Re: [Non-DoD Source] Summary of CAAA Pond 2 On-site for 2-12-2024

Yes, we will get new supply. Is there space available for storage where temperature will not be a factor? Warmer weather will make things easier but we do want to try the non-crystallized winter blend (though jar test will provide some insight). Thanks,

Waqi

On 2/22/2024 3:47 PM, Ranard, Brandy Sue CIV USN NSWC CD CRANE IN (USA) wrote:

> Are there plans to purchase new? I understand using what we have on this first treatment run because that was all we had available while you were here. It doesn't seem like we would choose what's on hand to use for the entire study.
>
> Thanks
>
> ---
>
> **From:** Waqi Alam <waqi.alam@tetrahedron-inc.com>
> **Sent:** Thursday, February 22, 2024 3:43 PM
> **To:** Ranard, Brandy Sue CIV USN NSWC CD CRANE IN (USA) <brandy.s.ranard.civ@us.navy.mil>; Parana, Carly A CIV USN COMNAVSEASYSCOM DC (USA) <carly.a.parana.civ@us.navy.mil>; Montoya, Chelsea R SWF <Chelsea.R.Montoya@usace.army.mil>; Doug Schlagel <dschlagel@auxiliomanagement.com>; Williard, Bradley S (Brad) CIV USARMY USAMC (USA) <bradley.s.williard.civ@army.mil>; ehsanur.quabili@tetrahedron-inc.com <ehsanur.quabili@tetrahedron-inc.com>; Hyndman, Kaleb T CIV USARMY CRANE ARMY AMMO ACT (USA) <kaleb.t.hyndman.civ@army.mil>; Roepke, Frank W CIV USARMY CESWF (USA) <Frank.Roepke@usace.army.mil>; Brindle, Matthew D CIV USARMY CRANE ARMY AMMO ACT (USA) <matthew.d.brindle.civ@army.mil>
> **Cc:** Daniel Ewald <daniel.ewald@tetrahedron-inc.com>; Renee Bouwkamp <renee.bouwkamp@tetrahedron-inc.com>
> **Subject:** Re: [Non-DoD Source] Summary of CAAA Pond 2 On-site for 2-12-

They will not send replacements because it was not stored properly. But the test will at least tell us if the efficacy is lost and if so by how much.

Waqi

On 2/22/2024 3:39 PM, Ranard, Brandy Sue CIV USN NSWC CD CRANE IN (USA) wrote:

> Will they be sending new chemicals to permanently replace the current crystalized chemical that we already have for future treatment runs?
>
> ---
>
> **From:** Waqi Alam <waqi.alam@tetrahedron-inc.com>
> **Sent:** Thursday, February 22, 2024 3:35 PM
> **To:** Parana, Carly A CIV USN COMNAVSEASYSCOM DC (USA) <carly.a.parana.civ@us.navy.mil>; Montoya, Chelsea R SWF <Chelsea.R.Montoya@usace.army.mil>; Doug Schlagel <dschlagel@auxiliomanagement.com>; Ranard, Brandy Sue CIV USN NSWC CD CRANE IN (USA) <brandy.s.ranard.civ@us.navy.mil>; Williard, Bradley S (Brad) CIV USARMY USAMC (USA) <bradley.s.williard.civ@army.mil>; ehsanur.quabili@tetrahedron-inc.com <ehsanur.quabili@tetrahedron-inc.com>; Hyndman, Kaleb T CIV USARMY CRANE ARMY AMMO ACT (USA) <kaleb.t.hyndman.civ@army.mil>; Roepke, Frank W CIV USARMY CESWF (USA) <Frank.Roepke@usace.army.mil>; Brindle, Matthew D CIV USARMY CRANE ARMY AMMO ACT (USA) <matthew.d.brindle.civ@army.mil>
> **Cc:** Daniel Ewald <daniel.ewald@tetrahedron-inc.com>; Renee Bouwkamp <renee.bouwkamp@tetrahedron-inc.com>
> **Subject:** Re: [Non-DoD Source] Summary of CAAA Pond 2 On-site for 2-12-2024
>
> Good afternoon,
>
> In order to test if the crystallized blend of chemical (NaOH and NaHS) remains effective, I have requested the chemical company (Brenntag) to send me a fresh sample of their winter and summer blends. We will conduct jar tests with these fresh blends to compare with

that in the drums on site.

Kaleb/Matt, the samples will be sent to the warehouse address. They have not given me an ETA but I will let you know as soon as I find out. We will send someone to conduct these tests.

Thanks,

Waqi

Waqi Alam, Ph.D.
President
Tetrahedron, Inc.
410-837-0512 (o)
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First Round of Sampling (Feb. 12 -14, 2024) Using Winter Blend (5:1) that had crystallized

Sample #	Sampling Data	Time	pH (Field)	Cd (ug/L)	Cu (ug/L)	Zn (ug/L)
Goal			6 to 9	22	84	509
Historical Average (***much lower than current values***)				94	207	1298
Jar Test (15 drops - 0.75 ml of crystallized winter blend in 500 ml pond water)						
4030152-01 (Pre) (Pond)	2/12/2024	1225	6.52	174	863	3160
4030151-01 (Post)	2/12/2024	1220	6.52	77.5	199	2740
Reduction %				55.46	79.09	13.29
Pre-Treatment						
4030153-01 (Pond)	2/13/2024	1325	6.44	171	1005	3140
4030154-01 (Pond)	2/13/2024	1327	6.44	168	898	3180
Pre-Treatment Pond Average			6.44	169.5	951.5	3160
Post Treatment (Pond)						
4024047-01 (Pond)	2/14/2024	1325	5.84	176	842	3240
4024046-01 (Pond)	2/14/2024	1327	5.84	177	866	3230
Post-Treatment Pond Average			5.84	176.5	854	3235
Post Treatment (Outfall 002)						
4040057-01	2/14/2024	1400	6.1	173	835	3130
4040058-01	2/14/2024	1430	6.06	171	834	3100
4049959-01	2/14/2024	1500	6.09	180	909	3270
4040060-01	2/14/2024	1530	6.12	171	876	3140
4040061-01	2/14/2024	1600	6.14	177	907	3250

From: Waqi Alam
To: Ranard, Brandy Sue CIV USN NSWC CD CRANE IN (USA); Parana, Carly A CIV USN COMNAVSEASYSCOM DC (USA); Montoya, Chelsea R SWF; Doug Schlagel; Williard, Bradley S (Brad) CIV USARMY USAMC (USA); ehsanur.quabili@tetrahedron-inc.com; Hyndman, Kaleb T CIV USARMY CRANE ARMY AMMO ACT (USA); Roepke, Frank W CIV USARMY CESWF (USA); Brindle, Matthew D CIV USARMY CRANE ARMY AMMO ACT (USA)
Cc: Daniel Ewald; Renee Bouwkamp
Subject: [Non-DoD Source] Bench study with fresh blend
Date: Saturday, March 23, 2024 4:41:37 PM

Good news, the fresh blend did show promising results in the lab bench study. Please see results below:

	Cadmium mg/L	Copper mg/L	Zinc mg/L
Raw	0.180	0.825	3.3
CR 400	0.012	0.002	0.073
CR 400S	0.090	0.036	0.16
Reg. Goals	0.022	0.084	0.509

The samples were dose 20 uL per 300 mls of sample:

Sample	Dose	pH
CR 400	20uL	8.26
CR 400S	20uL	8.21

CR 400 is the winter blend (NaOH: NaHS in the ratio of 5:1) while CR 400S is the summer blend in 2:1 ratio. The CR400 provided the best metal removal, which is encouraging because it crystallizes at a lower temperature (~5F) but we know now that temperatures outside at Crane can get that low.

Based on the dose, we will need about 34 gallons to see similar results under similar conditions, if we treat pond when it is 20% full. Since our rig can only handle 25 gallons in one trip, treatment efficiency expected can be 73% of the results above, which would still provide enough treatment to be within the regulatory goals.

I have ordered 2 more drums of the winter blend. If you agree we can treat the pond with this fresh blend but first by lowering the pond level to 20% of max. Or make additional trips of application for larger pond volumes. Please advise.

Thanks,

Waqi

Waqi Alam, Ph.D.
President
Tetrahedron, Inc.
410-837-0512 (o)

www.tetrahedron-inc.com

On 2/22/2024 3:58 PM, Waqi Alam wrote:

> Sure. Thanks,
> Waqi
> On 2/22/2024 3:56 PM, Ranard, Brandy Sue CIV USN NSWC CD CRANE IN (USA) wrote:
>
> > Ok, thank you for the clarification.
> >
> > ---
> >
> > **From:** Waqi Alam <waqi.alam@tetrahedron-inc.com>
> > **Sent:** Thursday, February 22, 2024 3:54 PM
> > **To:** Ranard, Brandy Sue CIV USN NSWC CD CRANE IN (USA) <brandy.s.ranard.civ@us.navy.mil>; Parana, Carly A CIV USN COMNAVSEASYSCOM DC (USA) <carly.a.parana.civ@us.navy.mil>; Montoya, Chelsea R SWF <Chelsea.R.Montoya@usace.army.mil>; Doug Schlagel <dschlagel@auxiliomanagement.com>; Williard, Bradley S (Brad) CIV USARMY USAMC (USA) <bradley.s.williard.civ@army.mil>; ehsanur.quabili@tetrahedron-inc.com <ehsanur.quabili@tetrahedron-inc.com>; Hyndman, Kaleb T CIV USARMY CRANE ARMY AMMO ACT (USA) <kaleb.t.hyndman.civ@army.mil>; Roepke, Frank W CIV USARMY CESWF (USA) <Frank.Roepke@usace.army.mil>; Brindle, Matthew D CIV USARMY CRANE ARMY AMMO ACT (USA) <matthew.d.brindle.civ@army.mil>
> > **Cc:** Daniel Ewald <daniel.ewald@tetrahedron-inc.com>; Renee Bouwkamp <renee.bouwkamp@tetrahedron-inc.com>
> > **Subject:** Re: [Non-DoD Source] Summary of CAAA Pond 2 On-site for 2-12-2024
> >
> > Yes, we will get new supply. Is there space available for storage where temperature will not be a factor? Warmer weather will make things easier but we do want to try the non-crystallized winter blend (though jar test will provide some insight). Thanks,
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To: Ranard, Brandy Sue CIV USN NSWC CD CRANE IN (USA) <brandy.s.ranard.civ@us.navy.mil>; Parana, Carly A CIV USN COMNAVSEASYSCOM DC (USA) <carly.a.parana.civ@us.navy.mil>; Montoya, Chelsea R SWF <Chelsea.R.Montoya@usace.army.mil>; Doug Schlagel <dschlagel@auxiliomanagement.com>; Williard, Bradley S (Brad) CIV USARMY USAMC (USA) <bradley.s.williard.civ@army.mil>; ehsanur.quabili@tetrahedron-inc.com <ehsanur.quabili@tetrahedron-inc.com>; Hyndman, Kaleb T CIV USARMY CRANE ARMY AMMO ACT (USA) <kaleb.t.hyndman.civ@army.mil>; Roepke, Frank W CIV USARMY CESWF (USA) <Frank.Roepke@usace.army.mil>; Brindle, Matthew D CIV USARMY CRANE ARMY AMMO ACT (USA) <matthew.d.brindle.civ@army.mil>
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[<brandy.s.ranard.civ@us.navy.mil>](mailto:brandy.s.ranard.civ@us.navy.mil); Williard, Bradley S (Brad) CIV USARMY USAMC (USA) [<bradley.s.williard.civ@army.mil>](mailto:bradley.s.williard.civ@army.mil); ehsanur.quabili@tetrahedron-inc.com [<ehsanur.quabili@tetrahedron-inc.com>](mailto:ehsanur.quabili@tetrahedron-inc.com); Hyndman, Kaleb T CIV USARMY CRANE ARMY AMMO ACT (USA) [<kaleb.t.hyndman.civ@army.mil>](mailto:kaleb.t.hyndman.civ@army.mil); Roepke, Frank W CIV USARMY CESWF (USA) [<Frank.Roepke@usace.army.mil>](mailto:Frank.Roepke@usace.army.mil); Brindle, Matthew D CIV USARMY CRANE ARMY AMMO ACT (USA) [<matthew.d.brindle.civ@army.mil>](mailto:matthew.d.brindle.civ@army.mil)
Cc: Daniel Ewald [<daniel.ewald@tetrahedron-inc.com>](mailto:daniel.ewald@tetrahedron-inc.com); Renee Bouwkamp [<renee.bouwkamp@tetrahedron-inc.com>](mailto:renee.bouwkamp@tetrahedron-inc.com)
Subject: Re: [Non-DoD Source] Summary of CAAA Pond 2 On-site for 2-12-2024

Good afternoon,

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Kaleb/Matt, the samples will be sent to the warehouse address. They have not given me an ETA but I will let you know as soon as I find out. We will send someone to conduct these tests.
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Waqi

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From:	Waqi Alam
To:	Brindle, Matthew D CIV USARMY CRANE ARMY AMMO ACT (USA); Hyndman, Kaleb T CIV USARMY CRANE ARMY AMMO ACT (USA); Ranard, Brandy Sue CIV USN NSWC CD CRANE IN (USA)
Cc:	Doug Schlagel; Montoya, Chelsea R CIV USARMY CESWF (USA); ehsanur.quabili@tetrahedron-inc.com; Parana, Carly A CIV USN COMNAVSEASYSCOM DC (USA); Daniel Ewald
Subject:	Re: [Non-DoD Source] CAAA Pilot -Suggested Modifications and plan
Date:	Monday, February 5, 2024 3:52:45 PM

Thank you Matt.

1. For increasing the pH, we looked at different options and selected the one with adding limestone to the channels from the dry dams to the Pond and also adding soda ash (sodium carbonate) briquets as a dam at the head of the pond where channels meet the pond. The pH seems high now (>6.5), so that will not be needed, but may be needed later should pH drops to below 6. We will prepare a report and include that as part of SOP.

2. Winter blend is 5:1 ratio of NaOH and NaHS while summer blend is 2:1 ratio of the same. We will add it to the SOP. Summer blend has more NaHS that is instrumental in forming metal sulfide precipitates but the blend will crystalize below 55F, therefore cannot be used in winter. Efficiency of winter blend is expected to be less but may be enough to meet the regulatory limits. Winter blend can be used up to 5F without crystallizing. This will be good time to test this out.

3. Our guy (Greg Sons) will change the flow meter and the tee tomorrow, if possible. Please provide them access to the truck and the parts. He will call you. Once done, we can run a test anytime of your convenience, except between Feb 14 and 20.

Thanks,

Waqi

Waqi Alam, Ph.D.
President
Tetrahedron, Inc.
410-837-0512 (o)
www.tetrahedron-inc.com

On 2/5/2024 2:45 PM, Brindle, Matthew D CIV USARMY CRANE ARMY AMMO ACT (USA) wrote:

> Waqi,
>
> I don't think there was anything else for parts. I apologize for the delay in response. I am still catching up on email from last week having
> training.
>
> I saw you were working with Lillian on the sampling.
>
> Yes, I would make changes based on current comments and any known changes to
> the system, but I would wait to see how the application goes to see if other
> changes need to be made before doing a second. I wanted to see a detailed
> description of bothe the Summer and Winter blends so the reader can know
> which is which. I cant even remember the blends. This should be spelled out

in the SOP.
For example:
Summer Blend - 40% NaOH, 60% NaHS
Winter Blend - 20% NaOH, 80% NaHS

The plan for increasing pH should also be included in the SOP.

As for coming to treat, we can make it work any time. This is one of my top
priorities and will remain so until complete.

Matt Brindle

-----Original Message-----
From: Waqi Alam <waqi.alam@tetrahedron-inc.com>
Sent: Friday, February 2, 2024 10:30 AM
To: Hyndman, Kaleb T CIV USARMY CRANE ARMY AMMO ACT (USA) <kaleb.t.hyndman.civ@army.mil>; Brindle, Matthew D CIV USARMY CRANE ARMY
AMMO ACT (USA) <matthew.d.brindle.civ@army.mil>; Ranard, Brandy Sue CIV USN
NSWC CD CRANE IN (USA) <brandy.s.ranard.civ@us.navy.mil>
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USARMY CESWF (USA) <Chelsea.R.Montoya@usace.army.mil>; ehsanur.quabili@tetrahedron-inc.com; Parana, Carly A CIV USN COMNAVSEASYSCOM
DC (USA) <carly.a.parana.civ@us.navy.mil>; Daniel Ewald <daniel.ewald@tetrahedron-inc.com>
Subject: [Non-DoD Source] CAAA Pilot -Suggested Modifications and plan

Good morning,

In our phone meeting, couple of changes to the equipment were suggested:

1. Install a new flow meter with larger capacity to replace the current
chemical flow meter.

2. Replace the tee after the pump with a stainless steel tee.

Is there anything else? I believe you have both the parts and we can have
it changed when we come or any other time of your convenience before that.
Please let me know.

Seems like the pH has increased substantially, and we should be ready to
apply the treatment. Brandy had suggested coordination with the lab. We
have already spoken to them and they will invoice us for the relevant samples. Do we need to do anything else? Wonder if you have the sample
bottles or if we should request the lab?

We received only few comments on the SOP, should we prepare the next version
(Draft Final) based on these comments?

We are writing a plan for increasing the pH of the pond, should that be
necessary and as was requested, but I don't think that is necessary now. We
will submit that as a backup.

When is a good time to operate the system and take samples? I am available
most of this month except between Feb 14 and 20. Please let me know.

Thanks,

Waqi

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Waqi Alam, Ph.D.
President
Tetrahedron, Inc.
410-837-0512 (o)
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Crane AAA FFCA Schedule Tracking

Project Start: 9/30/2022
Schedule Update: 4/11/2024

Activity	FFCA Schedule from Start [weeks]	FFCA Complete By	Current Schedule Complete By
Kickoff Meeting	1	10/7/2022	10/24/2022
Regulatory Support	3	10/21/2022	TBD
Work Plans (Draft)	5	11/4/2022	12/20/2022
Comments on Work Plans	7	11/18/2022	2/16/2023
Work Plans (Final)	8	11/25/2022	3/10/2023
Data Collection and Analysis	12	12/23/2022	12/16/2022
Site Characterization (Draft)	14	1/6/2023	12/29/2022
Comments on Site Characterization	16	1/20/2023	1/20/2023
Site Characterization (Final)	17	1/27/2023	1/23/2023
Feasibility Study (Draft)	20	2/17/2023	3/22/2023
Comments on Feasibility Study	22	3/3/2023	4/26/2023
Feasibility Study (Final)	23	3/10/2023	4/28/2023
Remedial Design (Draft)	29	4/21/2023	6/23/2023
Comments on Remedial Design	31	5/5/2023	7/17/2023
Remedial Design (Draft Final)	34	5/26/2023	7/31/2023
Comments on Remedial Design	36	6/9/2023	8/8/2023
Remedial Design (Final)	38	6/23/2023	8/29/2023
Treatment System Work Plan (Draft)	40	7/7/2023	8/31/2023
Comments on Treatment System Work Plan	41	7/14/2023	9/14/2023
Treatment System Work Plan (Draft Final)	43	7/28/2023	9/22/2023
Comments on Treatment System Work Plan	44	8/4/2023	10/4/2023
Treatment System Work Plan (Final)	45	8/11/2023	10/5/2023
Implementation and Monitoring	57	11/3/2023	5/3/2024
Treatment System Report (Draft)	60	11/24/2023	2/3/2024
Comments on Treatment System Report	62	12/8/2023	2/7/2024
Treatment System Report (Draft Final)	64	12/22/2023	4/19/2024
Comments on Treatment System Report	66	1/5/2024	4/19/2024
Treatment System Report (Final)	68	1/19/2024	4/19/2024
Standard Operating Procedures (Draft)	71	2/9/2024	12/11/2023
Comments on Standard Operating Procedures	73	2/23/2024	1/24/2024
Standard Operating Procedures (Final)	75	3/8/2024	4/19/2024
Training Materials (Draft)	76	3/15/2024	4/19/2024
Comments on Training Materials	77	3/22/2024	4/26/2024
Training Materials (Final)	78	3/29/2024	5/3/2024
Training of Installation Staff	79	4/5/2024	5/3/2024
Comprehensive Report (Draft)	82	4/26/2024	6/23/2024
Comments on Comprehensive Report	84	5/10/2024	7/7/2024
Comprehensive Report (Final)	86	5/24/2024	7/14/2024

Attachement (d)

CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

JOHNSON.DOUGLAS.G.1096383742 Digitally signed by JOHNSON.DOUGLAS.G.1096383742 Date: 2024.05.14 11:49:09 -04'00'

SIGNATURE

Environmental Protection Mgr — 5/14/24

TITLE — DATE

Enclosure (2)