

**WORK PLAN
for
CONSTRUCTION SUPPORT
DISCARDED MILITARY MUNITIONS
VISUAL SURVEY OPERATIONS**

at

**NAVAL WEAPONS STATION EARLE
Leonardo, New Jersey**



**Engineering Field Activity Northeast
Naval Facilities Engineering Command
Lester, Pennsylvania**

Contract Number N62472-03-D-0057
CLEAN Contract Task Order No. 0054

June 2006



TETRA TECH NUS, INC.

WORK PLAN
for
CONSTRUCTION SUPPORT
DISCARDED MILITARY MUNITIONS
VISUAL SURVEY OPERATIONS
at
NAVAL WEAPONS STATION EARLE
LEONARDO, NEW JERSEY

Submitted to:
Engineering Field Activity Northeast
Environmental Branch, Code EV4
Naval Facilities Engineering Command
10 Industrial Highway, Mail Stop No. 82
Lester, Pennsylvania 19113-2090

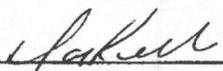
Submitted by:
Tetra Tech NUS, Inc.
600 Clark Avenue, Suite 3
King of Prussia, Pennsylvania 19406-1433

CONTRACT NO. N62472-03-D-0057
Contract Task Order No. 0054

June 2006

This Site-Specific Work Plan contains the procedures and other information that will be needed by Tetra Tech field staff to perform the specified Discarded Military Munitions construction support at the pier complex at Naval Weapons Station Earle in Leonardo, New Jersey. By their signatures, the undersigned certify this Work Plan is approved for implementation at the Earle, NJ Site and will be used to direct ordnance related activities at the site.

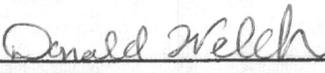
APPROVED BY:



Dave Keller
UXO Construction Manager
(425) 482-7749

6/9/2006

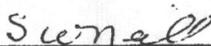
Date



Don Welch
UXO Quality Control Manager
(256) 430-3622

6/11/06

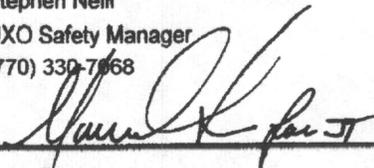
Date



Stephen Neill
UXO Safety Manager
(770) 330-7068

6/11/06

Date



John Trepanowski
Program Manager
(610) 491-9688

6/12/06

Date



TABLE OF CONTENTS

	<u>PAGE</u>
1.0 INTRODUCTION.....	1-1
1.1 GENERAL INFORMATION.....	1-1
1.2 PROJECT OBJECTIVE	1-1
1.3 PROJECT BACKGROUND	1-1
1.4 SITE LOCATION	1-2
1.5 SITE HISTORY	1-2
1.6 TOPOGRAPHY	1-3
1.7 CLIMATE	1-3
2.0 TECHNICAL MANAGEMENT PLAN.....	2-1
2.1 APPLICABLE GUIDANCE AND REGULATIONS.....	2-1
2.2 DISCOVERY OF CHEMICAL WARFARE MATERIEL (CWM).....	2-1
2.3 OFF-SITE MEC DISPOSAL.....	2-2
2.4 UNIDENTIFIED MEC.....	2-2
2.5 TECHNICAL SCOPE	2-2
2.5.1 Preparation of Site-Specific Work Plans.....	2-3
2.5.2 Observation of Dredge Spoils/Debris Transfer	2-3
2.5.3 Visual Survey of Dredge Spoils for DMM	2-3
2.6 CHANGED SITE CONDITIONS	2-4
2.7 PROJECT ORGANIZATION.....	2-5
2.8 MOBILIZATION AND SITE PREPARATION	2-7
2.8.1 Site Accessibility and Traffic Control	2-7
2.8.2 Site Security.....	2-8
2.9 REPORTING AND DISPOSITION OF MEC.....	2-8
2.10 MUNITIONS DEBRIS (MD) / MUNITIONS CONSTITUENTS (MC) MANAGEMENT	2-9
2.11 LESSONS LEARNED	2-9
3.0 EXPLOSIVES SITING PLAN	3-1
3.1 ORDNANCE AND EXPLOSIVES AREAS	3-1
3.2 PLANNED OR ESTABLISHED DEMOLITION AREAS	3-1
3.3 FOOT PRINT AREA	3-1
3.3.1 Blow-In-Place.....	3-1



3.3.2	Collection Points	3-2
3.3.3	In-Grid Consolidation Shots	3-2
3.4	EXPLOSIVES STORAGE MAGAZINES.....	3-2
4.0	WORK, DATA AND COST MANAGEMENT PLAN.....	4-1
4.1	PROJECT MANAGEMENT APPROACH	4-1
4.2	COST CONTROL	4-1
4.3	PROJECT SCHEDULE.....	4-1
4.4	SUBMITTALS	4-2
5.0	CONTRACTOR QUALITY CONTROL PLAN.....	5-1
5.1	GENERAL.....	5-1
5.1.1	Tetra Tech Personnel and QC.....	5-1
5.2	DUTIES AND RESPONSIBILITIES	5-1
5.2.1	UXO Quality Control Specialist.....	5-1
5.2.2	Stop Work Authority	5-2
5.2.3	Stop-Work Request	5-2
5.3	AUDIT PROCEDURES.....	5-2
5.4	QUALITY CONTROL PROCESS	5-3
5.4.1	Process QC	5-3
5.4.2	Product QC	5-5
5.5	CORRECTIVE ACTION PROCEDURES	5-5
5.6	ROOT CAUSE ANALYSIS.....	5-6
5.7	FIELD OPERATIONS	5-7
5.8	CONTRACT DELIVERABLES	5-7
5.8.1	Document Control.....	5-7
5.8.2	Document Review.....	5-7
5.8.3	Independent Technical Review.....	5-7
5.9	LESSONS LEARNED	5-8
5.10	TRAINING.....	5-8
5.11	Data Quality	5-8
6.0	OTHER CONSIDERATIONS	6-1
7.0	REFERENCES.....	7-1



LIST OF FIGURES

	<u>PAGE</u>
Figure 2-2. – Project Organization Chart	2-6

LIST OF TABLES

	<u>PAGE</u>
Table 2-1. Key Personnel and Project Contacts	2-5
Table 4-1. Required Submittals	4-2
Table 5-1. Tetra Tech Corporate Procedures	5-1
Table 5-2. Quality Requirements for UXO Support To The Navy at NWS Earle, NJ	5-9

APPENDICES

APPENDIX A – FIGURES (Maps Only – Other Figures are in the Text)

APPENDIX B - LOCAL POINTS OF CONTACT

APPENDIX C - SITE SPECIFIC HEALTH PLAN

APPENDIX D - PROJECT FORMS

APPENDIX E - STANDARD OPERATING PROCEDURES

APPENDIX F - RECORDS OF CHANGE



ACRONYMS

BIP	Blow-in-Place
CAR	Corrective Action Request
C/D	hazard class/division
CLEAN	Comprehensive Long-Term Environmental Action Navy
CNO	Chief of Naval Operations
CQCP	Contractor Quality Control Plan
CWM	Chemical Warfare Materiel
cy	cubic yards
DDESB	Department of Defense Explosive Safety Board
DID	Data Item Description
DMM	discarded military munitions
DN	Deficiency Notice
EMM	earth moving machinery
EOD	Explosive Ordnance Disposal
ESQD	Explosive Safety Quantity Distance
ESS	Explosive Safety Submission
HASP	Site-Specific Health and Safety Plan
HE	high explosive
HTRW	Hazardous, Toxic or Radiological Waste
ITR	independent technical review
MC	munitions constituents
MD	munitions debris
MEC	munitions and explosives of concern
mm	millimeter
MPPEH	material potentially presenting an explosive hazard
NCR	Non-Conformance Report
NJDEP	New Jersey Department of Environmental Protection
NW	net explosive weight



NOSSA	Naval Ordnance Safety and Security Activity
NWS	Naval Weapons Station
PESM	Project Environmental Safety Manager
PM	Project Manager
POC	Point of Contact
QC	Quality Control
SOP	Standard Operating Procedure
SS	Shift Supervisor
SSWP	Site-Specific Work Plan
SUXOS	Senior UXO Supervisor
TBD	to be determined
TtNUS	Tetra Tech NUS, Inc
USACE	United States Army Corps of Engineers
UXO	unexploded ordnance
UXO ESS/QC	UXO Environmental Safety Specialist/Quality Control Specialist
WMI	Weeks Marine Incorporated



1.0 INTRODUCTION

1.1 GENERAL INFORMATION

This Site-Specific Work Plan (SSWP) describes the technical approach for performing discarded military munitions (DMM) construction support activities for the replacement of Pier 3 in the Waterfront Complex at Naval Weapons Station (NWS) Earle located at Leonardo, New Jersey. Tetra Tech NUS, Inc. (TtNUS) is performing this work under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract number N62472-03-D-0057, Contract Task Order (CTO) 0054. This Work Plan was prepared in accordance with the *Data Item Description (DID) OE-005-01.01*. The scope of work and activities addressed in this SSWP, and the Site-Specific Health and Safety Plan (HASP) contained in Appendix C, have also been addressed in an Explosive Safety Submission (ESS) and a Chief of Naval Operations (CNO) Waiver Request. The CNO Waiver has been approved and the ESS has received conditional approval from Naval Ordnance Safety and Security Activity (NOSSA) (Navy 2006a; Navy 2006b). In addition, operations must be conducted in compliance with the NWS Earle Operational Risk Management (ORM) Plan developed this project and issued by the Navy under separate cover. Also, all site work must be conducted and managed in accordance with the New Jersey Department of Environmental Protection (NJDEP) Water Quality Certificate issued for this project (May 23, 2006).

1.2 PROJECT OBJECTIVE

The objective of this project is to conduct a visual survey of dredge materials/debris for DMM. This work is being completed as a result of DMM items being discovered in the debris during previous offloading operations. The purpose of the visual survey is to ensure the safety of personnel during the transfer of the debris and to remove DMM and Material Potentially Presenting an Explosive Hazard (MPPEH) from the dredge material prior to material being released for shipment offsite.

1.3 PROJECT BACKGROUND

Beginning in July 2005, Weeks Marine Incorporated (WMI), a prime contractor for the Navy, began demolition and dredging in preparation for the replacement of Pier 3 at NWS Earle. WMI contracted with a private landowner in Virginia for upland disposal of the dredge materials. The upland disposal of these dredge materials was approved by appropriate state of Virginia environmental agencies. WMI's operation involved a two stage process. The first stage incorporated water into the dredge material, creating a slurry mix. This mix was subsequently pumped off of the scow. Once all of the slurry was removed, WMI started removing construction debris from the bottom of the scow (depth of material is estimated to be 8 feet). Shortly after the offloading operation began, WMI uncovered three 40mm Anti-Aircraft (HE) ammunition rounds and a single 5 inch / 54 powder can (partially emptied). The Explosive



Ordnance Disposal (EOD) unit at NWS Yorktown was contacted and removed the rounds from the site under emergency response provisions. NOSSA was then contacted and advised that this could be an isolated event and to closely monitor the material for additional discoveries of DMM. Shortly after, two additional rounds of DMM [40mm Anti-Aircraft (HE)] were encountered; NOSSA was notified and the upland disposal at the Virginia site was suspended. Based on the discovery of the additional DMM, NOSSA required the remaining material be physically or mechanically surveyed for DMM.

1.4 SITE LOCATION

NWS Earle is located along the northern New Jersey shore in the south end of Sandy Hook Bay. The station is about 4 miles west of Sandy Hook and 7 miles southeast of Staten Island. The Station is divided into two sections: Main-side, located in Colts Neck, and the Waterfront Area, on Sandy Hook Bay, located in the Leonardo section of Middletown. Both areas are connected by Normandy Road, a 15-mile military road and rail line.

1.4.0.1 - The project site is located in the Pier Complex of the Waterfront Area near Pier 3. The site includes several scows, one or more barges and an abandoned railroad trestle (Trestle 2) near Pier 3. Currently, there are a total of four (4) scows anchored near the pier that are partially filled with the construction debris and residual soil to be screened for DMM. The material will be loaded onto Trestle 2 for screening. Oversize material will be placed on one or more flat top barges for screening. Figure 1-1 (Appendix A) shows the location of the project site within the Pier Complex. Because the work platforms are mobile, the configuration of the work site may vary slightly throughout the project.

1.5 SITE HISTORY

Naval Weapons Station Earle's history began in 1943, when a pressing need developed for an Ammunition Depot in the greater New York area to support the war effort. The location provided ships with a safe and operationally advantageous port to take on ammunition, and it also had access to commercial rail facilities with lines coming from the west, where the majority of ammunition shipments originated.

1.5.0.1 - On Aug. 2, 1943, construction began on what was to be Naval Ammunition Depot Earle, named after Rear Admiral Ralph Earle, the Chief of the Bureau of Ordnance during World War One. The depot was commissioned on Dec. 13, 1943. There was still a long way to go to complete N.A.D. Earle. That work included building the military road and railway connecting the Main-side complex, the Waterfront Area and the Pier Complex (as the various functional areas of the facility are known today).

Earle continued to develop after World War II, keeping pace with the changing needs of the Navy. In 1974, Earle's name was officially changed to Naval Weapons Station Earle.

1.5.0.2 - Since the early 1940s, the U.S. Navy has handled, stored, renovated, and transshipped munitions at the NWS. These operations involve preserving and maintaining



ammunition, missile components, and explosives; rendering safe unserviceable and/or dangerous ammunition and explosives; and providing support to the Fleet Mine Facility. The station also conducts or has conducted non-ordnance activities, radiological operations, materials storage, and waste disposal operations. Over the years NWS Earle has provided services for nearly every class of Navy ship.

1.6 TOPOGRAPHY

NWS Earle is located along the New Jersey shore in Monmouth County. Sandy beaches and adjacent lowlands characterize the coastal portions of the County. Elevations of only 30 feet are found in western Long Branch and in Rumson, Fair Haven and Wall Township. If sea level were to rise by fifty feet some three to four miles of the eastern part of the County would fall beneath the water. Only a few isolated hills would extend above the sea between the present Shrewsbury and Navesink Rivers and all of Sandy Hook (near NWS Earle), Sea Bright and the Bayshore would be covered by water.

1.7 CLIMATE

Specific climatological data for NWS Earle was not found; however, data are available for the town of Long Branch about 10 miles southeast of the NWS. The climate of Long Branch is classified as maritime with considerable influence from the Atlantic Ocean. Summer temperatures seldom exceed 100 °F but frequently reach into the 90's from late May until early September. Winter readings rarely drop below 0 degrees °F. The mean annual temperature for Monmouth County, where both Long Branch and NWS Earle are located is 53 degrees F.

1.7.0.1 - Precipitation in Monmouth County ranges from 45 to 47 inches a year. In Long Branch the average is 45 inches. The heaviest rainfall amounts countywide normally occur during the summer months. Snowfall on a countywide basis averages around 25 to 26 inches a season. The maximum monthly amount of snow on record for Long Branch was 32.9 inches in December 1947. Snow falls between the months of December and March inclusive, although snow has fallen on all months from October through May inclusive.

Although destructive storms are infrequent in Monmouth County, summer thunderstorms occasionally combine high winds with heavy rainfall, and heavy rains have occurred in connection with hurricanes, which move northward along the mid-Atlantic coast. Additionally, a considerable portion of the summer and autumn rainfall comes from tropical storms that pass near the New Jersey Coast.



2.0 TECHNICAL MANAGEMENT PLAN

The Technical Management Plan was prepared to document the approach and procedures to be used to execute the tasks required under this task order.

2.1 APPLICABLE GUIDANCE AND REGULATIONS

All UXO construction support activities will be performed in accordance with all local, state, and federal regulations and will include all applicable DID requirements including Engineer Pamphlet EP-75-1-2 dated 01 August 2004, and *DID OE-005-01.02* (USACE, 2002).

2.1.0.1 - All activities involving work in areas potentially containing DMM hazards shall be conducted in full compliance with the NWS Earle, Munitions Mandatory Center of Expertise (MM CX), Department of the Navy, and Department of Defense requirements regarding personnel, equipment, and procedures.

2.2 DISCOVERY OF CHEMICAL WARFARE MATERIEL (CWM)

Potential exposure to CWM on this site is not anticipated. In the event that CWM is located or suspected, Tetra Tech personnel will evacuate the area immediately in an upwind direction from the area, secure the site, and request assistance from the Navy point of contact (POC).

2.2.0.1 – Upon discovery of suspect materials, the responsible UXO Technician III (SS) will:

- Notify the Senior UXO Supervisor (SUXOS);
- Ensure that all personnel are clear of the area; and,
- Maintain security of the area until relieved.

2.2.0.2 – Upon notification of the potential CWM the SUXOS will:

- Notify the UXO Project Manager;
- Notify the Navy POC;
- Stop all field operations;
- Assemble the crew at a designated assembly point; and,
- Standby to provide assistance as required.

2.2.0.3 - If directed, UXO personnel will take emergency non-invasive actions such as covering the item with plastic sheeting or placing sandbags around the item.

2.2.0.4 - In the event that Hazardous, Toxic, or Radiological Waste (HTRW) is encountered on site, the work site will be evacuated until the Project Environmental Safety Manager (PESM), with concurrence of the Navy POC, identifies and implements appropriate protective measures.

2.3 OFF-SITE MEC DISPOSAL

All DMM (or other munitions and explosives of concern [MEC]) located that are safe to move will be turned over to the NWS Earle explosive ordnance disposal (EOD) unit for disposal at their approved treatment facility. No MEC will be disposed of on the work site. These items will be transported to a Ready Storage Locker (RSL) at the work site and transferred to NWS Earle EOD personnel for disposal at the approved treatment facility at NWS Earle. If DMM or MEC that are unsafe to move are encountered, the Navy POC will be notified. NWS Earle explosive ordnance disposal (EOD) personnel will be responsible for the removal and/or disposal of these items.

2.4 UNIDENTIFIED MEC

2.4.0.1 – If any DMM or MEC items are located that cannot be identified, the Navy POC will be notified and NWS Earle EOD personnel will be requested to assist with proper identification of the suspect item(s). Items will not be moved until a positive identification is made.

2.5 TECHNICAL SCOPE

This is a construction support project including the removal of DMM from dredge materials generated during the construction of a new Pier 3 at the NWS Earle Pier Complex. The project is not being conducted under any regulatory program.

2.5.0.1 - The scope of this project consists of observing the transfer of dredge spoils/ construction debris potentially contaminated with DMM from scows/barges to abandoned Trestle 2, and conducting a visual survey of the debris to identify and remove any DMM or materials potentially presenting an explosive hazards (MPPEH). The goal of the survey is to remove all DMM or other MPPEH; however, the Client must recognize that even the most comprehensive services may not detect and/or reduce all of the environmental liabilities related to MPPEH at a particular site because of technological limitations of equipment or methods and/or the unique conditions that exists at any site. The work will be carefully and thoroughly performed in accordance with the approved SSWP and all QC functions and activities will be used to ensure that quality objectives are met. Finished materials will be certified in accordance with the ESS, Revision 1 (Navy 2006b). The following tasks will be performed to implement the defined scope of work:

- Site-Specific Work Plan Preparation
- Observation of Dredge Spoils/Debris Transfer
- Visual Survey of Dredge Spoils for DMM
- Identification and Management of DMM or other MPPEH
- Verification of the Quality of Work Performed



2.5.1 Preparation of Site-Specific Work Plans

This SSWP for the identification and removal of DMM from dredge spoils generated during the construction of the new Pier 3 at NWS Earle includes site-specific details that are required by DID OE-005-01.01 governing preparation of a Type I SSWP. Sections from the standard plan format which are not applicable to this project have been omitted. The plan contains all relevant and necessary information for safe and efficient performance of the DMM identification and removal. No site work will commence until approval of this SSWP is received.

2.5.2 Observation of Dredge Spoils/Debris Transfer

WMI will conduct a transfer operation to remove dredge spoils and debris from the scows where it is currently located and place it atop Trestle 2 for inspection to identify and remove DMM (or other MPPEH). Larger debris will be placed on a flat top barge for inspection. The transfer operations will be conducted using one or more cranes equipped with a clam shell bucket (trestle materials) or grapple (larger debris on barges).

2.5.2.0.1 - This task will be performed by 2-person UXO teams equipped with an optional Schonstedt ferrous metal detector or other approved detector to aid in the location of potential DMM or other MPPEH observed during transfer. The use of the Schonstedt locator will be predicated on the amount of background metal in the survey area. The UXO team(s) assigned to this task will visually observe the transfer operation and provide UXO safety to personnel operating the equipment. In addition to observing the materials for possible MPPEH, the UXO team member manning the crane during the large debris operations will coordinate debris placement with the crane operator to ensure that the items requiring inspection are accessible and the barge is not over crowded.

2.5.2.0.2 - Specific procedures for this task are included in Standard Operating Procedure (SOP) 1 in Appendix E. SOP 3 contains the specific procedures and requirements for MPPEH accountability. In addition to the procedures in the SOP, personnel will observe all safety requirements in the approved HASP.

2.5.3 Visual Survey of Dredge Spoils for DMM

This task incorporates two separate activities. The first activity is the preparation of the spoils for visual evaluation and the second is the actual evaluation. Prior to beginning dredge spoil evaluation, the spoils will be transported to appropriate areas on Trestle 2 (those determined to be structurally adequate) and spread into a thin layer. Small earth moving machinery (EMM) such as mini-excavators and mini-front end loaders will be utilized for this task since work space on the trestle is limited and there are weight restrictions (loading no greater than 185 lbs./sq. ft. in approved areas). The mini-excavators will be equipped with York Rakes or other suitable tools to facilitate effective spreading of spoils for evaluation. Jersey barriers will be placed near the edges of the trestle to prevent equipment from inadvertently falling from the trestle. The Material Handling Plan prepared by TtNUS (TtNUS, 2006) addresses placement of Jersey



Barriers, erosion control and other issues pertinent to site setup. Larger debris will be placed on flat top barges for visual inspection, no further preparation is anticipated, work areas are shown on Figure 2-1, Appendix A.

2.5.3.0.1 - Once spoils are spread to an appropriate depth for evaluation (estimated at 2 to 3 inches, but no greater than 6 inches) or placed on a barge (larger debris), 2-person UXO teams will visually survey the materials to identify and remove DMM or other MPPEH. This task will be accomplished using appropriate hand tools such as rakes and forks. Schonstedt ferrous metal detectors may be utilized to assist in the detection of possible DMM if the metallic background of the survey area will permit their effective use. There will be up to 12, 2-person UXO teams divided into up to 3 UXO crews for this task. Crews will work 12-hour shifts on a rotating schedule to man this task 24 hours per day/7 days per week (24/7). Based on this approach, light plants will be required to ensure proper lighting for safe operations and comprehensive identification and removal of DMM or other MPPEH.

2.5.3.0.2 - During each shift, up to three spoils survey sites on the trestle will be operated, as well as one inspection site for larger debris. One 2-person UXO team will man each work area, along with two equipment operators (trestle areas). WMI will provide the crane operator for the barge area. Two general laborers will be available on each shift to perform support functions such as refueling equipment or light plants.

2.5.3.0.3 - After conducting the visual survey on each batch of dredge material, the UXO-team will notify the Shift Supervisor (SS) that the material is ready for quality control (QC) inspection. The SS will arrange for QC inspection as appropriate and required. When the QC process is complete and the spoils material has been approved for removal, the SS will notify WMI that the material may be removed from the survey area and transported to the designated loading/stock piling area. This operations cycle will continue until all debris has been surveyed and determined to be free of DMM.

2.5.3.0.4 - Specific procedures for this task are included in SOP 2 in Appendix E. SOP 3 contains the specific procedures and requirements for MPPEH accountability. In addition to the procedures in the SOP, personnel will observe all safety requirements in the approved HASP and ORM.

2.6 CHANGED SITE CONDITIONS

Tetra Tech will keep the Navy POC updated on project status via daily reporting and frequent communication of on-site activities and conditions. In the event extreme adverse weather conditions exist, or a change in site conditions is identified, Tetra Tech will notify the Navy POC immediately.

2.6.0.1 - The potential for changed site conditions (besides weather) is low since the debris is already anticipated to contain DMM and/or other MPPEH; however, severe storms resulting in high winds, heavy rainfall or lightning may delay the inspection work and lead to a changed condition.

2.7 PROJECT ORGANIZATION

Tetra Tech will provide qualified and experienced UXO personnel for this project including a Senior UXO Supervisor, UXO Environmental Safety and Quality Specialists and UXO SSs (highly qualified UXO Technician IIIs) who have worked at similar project sites in the past. These individuals will be supported by equipment operators and laborers, as well as technical, financial and administrative personnel who are well qualified in all aspects of project execution, management and monitoring. Figure 2-2 shows the project organization. Table 2-1 contains the names and phone numbers for key project personnel and other relevant points of contact for this project.

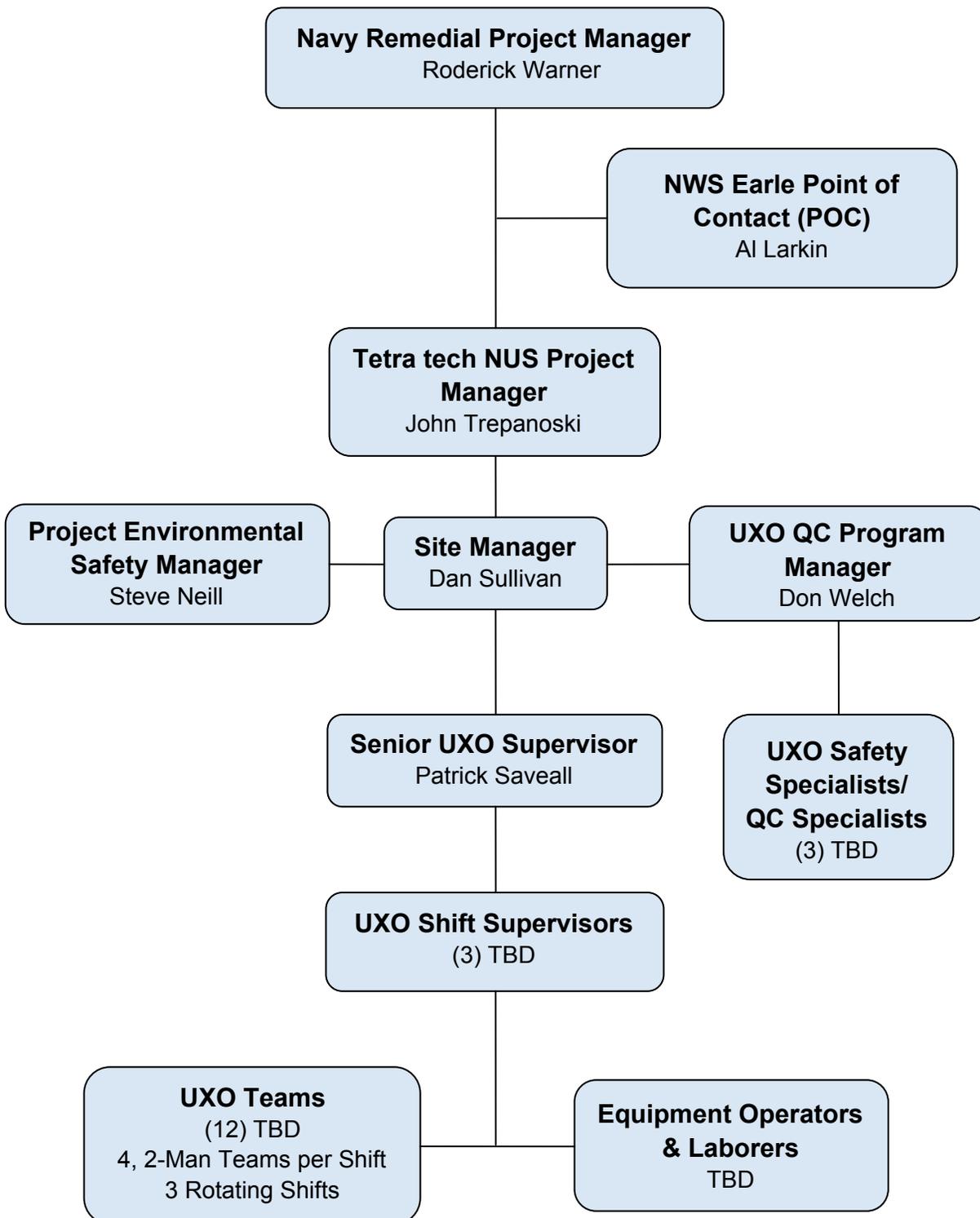
2.7.0.1 - The UXO Technicians on site conducting the observation and visual survey operations will meet or exceed the minimum qualification standards as stated in Department of Defense Explosive Safety Board (DDESB) TP18, Table 4-1. All personnel will be required to comply with the medical, training, experience, and educational requirements specified in *USACE DID OE-025.01*, OSHA regulations, and the HASP.

Table 2-1. Key Personnel and Project Contacts

Representative	Phone Number
TtNUS Project Manager John Trepanowski	(610) 491-9688
Site Manager Dan Sullivan	(617) 834-7211
Project Environmental Safety Manger Steve Neill	(412) 921-8912
Project Quality Control Manager Don Welch	(251) 580-8225
SUXOS Patrick Saveall	(425) 985-5450
Navy POC - NWS Earle Explosive Safety Officer Al Larkin	(732) 866-2386 (732) 573-5198 Cell



Figure 2-2. – Project Organization Chart



2.8 MOBILIZATION AND SITE PREPARATION

Tetra Tech will schedule the arrival of the work force in a manner that is most effective and designed to allow for immediate productivity. All personnel mobilized to the site will meet the Occupational Safety and Health Administration (OSHA) training and medical surveillance requirements as specified in the HASP. As part of the mobilization process, Tetra Tech will perform site-specific training for all on-site personnel assigned to this project. The purpose of this training is to ensure that these personnel fully understand the operational procedures and methods to be used by Tetra Tech at NWS Earle, to include individual duties and responsibilities, and all safety and environmental concerns associated with operations. Any personnel arriving at the site after this initial training session will be trained as they arrive. Training will be conducted by the SUXOS, or one of the UXO Environmental Safety Specialist/Quality Control Specialists (UXO ESS/QC).

2.8.0.1 - Project equipment will come from Tetra Tech sources and local leases/ purchases. All equipment, regardless of source, will be checked to ensure its completeness and operational readiness. Any equipment found damaged or defective will be returned to the point of origin and a replacement will be secured. All instruments and equipment that require routine maintenance and/or calibration will be checked initially upon arrival and then prior to use each day. This system of checks ensures that the equipment is functioning properly. If an equipment check indicates that any piece of equipment is not operating correctly and field repair cannot be made, the equipment will be tagged and removed from service and a request for replacement equipment will be placed immediately. Replacement equipment will meet the same specifications for accuracy and precision as the equipment removed from service.

2.8.0.2 – Tetra Tech will use an office trailer mobilized to the site and a Conex box for the storage of equipment. The office trailer will include a room large enough for briefings at the beginning of each shift. Access to restrooms will be provided.

2.8.1 Site Accessibility and Traffic Control

The site is a controlled area. Explosive safety requires a minimum 236 foot active exclusion zone [based on the fragmentation distance for a 40mm HE in accordance with the DDESB Technical Paper 16] be established and maintained before any visual survey activities occur due to the potential of encountering live explosively configured munitions. However, based on the approved CNO Waiver and ESS, Navy and Navy contractor personnel non-essential to the survey operation will be permitted use of Trestle 1A, which bi-sects the exclusion zone (see Figures 3-1 through 3-4), for non-ordnance related activities (Navy 2006b; Navy 2006c). During ordnance handling operations on the Pier Complex, Tetra Tech will station flagmen with approved radios at either end of the DMM survey/transfer Explosive Safety Quantity Distance (ESQD) arc on the main trestle. When placarded ordnance laden conveyances approach the ESQD with the intent of passing through the area to Trestle 1A, the flagman will notify the SS and UXO Team Leaders to secure their operations in order to allow the ordnance conveyances



to proceed down Trestle 1A. Once the ordnance vehicles are out of the area, the survey/transfer operation will restart. Ordnance handling operations on the Pier Complex take priority at all times and transit delays of ordnance conveyances will be kept to a minimum. All other vehicles will be allowed to proceed and the flagmen will not be stationed on the main trestle when there are no ordnance handling operations underway. Communications between NWS Earle and the UXO team for upcoming pier operations will be critical for efficient/timely DMM operations.

2.8.1.0.1 - The exclusion zone will require adjustment if munitions other than 40mm are encountered. The CNO Waiver and ESS for the operation include a contingency for expanding the exclusion zone to 425 feet based on the possibility of encountering a 5 inch/54 projectile, (Navy, 2006a; Navy, 2006b). In accordance with the CNO Waiver and ESS, operations may continue as noted above after establishing the adjusted exclusion zone.

2.8.1.0.2 - Access to abandoned Trestle 2 and/or the debris survey area will be controlled by the UXO Team Leader. Non-site or non-essential UXO personnel will not be permitted to access the abandoned pier or the survey area during survey operations. If non-essential non-UXO personnel enter the work area, all survey, transfer and/or intrusive operations will cease until the areas is cleared of non-essential personnel and security of the area is reestablished.

2.8.1.0.3 - Both routine and emergency response actions dictate the need for prevention of unauthorized site access, and for the protection of vital records and equipment. All equipment will be secured and brought to a designated location each day.

2.8.2 Site Security

Site Security will be maintained to ensure that non-essential personnel do not access the area during the UXO survey operations.

2.9 REPORTING AND DISPOSITION OF MEC

Initial MPPEH identification will be the responsibility of the UXO teams. MPPEH will not be moved until a positive identification is made and it is determined that the item(s) can be safely moved. If DMM or other MEC is identified, and deemed safe to move, the UXO team will transport the item(s) to the off-load point for their work area and relinquish custody to the SS. The supervisor will verify identification and transport the item(s) to the Ready Storage Locker (RSL) provided by NWS Earle. The supervisor will be responsible for filling out an MEC Data and Accountability Form and entering the recovered item on the RSL Inventory Card. Both of these forms are contained in Appendix D.

2.9.0.1 - If the UXO team is unable to identify an MPPEH item, the team will notify the SS. The supervisor, along with the SUXOS if necessary, will inspect the item and assist with identification. If the item cannot be identified by Tetra Tech personnel, the SUXOS (or SS when the SUXOS is not on site) will notify the Navy POC and request assistance.



2.9.0.2 - If items are encountered that are not safe to move, the SUXOS (or SS when the SUXOS is not on site) will notify the Navy POC and request assistance. The item will remain in place and will be secured until NWS Earle personnel arrive to take custody of the item. If directed, UXO personnel will take emergency non-invasive actions such as placing sandbags around the item.

2.9.0.3 - DMM and other MEC recovered during survey operations will be stored in the RSL provided by NWS Earle. These materials will inventoried by the SUXOS at the end of each work day. Following the inventory, the SUXOS will notify the Navy POC of the quantity of DMM secured in the RSL. The Navy POC will coordinate transfer and pick up of the DMM with NWS Earle EOD who will be responsible for the transport and treatment of the DMM per the NWS Earle EOD procedures. If at any time the DMM in the RSL totals a Net Explosive Weight (NEW) of 100 lbs., all visual survey operations will stop until NWS Earle EOD responds and the DMM is transferred to NWS Earle EOD custody. The SUXOS will maintain custody of DMM in the RSL until relieved by NWS Earle EOD. Recovered DMM will be managed as Hazard Division 1.1.

2.9.0.5 - Specific procedures for MPPEH management and accountability are presented in SOP 3, Appendix E.

2.10 MUNITIONS DEBRIS (MD) / MUNITIONS CONSTITUENTS (MC) MANAGEMENT

If MPPEH cannot be certified as explosive free it will be handled in the same manner as MEC (See Section 2.9). If MPPEH is determined to be explosive free, it will be certified as such and secured on site. To be certified as explosive free MPPEH must be inspected by at least two UXO technicians including the SS. After confirming that the MPPEH is explosive free, it will be placed in containers located in a secure area near the RSL and entered into an inventory of the container contents. The containers will be kept under the custody of the SSs and will be sealed when full or whenever operations cease. Prior to opening a container that has been sealed the custody seal will be inspected and its condition noted in the site records/log books. At the end of the project, all MPPEH determined to be explosive free will be re-certified in accordance with NOSSA OP5 13-15.8 and offered under chain of custody to NWS Earle. If NWS Earle will not accept custody of the material, it will be transported, accompanied by the certification paperwork, for demilitarization/shredding/smelting.

2.11 LESSONS LEARNED

Lessons learned will be captured and documented using Tetra Tech Procedure QP-14 Lessons Learned Procedure. The Lessons Learned Report Form used for documentation is contained in Appendix D. The UXO ESS/QC will attach the completed Lessons Learned Report form(s) to daily and weekly QC reports. The UXO ESS/QC will recap all Lessons Learned at daily safety briefings or sooner as necessary.

3.0 EXPLOSIVES SITING PLAN

This plan outlines the procedures that will be used to store recovered DMM and MEC for this Task Order.

3.1 ORDNANCE AND EXPLOSIVES AREAS

The minimum separation distances for nonessential personnel, (based on DDESB Technical Paper 16 and the known/suspected munitions) during DMM operations, shall be 236 feet. The minimum separation distance shall be an arc of 236 feet from the outermost boundary of the area of operation, and will move as the operation moves on the trestle. This separation distance shall be maintained during all active visual survey operations, unless engineering controls are used. However, as discussed under Section 2.6, non-essential personnel involved in non-ordnance activities will be permitted to conduct routine Navy-related work activities on Trestle 1A, which traverses the 236 foot separation distance. All survey operations will cease if ordnance-related activities are to be conducted by Navy personnel along Trestle 1A, (See Section 2.8.1).

If munitions other than the 40mm rounds anticipated are identified or encountered during operations, the separation zone will be adjusted to be the maximum fragmentation distance for that munition. The CNO Waiver and ESS for this project includes a contingency for encountering a 5 inch/54 projectile (Navy 2006a, Navy 2006b). Based on these plans, the separation distance will be increased to 425 feet if a 5 inch projectile is encountered and operations may continue as described in this work plan and the Site-Specific HASP. If larger munitions are encountered all work will cease and the Navy POC will be notified. No further work will be conducted unless authorized by designated Navy explosive safety personnel.

3.2 PLANNED OR ESTABLISHED DEMOLITION AREAS

There is not a planned or established demolition area for this project.

3.3 FOOT PRINT AREA

3.3.1 Blow-In-Place

No blow-in-place (BIP) operations are planned or anticipated for this operation. NWS Earle EOD personnel are responsible for responding to all emergencies or unstable munitions under emergency response provisions. The maximum fragmentation distance arcs for 40mm and 5-inch/54 projectiles are shown on Figures 3-1 and 3-2. If BIP becomes necessary, the maximum fragmentation distances shown on the figures will be the basis for amended exclusion zones.



3.3.2 Collection Points

DMM recovered during survey operations will be inventoried and secured for temporary storage in the RSL sited near the visual survey location. The SUXOS will notify the Navy POC of the quantity of DMM secured in the RSL at the end of each day. The Navy POC will coordinate transfer and pick up of the DMM with NWS Earle EOD. If at any time the DMM in the RSL totals a Net Explosive Weight (NEW) of 100 lbs., all visual survey operations will stop until NWS Earle EOD responds and the DMM is transferred to NWS Earle EOD custody. The UXO Technicians will maintain custody of DMM in the RSL until relieved by NWS Earle EOD. Recovered DMM will be managed as Hazard Division 1.1.

Figures 3-1 and 3-2 show a 658-foot hazard fragmentation distance arc generated by the placement of the RSL on the Southwest corner of abandoned Trestle 2. This arc is based on 100 lbs hazard Class/ Division (C/D) 1.1 Net Explosives Weight (NEW) per NAVSEA OP-5, Table 7-9.

3.3.3 In-Grid Consolidation Shots

No in-grid consolidated disposal is planned or anticipated for this operation. NWS Earle EOD personnel are responsible for responding to all emergencies or unstable munitions under emergency response provisions.

3.4 EXPLOSIVES STORAGE MAGAZINES

No explosives will be used in the performance of this project. NWS Earle EOD will be responsible for the transportation (from the RSL), storage and treatment of recovered DMM and MPPEH. No on-site treatment or demolition is anticipated for this project.

4.0 WORK, DATA AND COST MANAGEMENT PLAN

4.1 PROJECT MANAGEMENT APPROACH

Effective management is an essential element in the delivery of a quality product. Tetra Tech is committed to providing a management structure that meets this goal and is tailored to the operational requirements of the project. Figure 2.2 depicts the management team that Tetra Tech will utilize throughout the execution of this project. This team provides the appropriate level of management, safety, and quality oversight to ensure that all work will be performed in an efficient, safe, and cost-effective manner. The Tetra Tech field staff will report directly to the Site Manager (SM), who will in turn report to the TtNUS Project Manager (PM). The PM will report to the Navy POC to ensure effective communication of technical and management issues throughout the performance of work. All support personnel required will report to the appropriate member of the management team as identified in the technical management plan. The project management will ensure the project elements discussed below are managed and products delivered on time.

4.2 COST CONTROL

The SM will approve all hours charged to the project by all field and office personnel to ensure no unauthorized hours are charged. Tetra Tech's accounting system will provide bi-weekly updates of all charges posted to the project. The TtNUS PM will use these data to compare cost and schedule performance to the baseline cost-schedule data at least once weekly. Any significant variation will immediately be brought to the attention of the Navy POC, if appropriate. Tetra Tech will report cost and schedule performance on a monthly basis to the Navy POC.

4.3 PROJECT SCHEDULE

Following approval of the Work Plan, Tetra Tech personnel will mobilize to the site for site preparation and UXO Support activities. Mobilization will require approximately 5 days. This schedule is based on 12-hour per day operation. The sole work shift will work 10 hours, with one hour for safety briefings and preparation at start of shift and one hour for reports and cleanup at end of shift, (total twelve hour day). The project schedule will be adjusted as necessary throughout the project, as the duration is only an estimate.

Mobilization will be followed by the DMM survey operations, which will require approximately 5 weeks. This schedule is based on 10 hours per day of visual inspection with one hour for safety briefings and preparation at start of shift and one hour for reports and cleanup at end of shift, (total twelve hour day). Work will be conducted 24/7 by rotating 3 UXO crews so that each crew works 4 days followed by a two day rest period. Overtime work (i.e. greater than 40-hours per week) will be required. The project schedule will be adjusted as necessary throughout the project, as the duration is only an estimate due to the unknown quantity of DMM that may be encountered and the unknown amount of ammunition transport and weather delays.



4.4 SUBMITTALS

No firm schedule of deliverables has been established for this project. The Navy is currently conducting internal coordination of activities and reviewing facility and management priorities, which will determine the schedule for this project. The major milestones and deliverables associated with this project are listed below.

Table 4-1. Required Submittals

Deliverable	Due Date
Explosive Safety Submission ESS	COMPLETED
Receipt of Navy/NOSSA comments	COMPLETED
Final Explosive Safety Submission ESS	COMPLETED
Draft Work Plan and HASP	05/5/06
Receipt of Navy Comments	05/09/06 (estimated)
Final Work Plan and HASP	05/10/06 (estimated)
Field Work Start	05/15/06
Draft Summary Report	6 weeks after completion of field work
Receipt of Navy Comments	4 weeks after receipt of Draft report
Final Summary Report	2 weeks after Receipt of Comments



5.0 CONTRACTOR QUALITY CONTROL PLAN

5.1 GENERAL

This Contractor Quality Control Plan (CQCP) was developed to verify conformance to contract specifications and ensure that overall project activities are accomplished using an acceptable level of internal controls and review procedures. All QC documentation will be submitted as part of or as supporting documentation for the final report. All QC records and documentation will be kept on site and made available for government inspection upon request.

5.1.1 Tetra Tech Personnel and QC

All Tetra Tech personnel involved in project operations will implement this CQCP per contract specifications and specific Tetra Tech corporate procedures found in the Tetra Tech Corporate Reference Library (CRL). The CRL is internal to Tetra Tech. The UXO QC Program Manager will make all CRL references available upon request. The CRL procedures applicable to the Quality Control effort are listed in Table 9-1.

Table 5-1. Tetra Tech Corporate Procedures

PO-8	Document Control
QPM-1	Quality Program Manual
QP-3	Qualification/Certification Quality Program Audit Personnel
QP-9	Construction Quality Control
QP-10	Control of Measuring and Testing Equipment
QP-11	Control of Nonconforming Conditions
QP-12	Corrective Action
ENG-3	Developing and Issuing Engineering Documents (FCR)
QP-14	Lessons Learned Procedure

5.2 DUTIES AND RESPONSIBILITIES

5.2.1 UXO Quality Control Specialists

The UXO Quality Control Specialists (up to three, one per rotating shift) will also serve as the Environmental Safety Specialist for the project and is referred to in this plan as the UXO ESS/QC. The UXO ESS/QCs are independent from the SM and PM and reports directly to the UXO QC Program Manager. The UXO QC Program Manager also has a separate reporting line from the PM and is responsible for management of the UXO QC Program. This helps ensure that the QC program will be unbiased. Although the UXO ESS/QCs are separate and independent from the SM and PM, they are part of the problem resolution process and must



maintain close and open communication with these individuals. The UXO ESS/QCs are responsible for:

- Issuing Stop Work Requests (See Appendix D) when conditions warrant.
- Implementing the Quality Control Plan.
- Conducting quality control indoctrination training for project personnel and for site visitors.
- Initiating QC surveillance and inspection consistent with the CQCP and program QC policies and procedures.
- Identifying, evaluating, initiating, and approving corrective action to ensure work complies with the contract.
- Recommending changes to the CQCP.
- Providing weekly project QC update to the SM.
- Directly communicating with client QA project oversight.
- Conducting inspection and surveillance activity.
- Completing reports and other documentation; maintaining a daily log of activities.
- Implementing the three-phase control process: preparatory, initial, and follow up inspections.

5.2.2 Stop Work Authority

The UXO ESS/QCs have the authority to stop-work whenever a condition is identified that has a negative effect on the quality of the product we are delivering.

5.2.3 Stop-Work Request

A Stop-Work Request may be issued for a portion of a process, limiting the Stop-Work Request to that portion of the process that is not in compliance. If the SUXOS does not support a stop-work decision, the UXO ESS/QC will document the request and communicate the request to the SM and UXO QC Program Manager. The UXO ESS/QC will document this action on the Stop Work Request Form and will maintain a compilation of the stop work actions on the Stop Work Request Log. The Stop Work Request Form and the Stop Work Request Log Forms are in Appendix D.

5.3 AUDIT PROCEDURES

Audits will be conducted and audit records maintained per Tetra Tech Procedure QPM-1: Quality Program Manual. Audits will be conducted by personnel qualified in accordance with

Tetra Tech Corporate Procedure QP-3: Qualification/Certification of Quality Program Audit Personnel

5.4 QUALITY CONTROL PROCESS

Quality Control on this project will be carried out using two different types of procedures, process and product Quality Control. The first, process QC is conducted using a three-phase control process; preparatory, initial, and follow-up inspections to ensure processes are in control and opportunities for improving processes are captured and implemented. The second, product QC is carried out using a sampling procedure to verify the product meets the requirements of this SSWP. Personnel conducting Quality Control have stop-work authority and are organizationally independent from the processes.

5.4.1 Process QC

5.4.1.1 Preparatory Phase

A preparatory phase inspection will be performed prior to beginning each definable feature of work. The purpose of this inspection will be to review applicable specifications and verify that the necessary resources, conditions, and controls are in place and compliant before the start of work activities. The QC personnel will perform the following actions for each definable feature of work during the preparatory phase inspection:

- Verify that appropriate plans and procedures are developed, approved and are available;
- Verify personnel identified are available and meet the requirements/qualifications for the position or waivers obtained from the client;
- Verify that the required training has been performed
- Verify identified equipment is available, functional, and appropriate for the job;
- Verify that the preliminary work and coordination have been accomplished
- Verify that level of quality expected is understood;
- Verify Work Plan and applicable SOP's have been reviewed and understood by the workers; and
- Brief process improvement program.

5.4.1.1.0.2 - The specific QC activities performed during the preparatory phase and results of those activities will be documented on the Preparatory Phase Inspection Report, which will be attached to the Daily Quality Control Report (See Appendix D).



5.4.1.1.0.3 - Discrepancies between existing conditions and approved plans/ procedures will be resolved and corrective actions taken for unsatisfactory and nonconforming conditions identified during a preparatory phase inspection.

5.4.1.1.0.4 - The UXO ESS/QCs will discuss job hazards with site personnel and verify that the necessary safety measures are in place and ready for use.

5.4.1.2 Initial Phase Inspection

An initial phase inspection will be performed the first time a definable feature of work is performed. The purpose of the inspection will be to check the preliminary work for the compliance with procedures and contract specifications. Another aim is to establish the acceptable level of workmanship, check safety compliance, review the preparatory phase inspection, and check for omissions and resolve differences of interpretation. The QC personnel will perform the following actions for each definable feature of work during the initial phase inspection:

- Deficiencies identified during the preparatory phase have been corrected;
- Requirements of quality of workmanship will be established;
- Completion of readiness review actions verified;
- Differences of interpretation will be resolved;
- Work Plan and applicable documents reviewed to ensure that the requirements are being met; and
- Performance of work will be observed and adequacy of work verified.

5.4.1.2.0.1 - Discrepancies between site practices and approved plans/procedures will be resolved. Corrective actions for unsatisfactory conditions or practices will be verified by the UXO ESS/QC or his designee, prior to granting approval to proceed.

5.4.1.2.0.2 - The specific QC activities performed during the initial phase, and results of those activities, will be documented on an Initial Phase Inspection Report and attached to the Daily Quality Control Report (See Appendix D).



5.4.1.3 Follow-up Phase Inspection (Surveillance)

The follow-up phase inspection is performed on a scheduled and unscheduled basis. The purpose of the inspection is to ensure a level of continuous compliance and workmanship. The UXO ESS/QCs are responsible for on-site monitoring of the practices and operations taking place and verification of continued compliance with the specifications and requirements of the statement of work and approved SOP's. The following will be performed for each definable feature of work:

- Inspections/surveillance to ensure that the work is in compliance with the statement of work and work plans;
- Inspections/surveillance to ensure the required level of workmanship is maintained;
- Inspections/surveillance to ensure each project log book is properly filled out and maintained;
- Inspections/surveillance to ensure data management system is properly tracked and backed up; and
- Inspections/surveillance to check the “false positive” anomalies.

5.4.1.3.0.1 - Follow-up results will be documented on a Surveillance Report and attached to the Daily Quality Control Report (See Appendix D).

5.4.2 Product QC

A percentage based sampling protocol will be used to conduct product QC. The UXO ESS/QCs will initially recheck 25% of dredge material determined to be DMM-free prior to movement off site. After 4 rechecks, if no DMM have been found, the rechecks may change to 10%. If DMM is found in any recheck, that portion of the debris will be rejected and the UXO Technicians will complete a resurvey of that dredge material. The UXO ESS/QC will recheck that debris. At this point the rechecks will be increased to 25% until 4 rechecks have been free of DMM. The failure criteria for the project are:

“Any Discarded Military Munition (DMM) found in the processed dredge material”

5.5 CORRECTIVE ACTION PROCEDURES

Deficiencies and nonconforming conditions will be managed in accordance with Tetra Tech Procedure QP-11, Control of Nonconforming Conditions, and QP-12, Corrective Action. Deficiencies discovered during inspection or other Project QC functions will be documented on a Deficiency Notice (DN) form. (See Appendix D) Nonconforming conditions will be documented on a Nonconformance Report (NCR). (See Appendix D) All deficiencies will be resolved prior to completion of the project and in the timeliest manner possible. The Daily QC Report will include a report on each deficiency / nonconforming condition and the corrective

action that was completed and closed out for the day. A corrective action request is required for deficiencies identified from the following sources.

- Tetra Tech Quality Program Audits
- Management Assessments
- Audits performed by Program QC in accordance with project specific plans
- Audits of Tetra Tech, performed by the client or regulatory agency

5.5.0.1 - The Corrective Action Request (CAR) will be documented on a CAR form contained in Appendix D. The UXO ESS/QC will maintain a log of deficiencies using the CAR Status Log in Appendix D.

5.5.0.2 - It is the responsibility of all personnel on the project to identify deficiencies and nonconforming conditions to their supervisor or manager as soon as they are identified. Deficiencies and nonconforming conditions are not necessarily a “bad thing” and should not have a negative connotation. Deficiencies and nonconforming conditions should be considered opportunities to improve the process.

5.6 ROOT CAUSE ANALYSIS

Both the deficiency and nonconformance report forms contain an area for the entry of information regarding the cause of the problem and proposed resolution. The determination of the root cause of a deficiency or nonconformance is an integral part of the QC process. The depth and extent of the root cause analysis depends on the situation. It may be as simple (minor) as an overlooked step or procedure or be a complicated process. Root cause analysis is the responsibility of the functional manager or his/her designee with the assistance of the UXO ESS/QC. Criteria considered in the analysis will include:

- Staff qualifications and training;
- Adequacy of procedures;
- Adequacy of equipment; and
- Adequacy of QC measures.

5.6.0.1 - Input will be obtained as necessary from field personnel and technical advisors in order to identify the factors, which led to the problem.

5.6.0.2 - The root cause is always “upstream” from where the problem was detected. Two strategies that will be employed for determining the root cause of a deficiency or nonconforming condition for this project are: 1) tracing the problem back to the source, and 2) evaluation of the cause using basic questions such as who, what, when, where, why, and how. Why, is probably the most beneficial question, when attempting to arrive at a root cause. This question may need to be asked multiple times before the cause is identified. For example “*Why did A happen?*”

Answer: “Because of B,” “Why did B happen?” Answer: “Because of C.” This process is carried on until the real cause is identified

5.7 FIELD OPERATIONS

All QC procedures are detailed in the Surveillance Checklist. This Checklist outlines the definable features of work and its corresponding QC procedures to include the corrective action criteria for each one. This will ensure the specific definable features of work are conforming to specifications. The Surveillance Checklist is contained in Appendix D.

5.8 CONTRACT DELIVERABLES

5.8.1 Document Control

The SM will establish a document control plan in accordance with Tetra Tech Procedure PO-8, Document Control. Preparation, review, approval, and issuance of documents (including revisions) affecting quality will be controlled to the extent necessary to determine the documents include the specified requirements and provide adequate procedures or guidelines to perform the intended activities. Such documents may include, but are not limited to, drawings, specifications, calculations, procedures, plans, and reports. The UXO ESS/QC will review the documents to verify the inclusion of appropriate quality requirements.

5.8.2 Document Review

It is the policy of Tetra Tech to consistently provide scientific and engineering work products that meet the required level of quality; that are in compliance with applicable laws and regulations; and that are legible, error-free and consistent with project-defined scope, schedule, budget, and other contractual obligation. To ensure that documents are technically correct, complete and consistent with project objectives, Tetra Tech has established an internal procedure detailing the requirements for technical review and approval of all engineering work products.

5.8.3 Independent Technical Review

Each work product, or applicable sections thereof, will undergo an appropriate level of technical review and approval by qualified professional(s) other than the originator(s). This Independent Technical Review (ITR) will include reviewing, inspecting otherwise verifying the assumptions, accuracy, level of complexity, correctness, completeness compliance of methods, data, calculations with approved plans and accepted engineering procedures, standards and guidelines. In addition, the ITR will be performed for the purpose of confirming the proper application of criteria, regulations, laws, codes, principles and professional procedures. A “qualified professional” shall be a competent individual within the appropriate discipline who has technical qualifications and experience that are equal to or exceed those of the originator.

5.9 LESSONS LEARNED

Lessons learned will be captured, documented and submitted in the Final Report using Tetra Tech Procedure QP-14 Lessons Learned Procedure. The Lessons Learned Report Form is found in Appendix D. The UXO ESS/QC will attach the completed Lessons Learned Report forms to daily and weekly QC reports. The UXO ESS/QC will recap all such Lessons Learned in the Final Report

5.10 TRAINING

The UXO ESS/QC will verify site personnel have the following training as required:

- Qualification per TP-18 for the position assigned.
- Site Specific QC procedures and pass/fail criteria.

5.10.0.1 - The UXO ESS/QC will conduct periodic quality related briefings during the morning safety meeting. These briefings will cover quality related topics provided by the UXO QC Program Manager and as determined by the UXO ESS/QCS. Suggested topics include, but are not limited to, results from QC activity such as surveillance, inspections, the three-phase control process, process improvement, changes to procedures and approved FCRs.

5.11 DATA QUALITY

All data collected will be verified by appropriate personnel to ensure the correctness of that data. Recorded data will be verified by the UXO ESS/QC and spot checked by the SUXOS.

Table 5-2. Quality Requirements for UXO Support To The Navy at NWS Earle, NJ

Objective	Activity	Activity Quality Requirement	Quality Control Verification
Prepare Site	Mobilization and Site Preparation	Mobilize equipment and personnel, and prepare site as described in the Work Plan.	<ul style="list-style-type: none"> ▪ Daily Site Health and Safety Meeting Report ▪ Field Logbooks
Site-work	DMM Observation of Transfer Operations	UXO Technicians, supervised by a Shift Supervisor and SUXOS, will observe all transfer operations looking for DMM which create an unsafe environment. QC checks will be performed to ensure UXO Team observes 100% of transfer operations. Fail criteria will be any transfer operations conducted without UXO technicians on site.	<ul style="list-style-type: none"> ▪ QC Daily Report ▪ Daily Site Health and Safety Meeting Report ▪ QA Audit Checklist and Audit Form ▪ Health and Safety Compliance Inspection ▪ Field Logbooks ▪ Daily QC check of transfer operation
Site-Work	UXO Escort/Avoidance Operations	UXO Technician will conduct avoidance while conducting UXO Escort Duties. QC checks will be performed to ensure no DMM are moved or disturbed during this phase of the project. Fail criteria will be any DMM moved or disturbed.	<ul style="list-style-type: none"> ▪ QC Daily Report ▪ Daily Site Health and Safety Meeting Report ▪ QA Audit Checklist and Audit Form ▪ Health and Safety Compliance Inspection ▪ Field Logbooks ▪ QC/observe UXO Escort duties
Site-Work	UXO Visual Survey Operation and certification in accordance with ESS Revision 1	UXO Technicians, supervised by a Shift Supervisor and SUXOS, will complete a 100% visual survey for DMM on dredge debris. QC checks will be performed to ensure DMM have been located, identified, and removed from the dredge debris. Fail criteria will be any DMM item not located in the dredge debris which is checked.	<ul style="list-style-type: none"> ▪ QC Daily Report ▪ Daily Site Health and Safety Meeting Report ▪ QA Audit Checklist and Audit Form ▪ Health and Safety Compliance Inspection ▪ Field Logbooks ▪ QC 10% of dredge debris rechecked for DMM
Site-Work	DMM Transfer to Navy EOD	UXO Technicians supervised by a Shift Supervisor and SUXOS will transfer all DMM to Navy EOD control for transportation and treatment. QC checks will be performed to ensure DMM transfer is conducted in a safe and effective manner. Fail criteria will be any unsafe transfer procedures observed.	<ul style="list-style-type: none"> ▪ QC Daily Report ▪ Daily Site Health and Safety Meeting Report ▪ QA Audit Checklist and Audit Form ▪ Health and Safety Compliance Inspection ▪ Field Logbooks ▪ QC/observe DMM transfer operation
Site-Work	MPPEH Certification	UXO Technicians supervised by a Shift Supervisor and SUXOS will conduct MPPEH certification. QC checks will be performed to ensure no energetic material remains in the Certified MPPEH. Fail criteria will be any energetic material discovered in the certified MPPEH.	<ul style="list-style-type: none"> ▪ QC Daily Report ▪ Daily Site Health and Safety Meeting Report ▪ QA Audit Checklist and Audit Form ▪ Health and Safety Compliance Inspection ▪ Field Logbooks ▪ QC/inspect MPPEH during certification process
Site-Work	Demobilization	Demobilize equipment and personnel according to schedule.	<ul style="list-style-type: none"> ▪ Daily Site Health and Safety Meeting Report ▪ Health and Safety Compliance Inspection ▪ Field Log Books

6.0 OTHER CONSIDERATIONS

6.1 GENERAL

Tetra Tech's overall approach is described in the following bullets.

- Work Areas – DMM surveying will occur in up to three areas on the trestle, T-23, T-19/20, and T-16/17 (see Figure 6-1 in Appendix A). The portion of trestle section T-22 that is not a “no superimposed load” area will be used for gator parking and placement of a craft trailer supporting the T-23 and T-19/20 work crews. The portion of trestle section T-15 that is not a “no superimposed load” area will be used for gator parking and placement of a craft trailer supporting the T-16/17 work crew.
- Work Zone Access – The T-16/17 work zone will be accessed during survey operations by a gator traversing the length of the abandoned trestle. The T-19/20 and T-23 work zones will predominantly be accessed during surveying operations by a gangway installed by Tetra Tech. The gangway will run from the active trestle to the north side of T-22. The gangway design will be approved by the Earle FEAD prior to installation. Tetra Tech will park a vehicle such as a pickup on the active trestle near the gangway during operations for personnel movement and to transport DMM. The vehicle will be moved if there are any ordnance conveyances traversing the active trestle.
- Materials Handling – Dredge material will be handled in accordance with the materials handling plan for this job (Tetra Tech, 2006), which has been approved by NJDEP and in accordance with the NJDEP Water Quality Certificate issued for this project (May 2006). In addition to the geotextile filter fabric called for in the plan, jersey barriers will be installed around the perimeter of the survey areas to help contain the dredged material and help the loaders to load and move the material. Survey areas T/19-20 and T-16/17 will be loaded in approximately 400 cy batches, and survey area T-23 will be loaded in approximately 300 cy batches, in a pattern similar to that shown on Figure 6-2 (see Appendix A). This will leave about 100-foot-long areas at T-16/17 and T-19/20 for surveying and initial clean stockpiling, and about a 70-foot-long area at T-23 for surveying and initial clean stockpiling.
- T-16/17 Surveying Direction – Dredge material to be surveyed would be loaded onto the T-17 (north) end. The UXO team would survey the material in the work area and stockpile surveyed material on the T-16 (south) end. During the survey and stockpiling operation, an open transit lane (about 6 feet wide) would be maintained on the east side to allow access to T-15 and beyond. Surveyed material would be picked up from the south end.

- T-19/20 Surveying Direction - Dredge material to be surveyed would be loaded onto the T-19 (south) end. The UXO team would survey the material in the work area and stockpile surveyed material on the T-20 (north) end. During the survey and stockpiling operation, an open transit lane (about 6 feet wide) would be maintained on the east side to allow access to T-21 and T-22, and the gangway. Surveyed material would be picked up from the north end.
- T-23 Surveying Direction – Dredge material to be surveyed would be loaded on the north end of T-23. During the survey and stockpiling operation, an open transit lane (about 6 feet wide) would be maintained on the east side to allow access to the gangway. Surveyed material would be picked up from the south end.
- Equipment – Three Cat 906 loader and either three Bobcat 331s or Yanmar Vi035s equipped with York rakes will be utilized during spreading, surveying and stockpiling. One loader/excavation combination will be assigned to each work area.
- Fueling – Two gators will be mobilized, one to service the T-16/17 work area and one to service T-19/20 and T-23 work areas. The gators will be utilized for light materials, supplies, personnel, and DMM transport. The gators will be equipped with fuel storage tanks, and will be used to fuel the heavy equipment and lights. If fuel is required at T-19/20 and/or T-23 and the gator stationed at T-22 has an empty fuel storage tank and is penned in by unsurveyed material at T-16/17, fuel will be carried across the gangway in 5-gallon cans as necessary. The need to carry fuel across the gangway will be minimized as much as possible. A larger stationary fuel storage tank will be used to supply fuel to the gator tanks and 5-gallon cans. The stationary tank will be stationed on dry land at a location directing by the Earle FEAD, and will have appropriate spill containment.
- Mobilization – Lighter materials and supplies to be utilized during surveying operations will be mobilized to the work areas by driving them onto the trestle in vehicles less than 5000 lb gw. The heavy equipment to be utilized during surveying operations will be mobilized to the work areas by driving them onto the trestle. Heavier items (e.g., jersey barriers, craft trailers) will be placed onto the trestle work areas by a truck-mounted crane working from the active trestle. The gangway will also be installed by the crane. NWS Earle- mandated safety requirements (e.g., cones, flagmen, lane closure procedures) will be followed when the crane is on the active trestle. The crane will be moved if there are any ordnance conveyances traversing the active trestle.

- Trestle Roadway Protection – Steel plates will be installed over the deteriorated concrete at the T-7/T-8 and T-14/T-15 expansion joints. It is not envisioned that Cat 906 will be moved between locations T-16 to T-23 on a repetitive basis. However, if the plan changes and it is required that the Cat 906 be moved between locations T-16 to T-23 on a repetitive basis, highway plates will be placed over all of the no load areas between T-16 to T-23, with the plates centered on the expansion/construction joints. The plates only need to cover the width of the travel lane. There will be no payload in the equipment when traversing the “no superimposed load” areas.
- Crane Barge and Oversize Debris Barge Access –UXO technicians will be transported to the crane barge and oversize debris barge as needed in a small boat supplied and captained by WMI.
- Craft Trailers – Craft trailers will be emplaced at T-15 and T-22 to serve as weather protection, etc. for the work crews.
- Office Trailer and Conex Storage Box – An office trailer and Conex storage box will be stationed on dry land at a location directing by the Earle FEAD.
- Facilities – Port-a-potties for Tetra Tech and visitor use will be placed at the end of the abandoned trestle near the Ready Service Locker.
- WMI/Tetra Tech communication – Tetra Tech personnel will carry radios on the same frequency as WMI radios, to allow communications between the two sets of workers (e.g., with the WMI crane operator).

7.0 REFERENCES

Office of the Federal Register National Archives and Records Administration. *Code of Federal Regulations, Part 1926*, Revised as of 1 July 1999.

Office of Toxic Substances Guidance Document for the Preparation of Quality Assurance Project Plans *Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans*, 9 September 1987.

Guidance Documents from U.S. Army Engineering and Support Center, Huntsville, AL. (USACE):

Safety and Health Requirements Manual, EM 385-1-1, 3 September 1996.

Basic Safety Concepts and Considerations for Munitions and Explosives of Concern (MEC) Response Action Operations, EP 385-1-95a, 27 August 2004.

Munitions and Explosives of Concern (MEC) Support During Hazardous, Toxic, and Radioactive Waste (HTRW) and Construction Activities, EP 75-1-2, 01 August 2004.

Type II Work Plan OE-005-01.01, Revised 1 October 2002.

Technical Management Plan OE-005-02.01, Revised 1 October 2002.

Explosives Management Plan, OE-005-03.01, Revised 1 October 2002.

Site Safety and Health Plan, OE-005-06.01, Revised 1 October 2002.

Monthly Status Report New Number OE-080, Revised 3 March 2000.

Quality Control Plan USACE DID OE-005-11.01, Revised 1 October 2002.

Department of Defense Explosives Safety Board. *Minimum Qualifications for Unexploded Ordnance (UXO) Technicians and Personnel*, TP 18, 20 December 2004

Director of Commander, Naval Sea Systems Command, *Ammunition and Explosives Safety Ashore*, NAVSEA OP 5 VOLUME 1, 15 January 2001, W/Change 4 - 1 June 2005.

Navy, 2006a. Department of the Navy Office of the Chief of Naval Operations, letter from Chief of Naval Operations to Commanding Officer Naval Weapons Station Earle. February 13.

Navy, 2006b. Department of the Navy Naval Ordnance Safety and Security Activity, letter from Commanding Officer Naval Ordnance Safety and Security Activity to Commanding Officer Naval Facilities Engineering Command, Northeast. May 23.

Tetra Tech, 2006. Materials Handling Plan.

APPENDIX A

MAPS

(Other figures are presented in the text)

Naval Weapons Station Earle Pier Location

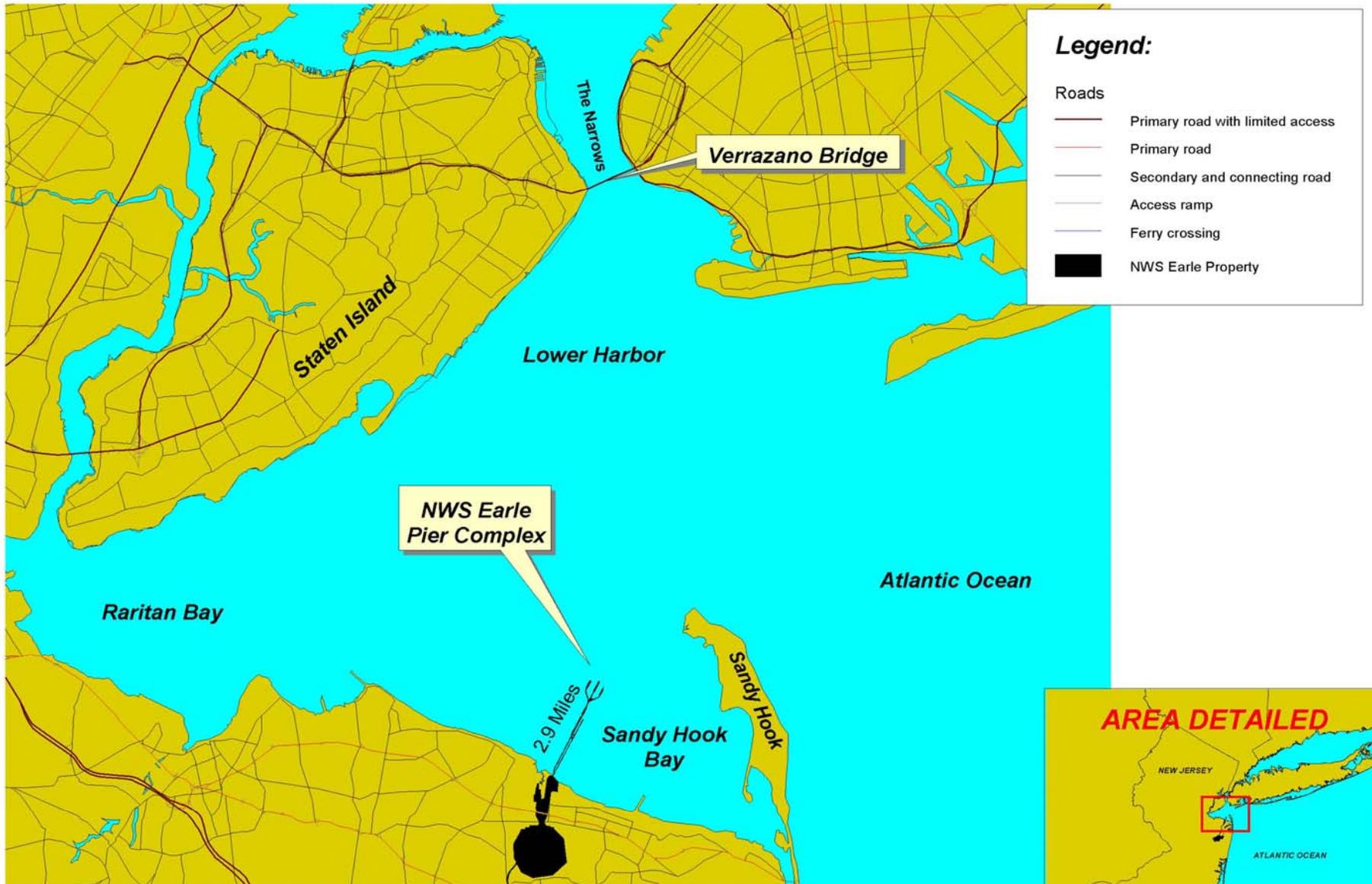
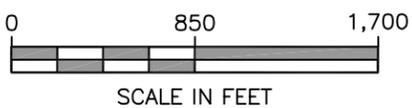
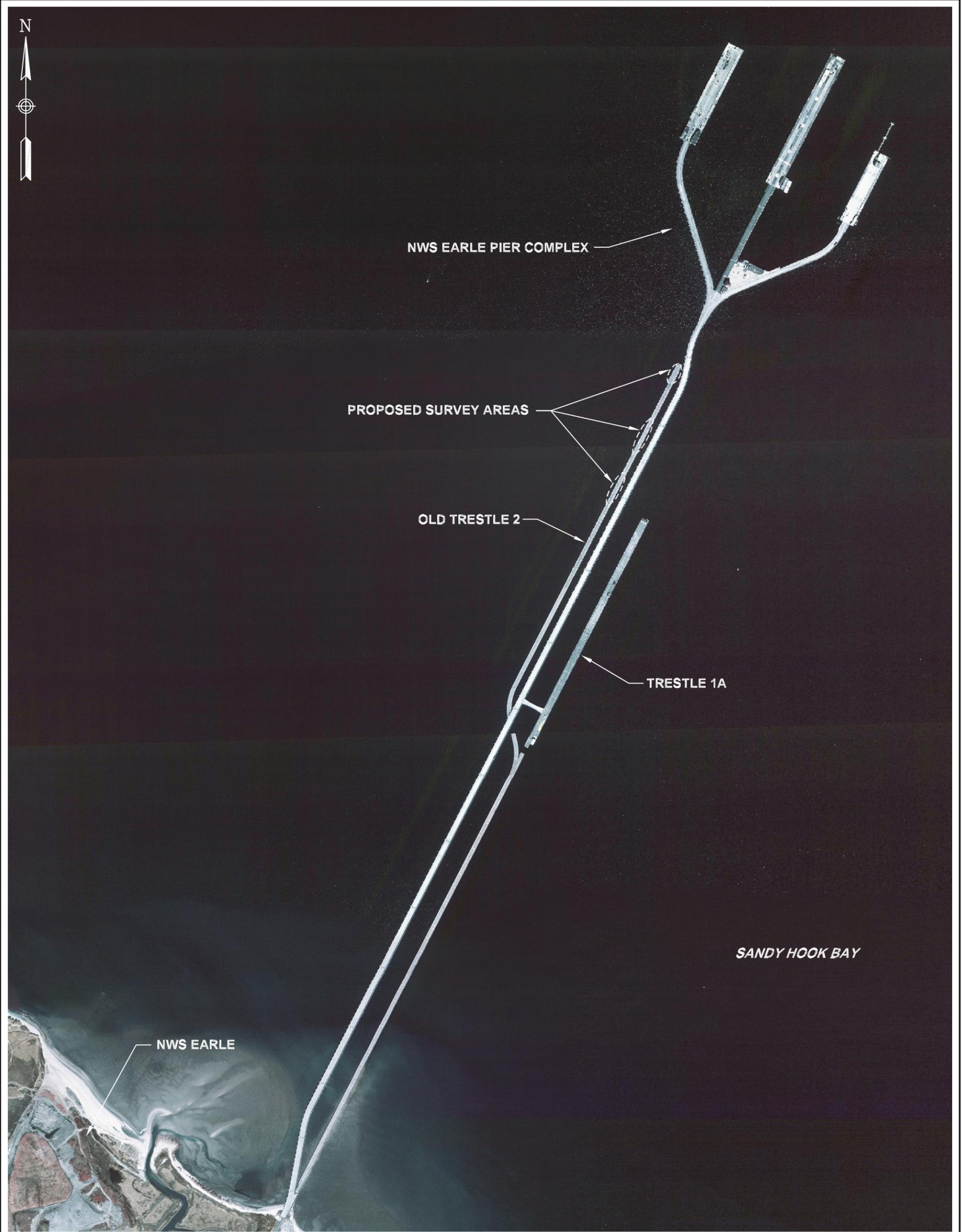
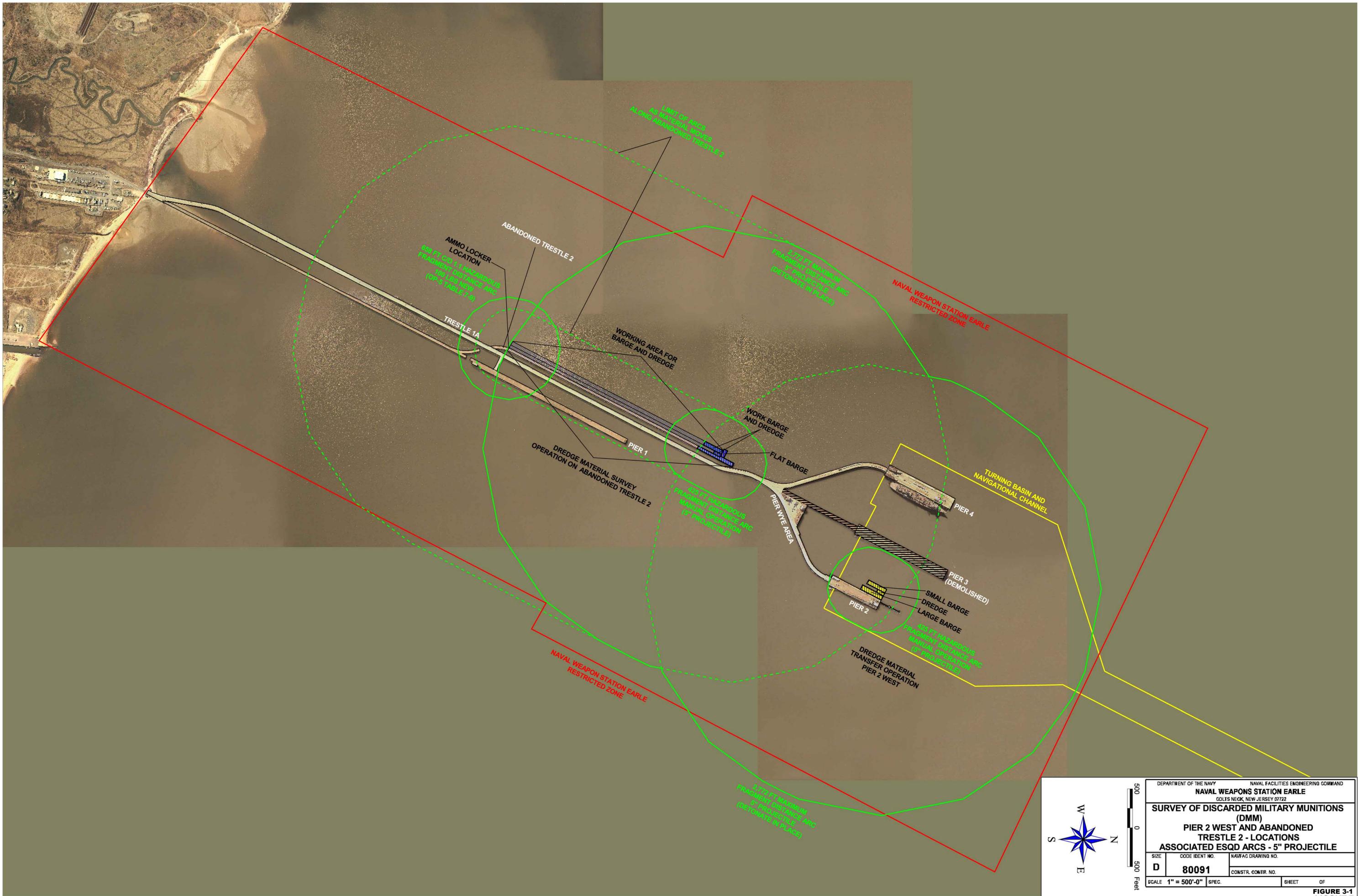


Figure 1-1



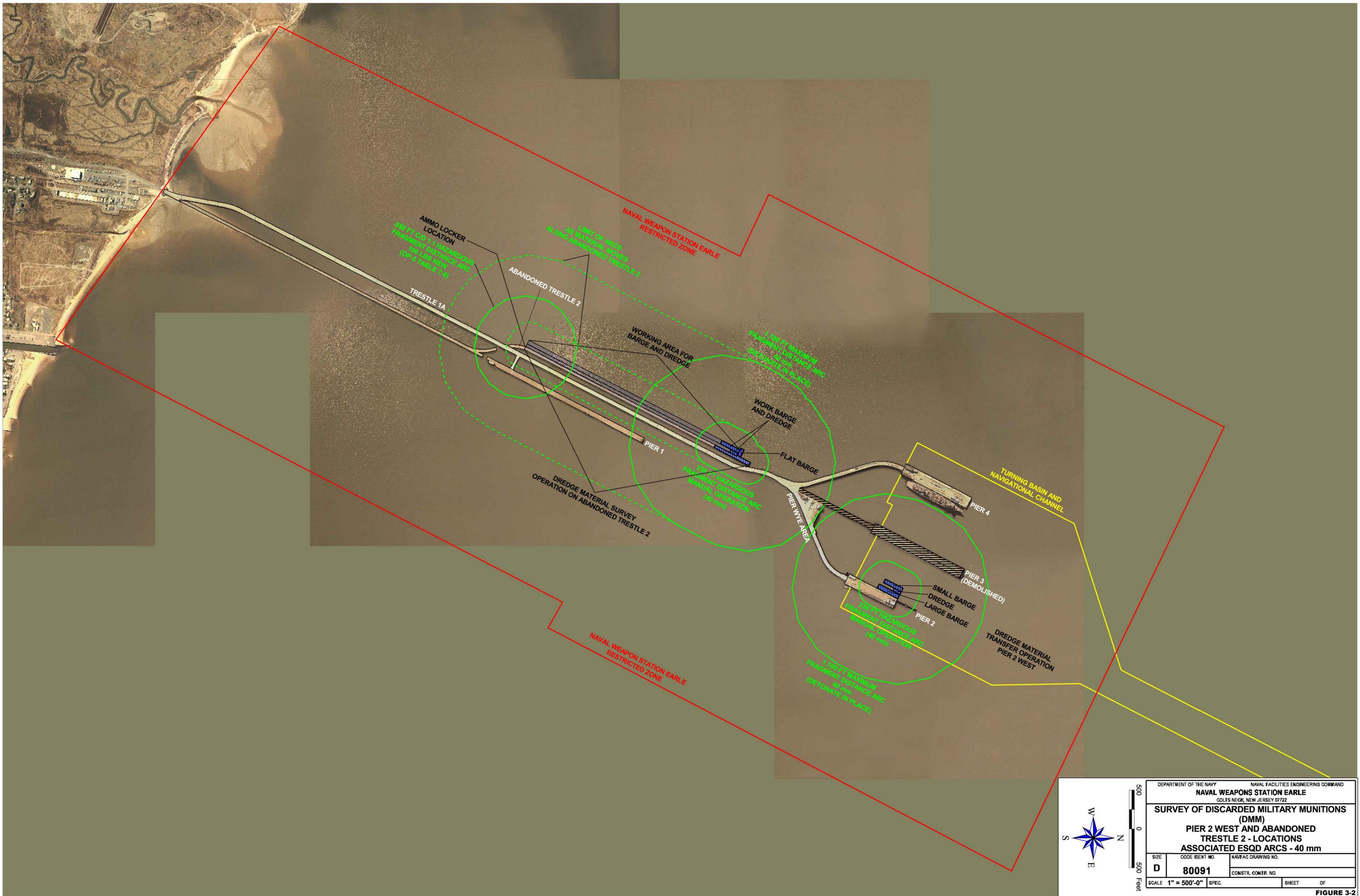


 TETRA TECH NUS, INC.	
PIER COMPLEX WATERFRONT AREA NWS EARLE – OLD TRESTLE 2 LEONARDO, NEW JERSEY	
FILE 112G00314MD02	SCALE AS NOTED
FIGURE NUMBER FIGURE 2-1	REV DATE 0 04/24/06



DEPARTMENT OF THE NAVY		NAVAL FACILITIES ENGINEERING COMMAND	
NAVAL WEAPONS STATION EARLE			
GOLDS NECK, NEW JERSEY 07722			
SURVEY OF DISCARDED MILITARY MUNITIONS (DMM)			
PIER 2 WEST AND ABANDONED TRESTLE 2 - LOCATIONS			
ASSOCIATED ESQD ARCS - 5" PROJECTILE			
SIZE	CODE IDENT. NO.	NAVFAC DRAWING NO.	
D	80091		
BCONSTR. CONTR. NO.			
SCALE	1" = 500'-0"	SPEC.	SHEET OF

FIGURE 3-1

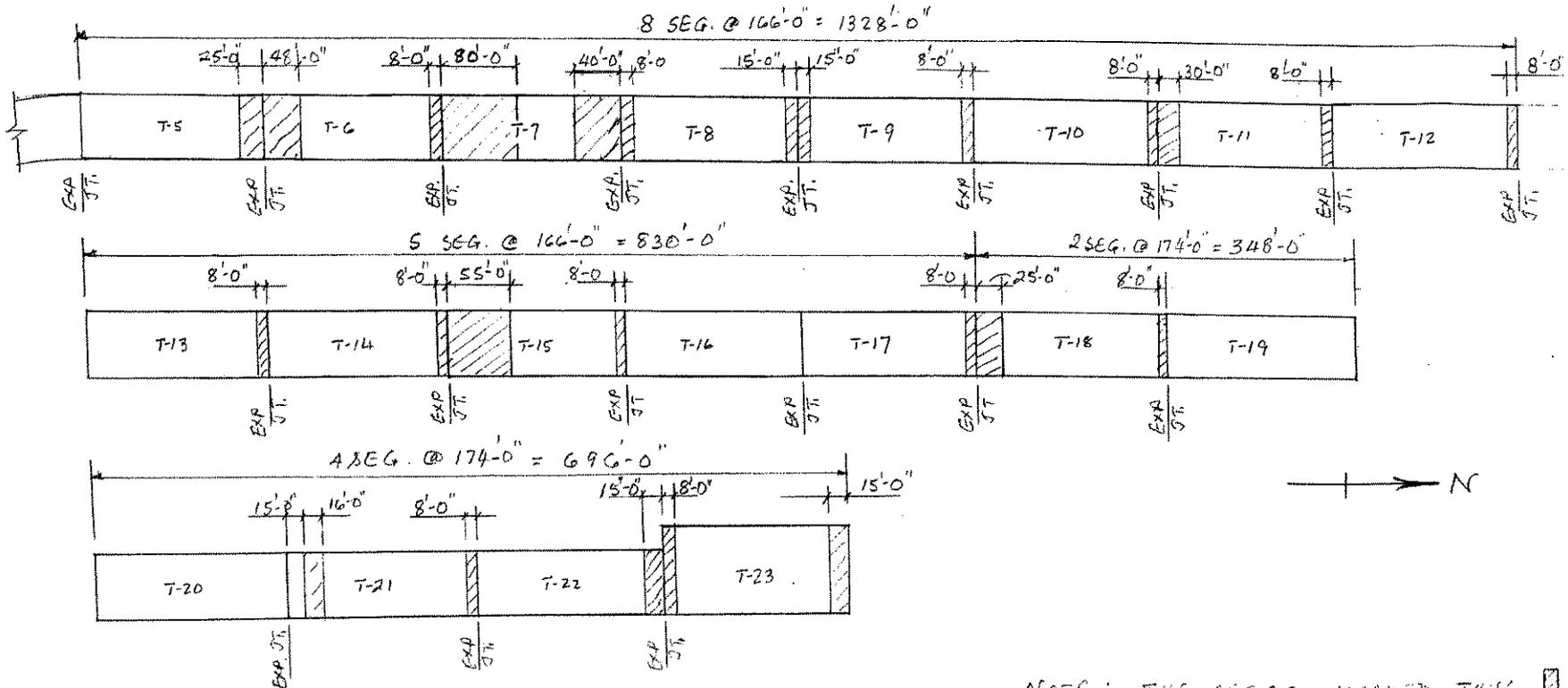


DEPARTMENT OF THE NAVY		NAVAL FACILITIES ENGINEERING COMMAND	
NAVAL WEAPONS STATION EARLE			
GOLDS NECK, NEW JERSEY 07722			
SURVEY OF DISCARDED MILITARY MUNITIONS (DMM)			
PIER 2 WEST AND ABANDONED TRESTLE 2 - LOCATIONS			
ASSOCIATED ESQD ARCS - 40 mm			
SIZE	CODE IDENT NO.	NAVFAC DRAWING NO.	
D	80091		
SCALE 1" = 500'-0"		SPEC.	SHEET OF

FIGURE 3-2

PROJECT NWS EARLE
SUBJECT TRESTLE 2 EMERGENCY INSPECTION
AND ASSESSMENT

SHEET NO. _____ OF _____
JOB NO. _____
MADE BY KD DATE _____
CHKD. BY _____ DATE _____

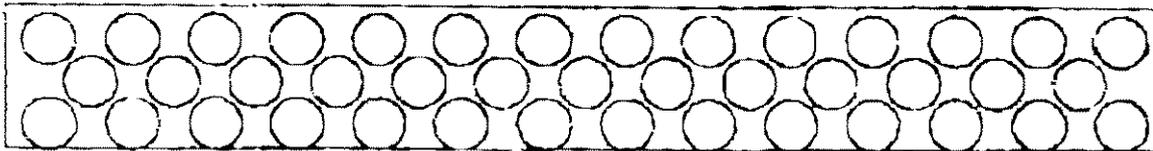


PLAN - OLD TRESTLE 2
N.T.S.

NOTE: THE AREAS MARKED THIS CANNOT TAKE ANY SUPERIMPOSED LOAD.

FIGURE 6-1
LOAD RESTRICTIONS

ASSUME LOADED DECK AREA OF 250 FEET BY 30 FEET
THIS WILL LEAVE AN AREA OF APPROXIMATELY
50 FEET TO START WITH AS WORKING SPACE
ASSUME MATERIAL WEIGHT LOOSE IS 115 PCF
WITH A UNIFORM LOAD OF 1.6 FEET (185PSF)
THIS IS APPROXIMATELY 450 CUBIC YARDS OF MATERIAL



A 15 CY BUCKET DROPPED ON THE DECK
WITH A 45 DEGREE ANGLE OF REPOSE
WILL PRODUCE A PILE ~~11.5~~ 11.5 FOOT HIGH WITH
A BASE 11.5 FOOT DIAMETER

41 PILES WITH A 15 CY BUCKET WILL BE 465 CY
THIS WOULD BE AN ACCEPTABLE LOADING PATTERN

FIGURE 6-2

APPENDIX B

LOCAL POINTS OF CONTACT

Representative	Phone Number
TtNUS Project Manager John Trepanowski	(610) 491-9688
SM Dan Sullivan	(617) 834-7211
Project Environmental Safety Manger Steve Neill	(412) 921-8912
Project Quality Control Manager Don Welch	(251) 580-8225
SUXOS Patrick Saveall	(425) 985-5450
Navy POC - NWS Earle Explosive Safety Officer Al Larkin	(732) 866-2386 (732) 573-5198 Cell



APPENDIX C

SITE SPECIFIC HEALTH AND SAFETY PLAN

**SITE-SPECIFIC HEALTH AND SAFETY PLAN
for
CONSTRUCTION SUPPORT
DISCARDED MILITARY MUNITIONS
VISUAL SURVEY OPERATIONS**

at

**NAVAL WEAPONS STATION EARLE
Leonardo, New Jersey**



**Engineering Field Activity Northeast
Naval Facilities Engineering Command
Lester, Pennsylvania**

Contract Number N62472-03-D-0057
Clean Contract Task Order No. 0054

June 2006

SITE-SPECIFIC HEALTH AND SAFETY PLAN
for
CONSTRUCTION SUPPORT
DISCARDED MILITARY MUNITIONS
VISUAL SURVEY OPERATIONS
at
NAVAL WEAPONS STATION EARLE
LEONARDO, NEW JERSEY

Submitted to:
Engineering Field Activity Northeast
Environmental Branch, Code EV4
Naval Facilities Engineering Command
10 Industrial Highway, Mail Stop No. 82
Lester, Pennsylvania 19113-2090

Submitted by:
Tetra Tech NUS, Inc.
600 Clark Avenue, Suite 3
King of Prussia, Pennsylvania 19406-1433

CONTRACT NO. N62472-03-D-0057
Contract Task Order No. 0054

June 2006

This Site-Specific Health and Safety Plan (HASP) has been prepared to address the general and site-specific hazards associated with Tetra Tech field staff performing the specified Discarded Military Munitions (DMM) construction support at the ordnance activities at the pier complex at Naval Weapons Station Earle in Leonardo, New Jersey. By their signatures, the undersigned certify this HASP will be utilized for the protection of the health and safety of workers during DMM work activities at this site.

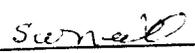
APPROVED BY:



Dave Keller
UXO Construction Manager
(425) 482-7749

6/9/2006

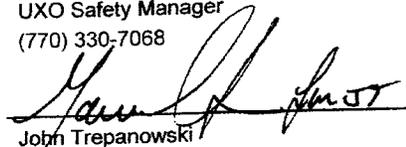
Date



Stephen Neill
UXO Safety Manager
(770) 330-7068

6/11/06

Date



John Trepanowski
Program Manager
(610) 491-9688

6/9/06

Date



TABLE OF CONTENTS

	<u>PAGE</u>
1.0 BACKGROUND.....	1-1
2.0 STAFF ORGANIZATION, QUALIFICATIONS, AND RESPONSIBILITIES	2-1
2.1 MANAGERIAL RESPONSIBILITY	2-1
2.1.1 Site Manager (SM).....	2-1
2.1.2 Project Environmental Safety Manager (PESM).....	2-1
2.1.3 Senior UXO Supervisor (SUXOS)	2-2
2.1.4 UXO Environmental Safety Specialist/QC Specialists (UXO ESS/QCs)	2-3
2.1.5 Field Personnel.....	2-3
2.1.6 Subcontractors and Suppliers.....	2-4
2.1.7 Shift Supervisors and UXO Team Leaders (UXO Technician III).....	2-4
2.1.8 UXO Technician (UXO Tech II or I)	2-4
3.0 SITE DESCRIPTION AND CONTAMINANT CHARACTERIZATION	3-1
3.1 SITE DESCRIPTION	3-1
3.2 POTENTIAL SITE CONTAMINANTS	3-1
4.0 HAZARD ANALYSIS	4-1
4.1 CHEMICAL AND EXPLOSIVE HAZARDS	4-2
4.1.1 Ordnance and Explosives.....	4-2
4.1.2 Other Chemical Hazards	4-3
4.2 PHYSICAL HAZARDS	4-4
4.2.1 Water hazards – Drowning	4-4
4.2.2 Adverse Weather Conditions	4-4
4.2.3 Heat Stress	4-4
4.2.4 Cold Stress	4-8
4.2.5 Heavy Equipment	4-9
4.2.6 Noise.....	4-11
4.2.7 Fire and Explosion	4-11
4.2.8 Slips, Trips and Falls	4-14
4.2.9 Manual Lifting	4-14
4.3 BIOLOGICAL HAZARDS	4-15



4.3.1	Insect/Arachnid Bites and Stings.....	4-15
4.3.2	Blood borne Pathogens	4-16
5.0	TRAINING	5-1
5.1	BASIC HEALTH AND SAFETY TRAINING	5-1
5.2	HAZARD COMMUNICATION TRAINING	5-1
5.3	MANAGER/SUPERVISOR TRAINING	5-1
5.4	SITE-SPECIFIC TRAINING	5-1
5.5	FIRST AID AND CPR	5-3
5.6	BLOODBORNE PATHOGENS TRAINING.....	5-3
5.7	FIRE EXTINGUISHER TRAINING.....	5-3
5.8	EMERGENCY RESPONSE TRAINING.....	5-3
5.9	DAILY BRIEFINGS/VERIFICATION	5-3
5.10	TAIL-GATE BRIEFINGS	5-4
5.11	DOCUMENTATION	5-4
5.12	VISITORS	5-4
6.0	PERSONAL PROTECTIVE EQUIPMENT	6-1
6.1	GENERAL.....	6-1
6.1.1	PPE Training.....	6-1
6.2	ANTICIPATED PPE USAGE	6-1
6.3	REASSESSMENT OF PROTECTION LEVEL.....	6-2
6.3.1	Excessive Noise	6-2
7.0	MEDICAL SURVEILLANCE PROGRAM	7-1
7.1	MEDICAL DATA SHEET	7-1
8.0	EXPOSURE MONITORING/AIR SAMPLING PROGRAM.....	8-1
9.0	SITE CONTROL MEASURES.....	9-2
9.1	WORK ZONES	9-2
9.2	VISITORS	9-2
9.3	SITE SECURITY.....	9-3
10.0	EMERGENCY ACTION PLAN	10-1
10.1	INTRODUCTION.....	10-1
10.2	EMERGENCY PLANNING	10-1



10.3	EMERGENCY RECOGNITION AND PREVENTION	10-2
10.3.1	Recognition.....	10-2
10.3.2	Prevention.....	10-3
10.4	EVACUATION ROUTES, PROCEDURES, AND PLACES OF REFUGE	10-3
10.5	EMERGENCY ALERTING AND ACTION/RESPONSE PROCEDURES	10-4
10.6	INJURY/ILLNESS REPORTING.....	10-4
10.7	ROUTE TO MEDICAL CENTER.....	10-4
11.0	ACCIDENT PREVENTION.....	11-1
12.0	INCLEMENT WEATHER.....	12-1
12.1	INCLEMENT WEATHER	12-1
12.2	LIGHTNING RESTRICTIONS.....	12-1
12.2.1	Phase I Lightning Advisory	12-1
12.2.2	Phase II Lightning Advisory	12-2
12.3	SEVERE WEATHER	12-2
12.3.1	Tornado Notification.....	12-2
13.0	STANDARD OPERATING SAFETY PROCEDURES, ENGINEERING CONTROLS, AND WORK PRACTICES	13-1
13.1	WORK SITE SAFETY	13-1
13.2	DAILY LOG BOOK	13-1
13.3	BUDDY SYSTEM.....	13-1
13.4	SAFE WORK PRACTICES.....	13-1
13.4.1	General Safe Work Practices	13-1
13.4.2	General Safe DMM Work Requirements:	13-3
13.4.3	Equipment.....	13-3
13.4.4	Safe Lifting Practices	13-4
13.5	COMMUNICATION.....	13-5
14.0	FIRST AID EQUIPMENT.....	14-1
15.0	CONFINED SPACE ENTRY PROCEDURES.....	15-1
16.0	DOCUMENTATION.....	16-1
16.1	FIELD CHANGE REQUEST	16-1
16.2	MEDICAL AND TRAINING RECORDS	16-1



16.3	ON-SITE LOG.....	16-1
16.4	WEEKLY AND MONTHLY SAFETY REPORTS	16-1
16.5	ACCIDENT/INCIDENT REPORTS	16-1
16.6	OSHA FORM 300	16-2
16.7	HEALTH AND SAFETY LOGBOOKS.....	16-2
16.8	HAZARD COMMUNICATION PROGRAM/MATERIAL SAFETY DATA SHEETS	16-2
16.9	ENVIRONMENTAL, HEALTH, AND SAFETY INSPECTIONS.....	16-2

LIST OF FIGURES

	<u>PAGE</u>
Figure 10-1. Route to Medical Center.....	10-7

LIST OF TABLES

	<u>PAGE</u>
Table 4-1. Maximum Work Duration during Hot Weather	4-7
Table 4-2. Examples of Activities within Metabolic Rate Categories	4-8
Table 4-3. Work/Rest Schedule Based on WBGT Reading.....	4-8
Table 4-4. Fire Classification and Proper Extinguishing Agents	4-14
Table 9-1. Wind Restrictions.....	12-2
Table 14-1. First Aid Kit Basic (Minimum) Fill Requirements.....	14-3

ATTACHMENTS

ATTACHMENT 1	ACTIVITY HAZARD ANALYSIS MATRIX
ATTACHMENT 2	HASP ACCEPTACNE FORM
ATTACHMENT 3	DAILY BRIEFING SIGN-IN SHEET
ATTACHMENT 4	VISITOR SIGN-IN SHEET
ATTACHMENT 5	MEDICAL DATA SHEETS
ATTACHMENT 6	INCIDENT REPORT
ATTACHMENT 7	WEEKLY/MONTHLY HEALTH & SAFETY INSPECTION REPORT



ACRONYMS

AHA	Analytical Hazard Analysis
ANSI	American National Standards Institute
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CLEAN	Comprehensive Long-Term Environmental Action Navy
CNO	Chief of Naval Operations
CPR	Cardio-Pulmonary Resuscitation
CRL	Corporate Reference Library
CSP	Certified Safety Professional
DDESB TP	Department of Defense Explosive Safety Board Technical Paper
ESS	Explosive Safety Submission
°F	degrees Fahrenheit
HASP	Site-Specific Health and Safety Plan
HE	High Explosive
HE-I	High Explosive Incendiary
HR	Heart Rate
HTRW	Hazardous, Toxic and Radioactive Waste
IDLH	Immediately Dangerous to Life and Health
LEL	Lower Explosive Limit
MEC	munitions and explosives of concern
NIOSH	National Institute for Occupational Safety and Health
NOSSA	Naval Ordnance Safety and Security Activity
OSHA	Occupational Safety and Health Administration
O ₂	Oxygen
PE	Professional Engineer
PESM	Project Environmental Safety Manager
POC	Point of Contact
PPE	Personal Protective Equipment



ppm	parts per million
RCRA	Resource Conservation and Recovery Act
PESM	Health and Safety Manager
SOW	Statement of Work
SS	Shift Supervisor
SSWP	Site-Specific Work Plan
SUXOS	Senior UXO Supervisor
TtNUS	Tetra Tech NUS, Inc.
USACE	United States Army Corps of Engineers
UXO	Unexploded Ordnance
UXO ESS/QC	UXO Environmental Safety Specialist/Quality Control Specialist
VOC	Volatile Organic Compounds
WMI	Weeks Marine Incorporated



1.0 BACKGROUND

1.0.1 - Authorization: This Site-Specific Health and Safety Plan (HASP) and the work described within are completed under the authorization of:

1.0.2 - Contract: Comprehensive Long Term Environmental Action, Navy (CLEAN IV), Naval Facilities Engineering Command Engineering field Activity Northeast

1.0.3 - Contract Number: N62472-03-D-0057

1.0.4 - Proposed Dates of Work: May 2006 – June 2006

1.0.5 - Application: This HASP is an appendix to the Site-Specific Work Plan (SSWP) for activities that are to be conducted during visual evaluation of dredge spoil for discarded military munitions (DMM) conducted at the Pier Complex at Naval Weapons Station (NWS) Earl, New Jersey. Specifically this HASP addresses the location and removal of DMM potentially contained in four scows of construction debris and residual soil and from material yet to be dredged from the Pier 3 area. Weeks Marine Incorporated (WMI) is the prime contractor for the Navy for the dredging operations.

1.0.6 - Tetra Tech will provide UXO Technician(s) and supervisors to perform visual screening of dredge spoils that are being unloaded from barges. The UXO Technicians will:

- Conduct DMM observation and visual survey of the dredge material, and
- Munitions debris management and disposal.

1.0.7 – The UXO technicians will be supported by equipment operators and laborers. For a more detail discussion of planned on-site activities see Section 2.0, Technical Management Plan, of this SSWP.

1.0.8 - Compliance: The elements of this HASP are intended to be in compliance with the requirements established by the Occupational Safety and Health Administration (OSHA) Standard 29 Code of Federal Regulations (CFR), Subtitle B, Chapter XVII (specifically 1910 and 1926).

1.0.9 - Statement of Safety and Health policy: Tetra Tech's commitment to safety is clearly defined in the corporate statement of environmental safety and quality policy. This policy is published in our Corporate Reference Library (CRL) and is available to all employees. There are a number of references to Tetra Tech Environmental Safety and Health Procedures found in this HASP. These proprietary procedures are published in the CRL and will be made available to the Client as requested.

ENVIRONMENTAL SAFETY AND QUALITY POLICY

The management of Tetra Tech EC, Inc. is committed to ensuring the health, safety, and well-being of our employees and the communities in which we work, to enhancing and protecting the environment, and to providing quality services to our clients. This commitment is fundamental to our Client Service Quality®, Do It Right®, and Shared VisionSM operating philosophies.

We are committed to:

Providing and maintaining a safe and healthful work-place;

Complying with all applicable environmental, health, and safety laws and regulations;

Conforming with company policies and procedures and the requirements of ISO 14001;

Incorporating pollution prevention and loss prevention principles into our work process;

Delivering products and services that meet the quality expectations of our clients;

Utilizing well trained personnel who understand and have the knowledge to fulfill their ESQ responsibilities;

Establishing ESQ improvement objectives and targets each year;

Monitoring and continually improving our environmental management system; and

Recognizing outstanding employee and project ESQ performance.

To fulfill these commitments, each employee of Tetra Tech EC, Inc. and its subsidiaries has the responsibility to help create and work in a safe and environmentally protective manner, to strive for Zero Incident Performance, and to promote the continual improvement of our organization.



Sam Box
President and CEO



Don Rogers
Chief Operating Officer

1.0.9.0.1 - It is the Policy of Tetra Tech to provide a safe and healthful workplace for our employees. It is the intent of this HASP to address potential hazards field personnel may encounter through the course of this work.

1.0.9.0.2 - All changes to this HASP will be requested through the Site Manager to the Tetra Tech Project Environmental Safety Manager (PESM). It is the responsibility of the PESM to notify affected personnel of changes to this HASP.

1.0.9.0.3 - The work activities addressed in this HASP are also addressed in an Explosive Safety Submission (ESS) and Chief of Naval Operations (CNO) Waiver prepared for these operations. The CNO Waiver has been approved by the Chief of Naval Operations, and the ESS has received conditional approval by the Naval Ordnance Safety and Security Activity (NOSSA), while awaiting Department of Defense Explosive Safety Board review and approval (see the SSWP plan for further details). This HASP has been prepared to comply with the requirements established by the ESS Revision 1.



2.0 STAFF ORGANIZATION, QUALIFICATIONS, AND RESPONSIBILITIES

2.1 MANAGERIAL RESPONSIBILITY

This section defines responsibility for site safety and health for Tetra Tech and subcontractor employees engaged in onsite activities. Personnel assigned to these positions will exercise the primary responsibility for onsite health and safety. These persons will be the primary point of contact for any questions regarding the safety and health procedures and the selected control measures that are to be implemented for onsite activities.

2.1.1 Site Manager (SM)

The Site Manager is responsible for the overall direction of health and safety for this project. It is the responsibility of the SM to:

- Ensure implementation of this HASP through coordination with the Senior UXO Supervisor (SUXOS) and the UXO Environmental Safety Specialist/Quality Control Specialist (UXO ESS/QC);
- Participate in major incident investigations;
- Ensure the HASP has all the required approvals before any site work is conducted;
- Ensure that the SUXOS and UXO ESS/QC are informed of project scope changes that require modifications of the HASP;
- Assume overall project responsibility for health and safety; and,
- Ensure that adequate resources are provided to the field staff to carry out their responsibilities as outlined below.

2.1.2 Project Environmental Safety Manager (PESM)

The PESM is a Certified Industrial Hygienist (CIH) and a Certified Safety Professional (CSP). The PESM is responsible for providing the Site Manager with assistance and support with regard to regulatory and safety aspects of site activity. The PESM is responsible for the following:

- Develop, maintain, and oversee implementation of the HASP;
- Visit the site as needed to audit the effectiveness of this HASP;
- Remain available for project emergencies;
- Develop modifications to the HASP as needed; and,



- Approve this HASP.

2.1.3 Senior UXO Supervisor (SUXOS)

The SUXOS is responsible for implementation of the HASP. This individual manages Tetra Tech MPPEH field activities and enforces safety procedures as applicable. It is the responsibility of the SUXOS to:

- Ensure Site Personnel comply with the HASP;
- Direct Tetra Tech's materials handling and DMM survey operations;
- Coordinate with the UXO Safety Officer (UXO ESS/QC) on matters regarding munitions and explosives of concern (MEC);
- Halt or modify any work conditions or remove personnel from the site if conditions are unsafe;
- Ensure all task site personnel understand and comply with all MEC safety requirements;
- Monitor team leader and team member's performance, including safety and quality control;
- Be responsible for overall direction of on-site MPPEH activities;
- Be responsible for the day to day MEC-related work at the site;
- Be responsible for implementing and enforcing all work plans related to MEC operations;
- Conduct daily activities such as: supervising employees in UXO operations, overseeing the implementation of specified levels of personal protective equipment, identifying potential problem areas and making corrective action recommendations to the PM, implementing all corrective actions, and maintaining a daily log of work activities including noting any extraordinary occurrences;
- Conduct weekly safety inspections jointly with the UXO ESS/QCs;
- Conduct incident investigations;
- Initiate corrective actions for observed safety violations;
- Conduct daily safety meetings; and,
- Act as the Primary Emergency Coordinator.

Compliance with the requirements stipulated in this HASP is monitored by the SUXOS and coordinated through the PESM.



2.1.4 UXO Environmental Safety Specialist/QC Specialists (UXO ESS/QCs)

As the lead UXO safety representatives at the site, the UXO ESS/QCs (one per rotating shift) are responsible to:

- Work as a member of the project team to ensure implementation of this HASP;
- Ensure all health and safety activities identified in this HASP are conducted and/or implemented;
- Identify operational changes that require modifications to the health and safety procedures and the APP and HASP, and ensure the procedure modifications are implemented and documented through changes to the HASP;
- Conduct daily informal inspections;
- Direct and coordinate health and safety monitoring activities;
- Ensure site personnel are trained in the proper use of Personal Protective Equipment (PPE);
- Ensure proper PPE is utilized by field teams;
- Assist in conducting daily safety briefings;
- Conduct and document inspection of equipment brought on site;
- Monitor compliance with this HASP;
- Notify the PESH and the Navy POC of all accidents/incidents;
- Coordinate with the Site Manager, PESH, and Navy POC on any incident investigation;
- Maintain Accident/Incident Report Forms;
- Determine upgrades or downgrades of PPE based on site conditions and /or real-time monitoring results;
- Ensure monitoring instruments are calibrated before use (if needed);
- Report to the PESH summaries of field operations and progress;
- Maintain health and safety field log books; and,
- Act as the Alternate Emergency Coordinator.

2.1.5 Field Personnel

This project will be conducted using two-person UXO teams under the direction of a Shift Supervisor (SS) who is a highly qualified and experienced UXO Technician III. Field crew



personnel also include all other persons entering the site for the purpose of assisting in the completion of the project. This includes, but is not limited to, equipment operators, general laborers, Tetra Tech management personnel, subcontractors, regulatory personnel, and site workers. It is their responsibility to:

- Report any unsafe or potentially hazardous conditions to the UXO ESS/QC;
- Maintain knowledge of the information, instructions, and emergency response actions contained in this HASP;
- Comply with rules, regulations and procedures set forth in this HASP and any revisions that are instituted;
- Initiate the Incident Report when involved in an incident/accident if able to do so;
- Prevent admittance to work sites by unauthorized personnel. If the unauthorized persons refuse to leave, the field crew personnel will cease operations and notify Base security who will remove these individuals;
- Inspect all tools and equipment, including PPE, daily prior to use; and,
- Assists the UXO ESS/QC with implementation and compliance with the HASP.

2.1.6 Subcontractors and Suppliers

Individuals employed by subcontractors/vendors will receive a site-specific briefing regarding the MEC hazards present on the site, required safety activities and their individual roles and responsibilities for safety practices. While on site they will be under the direct supervision of the SUXOS or SS.

2.1.7 Shift Supervisors and UXO Team Leaders (UXO Technician III)

UXO Technician III personnel will serve as Shift Supervisors (SSs) and UXO Team Leaders. The individuals will have a minimum of 8 years of EOD/UXO experience including prior military EOD and/or commercial UXO experience in munitions response actions and/or range clearance activities. The SSs may supervise up to 6 UXO crews under the direction of Team Leaders. UXO Team Leader may supervise up to 4 UXO Technicians. The SSs will conduct UXO activities as directed by the SUXOS. The SSs and UXO Team Leaders will meet the qualifications as stated in DDESB TP 18 and be under the direct supervision of the SUXOS.

2.1.8 UXO Technician (UXO Tech II or I)

This UXO Technician II or I shall be a graduate of a recognized UXO school in accordance with DDESB TP 18. The UXO Tech II will have prior military EOD experience, or a minimum of 3 years experience in munitions response actions or range clearance activities. The UXO Technicians will conduct DMM activities as directed by the UXO Team Leader and the SS. The



UXO Technicians will conduct the observation and survey efforts to clear the non-DMM items, and to identify the DMM. The responsibilities of UXO team members include the following:

- Complying with the aspects of this Site Safety and Health Plan;
- Obeying the orders of the UXO Team Leader (senior UXO Technician);
- Notifying the UXO Team Leader of hazardous or potentially hazardous incidents or working situations, and
- Stopping work if unacceptable safety conditions exist or unsafe acts are observed.



3.0 SITE DESCRIPTION AND CONTAMINANT CHARACTERIZATION

3.1 SITE DESCRIPTION

The project site is located in the Pier Complex of the Waterfront Area near Pier 3 at NWS Earle in Leonardo, New Jersey. The site includes several scows, one or more barges and an abandoned railroad trestle (Trestle 2) near Pier 3. Currently, there are a total of four (4) scows anchored near the pier that are partially filled with the construction debris and residual soil to be screened for DMM. The material will be loaded onto Trestle 2 for DMM screening. Oversize material will be placed on one or more flat top barges for screening. Because the work platforms are mobile, the configuration of the work site may vary slightly throughout the project. Figures (1-1, 2-1, 3-1, 3-2, and 6-1) showing the work site and work areas are contained in Appendix A of the SSWP.

3.1.0.1 - Since the early 1940s, the U.S. Navy has handled, stored, renovated, and transshipped munitions at the NWS Earle. These operations involve preserving and maintaining ammunition, missile components, and explosives; rendering safe unserviceable and/or dangerous ammunition and explosives; and providing support to the Fleet Mine Facility. No previous MEC studies have been conducted at the project site; however, DMM was found at the site during previous dredging operations. Beginning in July 2005, Weeks Marine Incorporated (WMI), a prime contractor for the Navy, began demolition and dredging in preparation for the replacement of Pier 3 at NWS Earle. WMI contracted with a private landowner in Virginia for upland disposal of the dredge materials. WMI's operation involved a two stage process. The first stage incorporated water into the dredge material, creating a slurry mix. This mix was subsequently pumped off of the scow. Once all of the slurry was removed, WMI started removing construction debris from the bottom of the scow (depth of material is estimated to be 8 feet). Shortly after the initial offloading operation began, WMI uncovered three 40mm Anti-Aircraft (HE) ammunition rounds and a single 5 inch/54 powder can (partially emptied). The Explosive Ordnance Disposal (EOD) unit at NWS Yorktown was contacted and removed the rounds from the site under emergency response provisions. NOSSA was then contacted and advised that this could be an isolated event and to closely monitor the material for additional discoveries of DMM. Shortly after, two additional rounds of DMM [40mm Anti-Aircraft (HE)] were encountered; NOSSA was notified and the upland disposal at the Virginia site was suspended. Based on the discovery of the additional DMM, NOSSA required the remaining material be physically or mechanically surveyed for DMM.

3.2 POTENTIAL SITE CONTAMINANTS

The suspected type of ordnance contamination at the site is DMM reportedly consisting of 40 mm Anti-Aircraft (HE) rounds. The potential amount of ordnance at the site is unknown. To



date, five 40 mm Anti-Aircraft (HE) (40mm AA) rounds have been recovered from the dredge spoils/debris. It is suspected that more munitions of this type may be present in the debris. Since a 5 inch/54 powder can was also removed from the dredge debris; it is possible that this type of munitions is also present. Explosive soils are not anticipated under this operation.

3.2.0.1 - It is anticipated that incidental contact and exposure can be controlled through good work hygiene practices and through diligent use of PPE and decontamination procedures. Refer to Section 4.0 for additional information.



4.0 HAZARD ANALYSIS

Currently, there are a total of four (4) scows, partially filled with the construction debris and residual soil. Although each scow contains approximately 3700 cubic yards of material, they are not fully loaded. These scows are fairly large, measuring 380 feet long by 65 feet wide, with a draft of approximately 15 feet. The cumulative total of material contained in these scows is approximately 15,000 cubic yards. The four scows are to be located at the NWS Earle pier complex. The material contained within the scows originated from around Pier 3. In addition to the material contained within the scows, another estimated 4,000 cubic yards of material remains to be dredged from the Pier 3 area.

4.0.1 - Based on the findings to date, the dredge material contained within the scows and the material to be dredged is expected to contain additional DMM. The dredge material from the scows and the construction project will be visually surveyed after it has been spread to a thickness not to exceed 6 inches. After a thorough visual survey, the debris that has been determined to be “DMM Free” will be certified in accordance with the ESS Revision 1 and released for off-site shipment and disposal.

4.0.2 - Specific activities to be conducted for this task order include:

1. • Site-Specific Work Plan Preparation
2. • Observation of Dredge Spoils/Debris Transfer
3. • Visual Survey of Dredge Spoils for DMM
4. • Identification and Management of DMM or other MPPEH
5. • Verification of the Quality of Work Performed

4.0.3 - Tasks 2 through 4 involve activities that require hazard analysis. Hazards associated with these activities include:

- Ordnance Hazards
 - Explosion
 - Fire
- Chemical Hazards
 - Ordnance chemicals
 - Chemicals brought on site (fuels, lubricants, etc.)
- Physical Hazards
 - Water hazards – drowning,
 - Slips, trips, and falls (from the scow and/or dock) and

- Being struck by Heavy Equipment
- Biological Hazards.
 - Insect bites and stings

4.0.4 - The specific hazards associated with individual MEC tasks and operations will be evaluated using an Activity Hazard Analysis (AHA). The AHA is a systematic way of identifying the potential health and safety hazards associated with major phases of work on the project and the methods to avoid, control, and mitigate those hazards. AHA has been conducted for tasks 2 through 4 listed in Section 4.0. An AHA matrix showing a summary of all of the activities along with the hazard analysis and mitigation measures, as necessary, is included in Attachment 1 of this plan. This AHA matrix will be used to train work crews, subcontractors and other site visitors in proper safety procedures during preparatory meetings or prior to site visits. Specific hazards and mitigation measures are discussed in the following sections.

4.1 CHEMICAL AND EXPLOSIVE HAZARDS

MEC have the potential to kill or cause serious injury if mishandled. This potential is due to both the explosive nature of MEC and the reactive chemicals contained in munitions. If indications of reactive MEC-related chemicals are observed, UXO personnel will stop work and notify the SUXOS. UXO personnel will not resume work until authorization to do so is received from the SUXOS or UXO ESS/QC. It is not anticipated that radiological or chemical warfare materiel (CWM) will be encountered at the Site. However, in the event of CWM discovery, all personnel will evacuate the area immediately in an upwind direction. The SUXOS will notify the Site Manager and the Navy POC. UXO personnel will standby in the area (at a safe distance) until response elements arrive on scene or until directed by the PESM.

4.1.1 Ordnance and Explosives

4.1.1.1 Hazard Identification

Types of ordnance that may be encountered at the Site include:

- 40 mm Anti-aircraft rounds
- 5-inch/54 rounds

4.1.1.2 Hazard Mitigation/Prevention

Only UXO trained personnel are authorized to investigate and handle MEC. MEC has the potential to kill or cause serious injury if improperly handled. Operations involving MEC are inherently dangerous and require strict adherence to safe practices and safety procedures, as well as positive control of personnel. Due to the variety of ordnance items that may be encountered all site workers must be vigilant in identifying hazards at the work site and bringing them to the attention of supervisory personnel. As additional hazards are identified, protective



measures will be implemented. The following prevention measures will initially be implemented on site to reduce the potential for exposure to, or injury from, MEC-related hazards:

- Recognition and avoidance training for MEC will be provided to all site personnel performing MEC operations,
- Only trained and qualified UXO personnel will conduct MEC activities at the site;
- All MEC activities will be performed IAW the procedures and guidelines in the approved work plan and this HASP;
- During MEC operations, the field personnel shall follow the field procedures and safety concepts/considerations specified in the Work Plan. Basic safety concepts and considerations for MEC are provided in USACE Engineering Pamphlet EP-385-1-95a (USACE, 2001); and,
- Prior to conducting MEC operations, the UXO team members will perform a visual sweep of their work area to ensure that no unauthorized personnel are within the exclusion zone.

4.1.1.2.0.1 - As part of the mitigation/prevention strategy for all types of hazards including chemical hazards, all MEC-related work will be conducted using proper lighting meeting minimum OSHA standards.

4.1.2 Other Chemical Hazards

4.1.2.1 Hazard Identification

Chemicals brought on site including fuels and lubricants may pose a hazard to site personnel.

4.1.2.2 Hazard Mitigation/Prevention

The following prevention measures will initially be implemented on site to reduce the potential for exposure to, or injury from, chemicals brought on site:

- Training will be provided to personnel regarding the transport, storage, use and hazards of chemicals brought on site (Material Safety Data Sheets [MSDS] will be available on site)
- Chemicals brought on site will be stored in approved storage containers, lockers or tanks in accordance with specific requirements
- Equipment will be shut down and secured during re-fueling operations

4.2 PHYSICAL HAZARDS

4.2.1 Water hazards – Drowning

4.2.1.1 Hazard Identification

Working over or near water presents specific hazards associated with falls into the water, such as drowning. A marine environment may also result in wet and slippery conditions around a dock or pier or on a vessel resulting in a serious fall. This section deals with drowning hazards. Slips, trips and falls are covered Section 4.2.8.

4.2.1.2 Hazard Mitigation/Prevention

The following prevention measures will initially be implemented on site to reduce the potential for falls in to the water and drowning:

- Training will be provided regarding the hazards associated with work over or near water
- Training will be provided regarding water rescues including appropriate First Aid for hypothermia
- Personnel will wear personal floatation devices (PFDs) anytime they are outside of the fall protection (Jersey Barriers) on the trestle and at all times when working on open barge decks or open piers/trestles without rails or other fall protection.

4.2.2 Adverse Weather Conditions

See Section 9.0

4.2.3 Heat Stress

4.2.3.1 Hazard Identification

There is a potential for heat stress and related illness/injury during work activities. Conditions that lead to heat stress are possible during Spring and Summer months, particularly if PPE is being utilized. Site personnel need to be aware of the specific potential hazards including:

- Heat rash
- Heat cramps
- Fainting (and related physical injury)
- Heat Exhaustion
- Heat Stroke

4.2.3.1.0.1 - Heat stress is directly related to the inability of the body to cool itself via evaporation of sweat. Heat rash occurs because sweat is not evaporating. The salty fluid

remains in contact with the skin causing irritation and vesicular inflammation. Standing erect and immobile in the heat allows blood to pool in the lower extremities. As a result, blood does not return to the heart to be pumped back to the brain and fainting may occur. Physical injuries may occur as a secondary effect when an individual faints and falls to the ground. Heat cramps are painful spasms of the muscles due to excessive water and salt loss from profuse sweating. Similarly, heat exhaustion occurs due to the large fluid and salt loss from profuse sweating. Heat exhaustion is characterized by clammy and moist skin, nausea, dizziness, headaches and low blood pressure. Heat stroke occurs when the body's temperature regulatory system has failed. Skin is hot, dry, red, and spotted. The effected person may be mentally confused, delirious and convulsions may occur. A person exhibiting signs of heat stroke should be immediately removed from the work area and placed in a shaded area. The injured person should be soaked with water and fanned to promote evaporation. Medical attention must be obtained immediately. **EARLY RECOGNITION AND TREATMENT OF HEAT STROKE ARE THE ONLY MEANS OF PREVENTING BRAIN DAMAGE OR DEATH.**

4.2.3.1.0.2 - Early symptoms of heat stress related problems include the following:

- Decline in task performance.
- Lack of coordination.
- Decline in alertness.
- Unsteady walk.
- Excessive fatigue.
- Muscle cramps.
- Dizziness.

4.2.3.2 Hazard Mitigation/Prevention

Proper training and preventive measures will aid in averting loss of worker productivity and serious illness. Heat stress prevention is particularly important because once an person suffers from heat stroke or heat exhaustion, that individual may be predisposed to additional heat related illnesses. To avoid heat stress, the following procedures/requirements will be considered and implemented **as appropriate**:

- Work Schedules will be modified as necessary:
 - Modify work/rest schedules according to temperatures and work conditions
 - Mandate work slowdowns as needed
 - Perform work during cooler hours of the day, if possible
- Physiological monitoring will be performed;

- Shelter (air-conditioned, if possible) or shaded areas will be provided to protect personnel during rest periods;
- Measures will be taken to maintain worker's body fluids at normal levels. This is necessary to ensure the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat, e.g. 8 fluid ounces (0.23 liters) of water must be ingested for approximately every 8 ounces (0.23 kg) of weight loss. The normal thirst mechanism is not sensitive enough to ensure enough water will be consumed at a rate high enough to replace lost sweat. When heavy sweating occurs, encourage the worker to drink more. The following strategies may be useful:
 - Maintain water temperature at 50° to 60°F (10°-16.6°C)
 - Provide small disposable cups that hold about 4 ounces (0.1 liter)
 - Have workers drink 16 ounces (0.5 liters) of fluid, preferably water or diluted drinks, before beginning work
 - Urge workers to drink a cup or two of fluid every 15 to 20 minutes, or at each monitoring break. A total of 1 to 1.6 gallons (4 to 6 liters) of fluid per day are recommended, but more may be necessary to maintain body weight
- Workers will be trained to recognize the symptoms of heat-related illnesses and instructed in the specific procedures used to reduce the risk of heat stress and heat stroke;
- Personnel will be rotated and job functions will be alternated; and,
- Cooling vests will be utilized when impermeable clothing is worn

4.2.3.3 Work/Rest Schedule and Physiological Monitoring

When the ambient temperature exceeds 70°F the UXO ESS/QC will institute physiological monitoring, Wet Bulb Globe Temperature (WBGT) monitoring, or a combination of the two to determine work/rest regimes. Work periods for Exclusion Zone workers will not exceed the maximum times specified in Table 4-1. At a minimum, rest periods will be 15 minutes. Based on the results of physiological monitoring and worker observations (see below), the UXO ESS/QC can decrease the work duration or increase the rest period.

4.2.3.3.0.1 - The UXO ESS/QCs may choose to use Wet Bulb Globe Temperature (WBGT) to monitor for conditions that pose a threat of thermal strain to workers. WBGT monitoring should be conducted by the UXO ESS/QC when workers are dressed in level D, or modified level D, PPE ensembles and the ambient temperature exceeds 75°F. Once the WBGT has been determined, the UXO ESS/QC can estimate a worker's metabolic heat load category using Table 4-2.



4.2.3.3.0.2 - Once the metabolic category is known, Table 4-3 can then be used to determine the appropriate work/rest regimen for the worker. The values outlined in Table 4-3 are applicable for acclimated workers clothed in a permeable work ensemble. The WBGT index will not be used when impermeable ensembles are worn. Modification to the work/rest schedule can also be instituted by the UXO ESS/QC based on physiological monitoring data. The UXO ESS/QC will monitor the worker’s heart rate and temperature to evaluate the need to adjust work/rest schedules. To monitor a worker’s heart rate the UXO ESS/QC will count the radial pulse of the worker during a 30-second period as early as possible in the rest period. If the worker’s heart rate exceeds 110 beats per minute at the beginning of the rest period, the next work cycle should be shortened by a third (the rest time should remain constant). If the worker’s heart rate still exceeds 110 beats per minute at the beginning of the next rest period, the following work cycle again should be shortened by a third. This process will continue until the workers pulse drops below 110 beats per minute.

Table 4-1. Maximum Work Duration during Hot Weather

Ambient temperature ^{(a) (b)}	Duration using Level D/Modified Level D PPE (minutes)	Duration using Level C, B, or A PPE (minutes)
90° or above	45	15
87.5-90°F	60	30
82.5-87.5°F	90	60
77.5-82.5°F	120	90
72.5-77.5°F	150	120

From NIOSH/OSHA/USEPA/USCG publication *Occupational Safety and Health Guidance Manual for Hazardous Waste Sites* (1985)

(a) For work levels of 250 kilocalories/hour.
 (b) Calculate the adjusted air temperature (ta adj) by using the equation:

$$ta\ adj = ta + (13 \times \text{percent sunshine})$$

where: ta is the air temperature in °F.

Measure air temperature (ta) with a standard mercury-in-glass thermometer, with the bulb shielded from radiant heat.
 Estimate percent sunshine by judging what percent of the time the sun is not covered by clouds that are thick enough to produce a shadow (100 percent sunshine = no cloud cover and a sharp, distinct shadow; zero percent sunshine = no shadows.)

4.2.3.3.0.3 - A clinical thermometer or similar device should be used to measure the oral temperature of workers at the end of the work period (before drinking). When the oral temperature of a worker exceeds 99.6°F (37.6°C), shorten the next work cycle by one-third. If the oral temperature continues to exceed 99.6°F (37.6°C) the next work cycle will again be shorten by a third. This process will continue until elevated temperatures (99.6°F) are not observed. The results of worker monitoring will be recorded by the UXO ESS/QC or the Team Leader in his logbook.



Table 4-2. Examples of Activities within Metabolic Rate Categories

Categories	Example Activities
Resting	Sitting quietly
Light	Sitting with moderate leg and arm movement Using table saw
Moderate	Standing with light or moderate work (at bench or operating machine) Scrubbing in standing position Walking about with moderate lifting Walking on level surface while carrying 50lb load
Heavy	Sawing by hand Shoveling Intermittent heavy lifting

Table 4-3. Work/Rest Schedule Based on WBGT Reading

Work – Rest Regimen	Work Load		
	Light	Moderate	Heavy
Continuous work	85°F (29.5°C)	82°F (27.5°C)	79°F (26.0°C)
75% Work – 25% Rest, each hour	87°F (30.6°C)	83°F (28.5°C)	82°F (27.5°C)
50% Work – 50% Rest, each hour	89°F (31.5°C)	85°F (29.5°C)	83°F (28.5°C)
25% Work – 75% -Rest, each hour	90°F (32.5°C)	88°F (31.0°C)	86°F (30.0°C)
From year 2000 TLVs and BEIs booklet published by ACGIH			

4.2.4 Cold Stress

4.2.4.1 Hazard Identification

Workers may be exposed to the health hazards associated with working in cold environments. Potential hazards in cold environments include frostbite, trench foot or immersion foot, hypothermia, slippery surfaces, and the increasing likelihood of experiencing poor judgment. The cold stress prevention and management procedures are found in the Tetra Tech EC Environmental Health and Safety Program EHS 4-6: Temperatures Extremes in the CRL.

4.2.4.1.0.1 - The basic elements of this program include:

- PPE (i.e., hard hat liners, boot and glove liners, insulated coveralls);
- Engineering controls (i.e., heaters, wind shields, covered metal handles);

- Administrative controls (i.e., work/warm up schedule, acclimatization);
- Warm rest areas; and
- Employee training.

4.2.4.2 Hazard Prevention/Mitigation

By following the procedures in EHS 4-6, employees will be able to recognize and prevent all cold related injuries. The object is to ensure workers recognize and take prompt action to get out of the cold and into a warm area for the appropriate amount of time to warm up.

4.2.5 Heavy Equipment

4.2.5.1 Hazard Identification

It is anticipated that the heavy equipment used for MEC operations for this project will consist of mini-excavators, mini-loaders and barge mounted cranes. UXO personnel will not operate any of this equipment. Site personnel working on or near heavy equipment for any reason (UXO work or construction), will follow the provisions of this section.

4.2.5.2 Hazard Prevention/Mitigation

Site personnel will be informed of the potential hazards associated with working on or near heavy equipment and will be instructed in proper procedures to reduce/eliminate those hazards. A system of hand signals will be developed to ensure clear communication between the equipment operator and other site personnel. In addition, the following precautions will be taken to help prevent injuries or accidents associated with heavy equipment:

- Prior to the start of on-site equipment operations, all personnel will be briefed on the potential hazards posed by these operations;
- Brakes, hydraulic lines, signal lights, fire extinguishers, fluid levels, steering mechanisms, tires, horns and other safety devices will be checked and maintained in good working order throughout the duration of field activities;
- Personnel not directly required in the area will be kept at safe distance while equipment is in operation;
- Personnel in the vicinity of heavy equipment (within 25 feet) will wear hard hats and safety glasses;
- Personnel directly involved in activities utilizing heavy equipment will avoid moving into the path of equipment while it is in operation. Personnel will avoid areas that are not visible to the equipment operator and spotters will be used when personnel must conduct activities in areas where the equipment operator's view is obstructed;



- Personnel other than the operator will not be allowed on equipment unless that equipment is specifically designed to convey, lift or otherwise move personnel;
- An Exclusion Zone (EZ) will be established around heavy equipment operations. EZs will be based upon the working and maneuvering room required for individual pieces of equipment. For example, when an excavator is in use, extend the bucket to its furthest reach and mark a semi circle around the front of the excavator. This line can then be used to delineate an appropriate Exclusion Zone around the rear of the excavator;
- Personnel needing to enter the heavy equipment exclusion zone will get the attention of (make eye contact with) the operator and signal their intentions. The operator will secure the equipment (e.g. ground the bucket) and show both hands to the personnel desiring entrance. At that point, entrance is authorized into the equipment EZ;
- Large construction motor vehicles will not be backed up unless the vehicles have a reverse signal alarm that is audible above the background noise of operation, or the vehicles are equipped with backup warning lights and an observer signals it is safe to do so;
- Construction and heavy equipment will be equipped with the necessary and required safety features including seat belts, rollover protection, emergency shut-off protection during rollover, backup warning lights and audible alarms;
- Blades and buckets will be lowered to the ground and parking brakes will be set before any heavy equipment or vehicle is shut off;
- The heavy equipment operator will perform checks and document inspections at the beginning of each shift to ensure all equipment, parts and accessories are in safe operating condition and free of apparent damage that could cause failure while in use;
- Field support vehicles will be equipped with a first-aid kit and appropriate fire extinguisher; and,
- Heavy equipment operators must be trained and qualified in the operation of the equipment. Operators cannot exceed 10-hrs of duty time in any 24-hr period without an interval of 8-consecutive hours of rest.



4.2.6 Noise

4.2.6.1 Hazard Identification

Noise is a potential hazard associated with the operation of heavy equipment, pumps and generators. First, it hinders communication between workers. Second, excessive noise exposures, to both continuous and impact noise, can have adverse effects on long term hearing capability. Hearing damage may be temporary or permanent depending upon the loudness and frequency of the noise and the length of the exposure period.

4.2.6.2 Hazard Mitigation/Prevention

Personnel working on this project are to be given an audiogram (hearing test) and hearing conservation training. The PESM or UXO ESS/QC will verify these requirements have been met for each site worker. The UXO ESS/QC will ensure ear protection such as disposable earplugs, is made available to, and used by, all personnel working near operating heavy equipment or other sources of high intensity noise. Hearing protection is required any time the noise level reaches 85 dbA or greater. Double protection is required anytime noise levels exceed 100 dbA. Hazardous noise placards will be posted as required along the boundary of high noise areas.

4.2.6.2.0.1 - In order to establish hearing protection requirements, the UXO ESS/QC can either monitor the noise or require the use of hearing protection for all personnel working within 50 feet of the equipment or noise source.

4.2.7 Fire and Explosion

4.2.7.1 Hazard Identification

In most cases involving ordnance, some type of movement causes accidental ignition and/or explosion. It is imperative to positively identify ordnance by type and function prior to any excessive movement. Ordnance should also be isolated from ignition sources to reduce the possibility of an explosion or fire. When conducting heavy equipment operations, the potential of encountering fire and explosion hazards exists due to potential underground or overhead utilities and underground gases, as well as contact with buried MEC. In addition, engine malfunction or sparks created by engine components may result in fire and/or explosion. Although fires and explosions may arise spontaneously, they are more commonly the result of carelessness during the performance of site activities such as moving drums, mixing/bulking of site chemicals and re-fueling of equipment (heavy and hand held). Some potential causes of explosions and fires include:

- Mixing of incompatible chemicals, causing reactions that spontaneously ignite due to the production of both flammable vapors and heat;
- Ignition of explosive or flammable chemical gas/ vapors by external ignition sources;

- Ignition of materials due to oxygen enrichment;
- Agitation of shock or friction-sensitive compounds; and,
- Sudden release of materials under pressure

4.2.7.2 Hazard Mitigation/Prevention

To ensure adequate fire protection, the UXO ESS/QC will inspect the site to ensure all flammable and combustible materials are being safely stored in appropriately configured storage areas and containers. The UXO ESS/QC will also ensure no flammable/combustible materials are stored near any sources of ignition and that sources of ignition are removed a safe distance from storage areas. If necessary, storage areas will be segregated from the remainder of the site through the use of flagging or fencing.

4.2.7.2.0.1 - Explosions and fires not only pose the obvious hazards of intense heat, open flames, smoke inhalation and flying objects, but may also cause the release of toxic chemicals. Such releases can threaten both on-site personnel and members of the general public living or working nearby. Site personnel involved with potentially flammable material or operations will follow the guidelines listed below and EM 385-1-1, Section 9, to prevent fires and explosions. At a minimum, the following guidelines will be observed:

- Prior to initiation of site activities involving explosive/flammable materials, all potential ignition sources will be removed or extinguished;
- Non-sparking and explosion-proof equipment will be used whenever the potential for ignition of flammable/explosive gases/vapors/liquids exists;
- Smoking will be prohibited at, or in the vicinity of, operations that may present a fire hazard and these areas will be conspicuously posted with signs stating “No Smoking or Open Flame Within 50 Feet”;
- Flammable and/or combustible liquids will be kept at all times in approved, properly labeled metal safety cans equipped with flash arrestors and self-closing lids;
- Transfer of flammable liquids from one metal container to another will be done only when the containers are bonded;
- During fueling operations, motors of all equipment will be shut off;
- Metal drums used for storing flammable/combustible liquids will be equipped with self-closing safety faucets, vent bung fittings, grounding cables and drip pans and will be stored outside buildings in an area approved by the UXO ESS/QC; and,
- Outdoor flammable/combustible materials storage areas will be:
 - Lined and surrounded by a dike that is at a minimum 12 inches in height, and of sufficient volume to contain 110 percent of the stored materials



- Located fifty feet from buildings
- Kept free of weeds, debris, and other combustible materials
- Equipped with an appropriate fire extinguisher.

4.2.7.3 Immediate Fire/Explosion Response Actions

Upon detecting a fire/explosion, employees will determine whether the fire is small enough to readily extinguish with immediately available portable extinguishers or water, or if other fire-fighting methods are necessary. Non-essential personnel will be directed away from the area of the fire. If it is judged that a fire is small enough to fight with available extinguishing media, employees will attempt to extinguish the fire provided that:

- They are able to approach the fire from the upwind side, or from the direction opposite to the direction of the fire's progress;
- The correct extinguisher for the potential fire is readily available; and,
- No known complicating factors are present, such as conditions that would promote rapid spread, an imminent risk of explosion or the presence of gross contamination.

4.2.7.3.0.1 - Personnel leaving a fire/explosion area will account for all employees in that work area as soon as possible, with the UXO ESS/QC (or designee) performing a head count.

4.2.7.3.0.2 - The SUXOS will be notified as soon as possible of the location, size, and nature of the fire/explosion. As conditions dictate, the UXO ESS/QC will declare an emergency, and initiate remedial procedures, and request assistance from the NWS Earle Fire Department. Outside personnel responding to the fire/explosion may seek assistance from the UXO ESS/QC with regard to the routing of equipment within the incident site to the most favorable and safe position while minimizing and/or avoiding exposure to any site contaminants. The SUXSO will have safety oversight and will advise the SUXOS as conditions change.

4.2.7.3.0.3 - If employee(s) are unable to evacuate themselves from a fire/explosion area for any reason, their rescue will be the first priority of responders. The UXO ESS/QC will determine whether on-site resources are sufficient to proceed with rescue operations or if rescue must be delayed until the Fire Department or other emergency responders arrive.

4.2.7.4 Fire Extinguisher Information

The four classes of fire, along with their constituents and respective proper extinguishing agents, are presented in Table 4-4. Flammable/combustible liquid storage areas will have at least one 4A:20:B:C fire extinguisher located within 25-75 feet. These areas will be marked with the appropriate fire symbol and no smoking signs will be posted. Temporary offices will be equipped with a fire extinguisher having a rating of not less than 2A:10:B:C. At least one portable fire extinguisher having a rating of not less than 2A:20:B:C will be located at each work site within the exclusion zone.



Table 4-4. Fire Classification and Proper Extinguishing Agents

Class	Constituents	Proper Extinguishing Agents
Class A	Wood, cloth, paper, rubber, many plastics, and ordinary combustible materials.	Water or ABC Dry Chemical
Class B	Flammable liquids, gases, and greases.	ABC Dry Chemical
Class C	Energized electrical equipment.	ABC Dry Chemical
Class D	Combustible metals such as magnesium, titanium, sodium, and potassium.	Metal-X Dry Chemical (not anticipated; extinguishers not on site for this project.)

4.2.8 Slips, Trips and Falls

4.2.8.1 Hazard Identification

Working in and around the site will pose slip, trip and fall hazards due to slippery surfaces that are wet from rain, snow, steam cleaning fluids or water. Slips, trips and falls are a leading cause of injuries in the field; therefore, a concerted effort to identify, control and eliminate these hazards will be made. The measures needed to reduce or eliminate the possibility of injury will be communicated to all site personnel. Potential adverse health effects include falling to the ground and becoming injured or twisting an ankle.

4.2.8.2 Hazard Mitigation/Prevention

Site personnel will be instructed to look for potential safety hazards and immediately inform the UXO ESS/QC or Shift Supervisor about any new hazards. If the hazard cannot be immediately removed, action must be taken to warn site workers about the hazard. Proper housekeeping must be maintained on site, particularly adjacent to office and decontamination trailers. Small holes and pits along in foot traffic areas should be covered or barricaded to prevent injury.

4.2.9 Manual Lifting

4.2.9.1 Hazard Identification

Manual lifting of heavy objects may be required. Failure to follow proper lifting techniques can result in back injuries and strains. Back injuries are a serious concern as they are the most common workplace injury, often resulting in lost or restricted work time and long treatment and recovery periods.

4.2.9.2 Hazard Mitigation/Prevention

Site personnel will be informed of the potential hazards associated with lifting heavy loads and will be instructed in proper procedures to reduce and eliminate those hazards. Tetra Tech's Corporate EHS policy states that individual employees are not to lift loads greater than 50 pounds. In addition, the following procedures will be used to safely lift anything, particularly heavier loads:



1. Size up the load as to its weight, size and shape.
2. Place the feet about a foot apart and close to the object for good balance.
3. Bend the knees to a comfortable position and get a good handhold.
4. Using both leg and back muscles, lift the load straight up, smoothly and evenly, pushing with the legs and keeping the load close to the body.
5. Lift the object into carrying position, avoiding twisting movements until the lift is completed.
6. Turn the body with changes of foot position; making sure the path of travel is clear.
7. Using both leg and back muscles, comfortably lower the load by bending the knees. When the load is securely in place, release the grip. Setting down the load is just as important as picking it up.

4.2.9.2.0.1 - The same steps apply to team lifting, with the emphasis on coordination. All should start and finish the lift action at the same time and perform turning movements together.

4.3 BIOLOGICAL HAZARDS

The following biological hazards may be present at the site. The UXO ESS/QC will instruct the field crew in recognition of biological hazards and procedures for avoiding those hazards. Pictures of spiders and insects will be posted on site, if available.

4.3.1 Insect/Arachnid Bites and Stings

4.3.1.1 Hazard Identification

Insects, including bees, wasps, hornets, and spiders will be present at this site making the chance of a bite possible. Some individuals may have a severe allergic reaction to an insect bite or sting that can result in a life threatening condition.

4.3.1.2 Hazard Mitigation/Prevention

The UXO ESS/QC will instruct the field crew in the recognition of poisonous insects and in procedures for avoiding these hazards. Additionally, any individuals who have been bitten or stung by a spider or an insect will promptly notify the UXO ESS/QC. The following is a list of preventive measures that may be used **as appropriate** to avoid contact with poisonous spiders and insects:

- Apply insect repellent prior to fieldwork and as often as needed throughout the work shift. Apply deet (vapor-active repellent) to any exposed skin surface (except eyes and lips) and apply a permethrin repellent spray to field clothing. Other types of repellents may be approved by the PESH on a site-by-site basis.
- **Note: Allow the permethrin to dry before using the treated clothing.**



- Wear proper protective clothing (work boots, socks and pants).
- Avoid contact with bushes, tall grass or brush to the greatest degree possible, particularly in wooded areas.
- Inform the UXO ESS/QC of any known allergies to insect bites or stings. Field personnel having these types of allergies will be required to have allergy medication on site.

4.3.1.2.0.1 - Mild insect stings or spider bites should be treated by applying a baking soda paste or ice wrapped in a wet cloth. Bee stingers should be gently scraped off the skin, working from the side of the stinger. The suction device in commercially available snakebite kits can also be used to remove the stinger. If insect bites become red or inflamed or symptoms such as nausea, dizziness, shortness of breath, etc., appear, medical care will be sought immediately. Immediate medical care is essential for person's who are allergic to insect bites/stings. If an allergic person receives a spider bite or insect bite/sting, seek immediate medical attention, keep the victim calm, and check vital signs frequently. Rescue breathing should be given, if necessary, to supply oxygen to the victim.

4.3.2 Blood borne Pathogens

4.3.2.1 Hazard Identification

Blood borne pathogens enter the human body through punctures, cuts or abrasions of the skin or mucous membranes. They are not transmitted via ingestion (swallowing), through inhalation into the lungs or by contact with whole, healthy skin. However, under the principle of universal precaution, all blood should be considered infectious and all skin and mucous membranes should be considered to have possible points of entry.

4.3.2.1.0.1 - There are a number of infections transmitted by insects and arthropods where the infection cycle includes the human blood system. Examples include malaria and Lyme disease, which are transmitted by mosquitoes and ticks, respectively. These diseases are serious and the possibility for infection should be considered. However, these diseases cannot be transmitted through personal contact with human blood, and are not covered by the OSHA *Blood borne Pathogen Standard*. Two primary blood borne pathogens include Hepatitis B and Acquired Immune Deficiency Syndrome (AIDS). Potential blood borne pathogen exposure includes:

- Contact with contaminated medical equipment, medical waste or sharps;
- Contact with contaminated body fluids during emergency medical response operations such as administering first aid or CPR; and,
- Contact with human wastes such as domestic sewage.

4.3.2.2 Hazard Mitigation/Prevention

To reduce the risk of contracting a blood borne pathogen, take the following precautions:

- Avoid contact with blood and other bodily fluids;
- Use protective equipment when giving First Aid/CPR, such as disposable gloves and breathing barriers;
- Thoroughly wash hands with soap and water immediately after giving aid;
- When cleaning up blood or other bodily fluids:
 - Clean up the spill immediately (or soon as possible).
 - Use disposable gloves and other PPE when cleaning up spills.
 - Wipe up the spill with paper towels or other absorbent materials.
 - After the area has been wiped up, flood the area with a solution of ¼ cup liquid chlorine bleach to 1 gallon of fresh water and allow the solution to stand for at least 20 minutes.
 - Dispose of the contaminated material used to clean up the spill in a labeled biohazard container.

4.3.2.2.0.1 - A vaccine exists for Hepatitis B. Should employees desire the vaccine, their employer will arrange to have the employee receive the series of inoculations. This vaccine is most effective when given before exposure, but may also prevent infection if given after exposure to blood carrying the Hepatitis B virus.

4.3.2.2.0.2 -The UXO ESS/QC should be notified of any potential contact with blood or bodily fluids resulting from first aid or CPR administered on the job. Site personnel will be given blood borne pathogens training. Training for this hazard is discussed in greater detail in Section 5.8.

4.3.2.2.0.3 -Management of risk associated with various skin contact and potential ingestion will be accomplished through:

- Observance of proper site work practices (e.g., minimizing contact with potentially-contaminated site media).
- Following good personal and equipment decontamination practices.
- Good personal hygiene practices.
- Proper use of personnel protective equipment.

4.3.2.2.0.4 -These and other controls are specified in the task-specific AHA Matrix presented in Attachment 1.

5.0 TRAINING

5.1 BASIC HEALTH AND SAFETY TRAINING

This site is not a hazardous waste site and therefore is not subject to the requirement for 40 hour Hazardous Waste Site Work and Emergency Response Operations (HAZWOPER) training.

5.2 HAZARD COMMUNICATION TRAINING

In accordance with the corporate policy, copies of all material safety data sheets (MSDS) for hazardous chemical materials used during site operations or that may be present on site will be available on site from the UXO ESS/QC. The UXO ESS/QC will conduct hazard communication training in accordance with 29 CFR 1920.1200 and CFR 1926.59, EM 385-1-1, and the Tetra Tech Hazard Communication Program. Training will include, but not be limited to, all hazards or potential hazards associated with site activities and any hazardous chemical materials brought to or found on site.

5.3 MANAGER/SUPERVISOR TRAINING

In accordance with corporate policy, on-site management and supervisors who will be directly responsible for, or who supervise employees engaged in hazardous waste operations shall receive at least eight additional hours of specialized training on managing such operations at the time of job assignment. This course shall include eight hours of training on topics such as the Tetra Tech Health and Safety Program and procedures, health and safety training requirements, personal protective equipment, emergency preparedness programs/procedures and health hazard monitoring procedures and techniques. At a minimum, the SUXOS and UXO ESS/QC will have had this training.

5.4 SITE-SPECIFIC TRAINING

Prior to commencement of field activities, all field personnel assigned to the project will have completed training that specifically addresses the activities, procedures, monitoring and equipment used in the site operations. It will include site and facility layout, hazards and emergency services at the site and will highlight all provisions contained within this HASP. This training will also allow field workers to clarify anything they do not understand and reinforce their responsibilities regarding safety and operations for their particular activity. Topics addressed in the site-specific health and safety training will include:

- Site history and background;
- Names of on-site employees and their duties;
- Personnel responsibilities for safety and health;



- Employee rights and responsibilities under OSHA;
- Review of the HASP;
- Acute and chronic effects of exposure to hazardous substances, such as chemical agents, that may be present, the potential routes and symptoms of exposure for these substances; the exposure limits and the level of personal exposure that can be anticipated;
- SOPs prepared specifically to address various aspects of this project;
- Site control measures;
- Fire prevention measures;
- Medical surveillance program;
- Personal protective equipment (PPE);
- Discussion of action levels for changing site PPE or evacuating the site;
- Heat and/or cold stress prevention, treatment and monitoring;
- Other physical hazards such as slip/trip/falls, noise, electrocution, being struck by something and being caught in or between something;
- Personal cleanliness and restrictions on eating, drinking and smoking;
- Emergencies and review of emergency procedures and facilities, including blood borne pathogen precautions and universal precautions;
- Conventional Ordnance and,
- Confined Spaces (if needed).

5.4.0.1 - Employees will also be instructed in the use of the buddy system, which is a method of organizing work groups so there is always someone available to;

- Provide his or her partner with assistance in an emergency;
- Observe his or her partner for signs of chemical or physical exposure;
- Periodically check the integrity of his or her partner's PPE; and
- Notify the emergency response personnel when an emergency situation occurs.

5.4.0.2 - At the completion of site-specific training, all employees will be required to sign a Plan Acceptance Form (See Attachment 2) that states they have received site-specific training and read, understood, agreed with, and will abide by the health and safety procedures outlined in the HASP.



5.5 FIRST AID AND CPR

The UXO ESS/QC will identify those individuals requiring first aid and CPR training in order to ensure emergency medical treatment is available during field activities. A minimum of two field personnel on-site at any one time will have first aid and CPR training. The training will be consistent with the requirements of the American Red Cross.

5.6 BLOODBORNE PATHOGENS TRAINING

Individuals on-site who have First Aid and CPR certification and who may provide emergency medical treatment shall have completed training in accordance with the Tetra Tech Blood borne Pathogens Program and Occupational Safety and Health Administration (OSHA) Blood borne Pathogen Standard, 29 CFR 1910.1030. The Hepatitis B Vaccine Declaration (mandatory) will be one of the topics covered in the training in accordance with 29 CFR 1910.1030.

5.7 FIRE EXTINGUISHER TRAINING

Fire extinguisher education and training will be conducted in accordance with 29 CFR 1910.157 (g).

5.8 EMERGENCY RESPONSE TRAINING

Personnel on this project have not been trained as hazardous material responders and incident commanders, and therefore will not respond to off-site releases of hazardous materials, structural or major fires, or other catastrophic incidents beyond their training and competency. Training during initial orientation will include:

- Employee alarm system.
- Evacuation procedures, routes, meeting places and accountability.

5.9 DAILY BRIEFINGS/VERIFICATION

At the beginning of each working day, the SS will hold a daily briefing. At a minimum, the daily briefings will include:

1. Review of emergency procedures.
2. Review of munitions safety.
3. Communications.
4. Review of any site-specific or applicable task-specific hazards.
5. Procedures for coordination of ordnance work with personnel performing construction work or other non-ordnance functions.

5.9.0.1 - Other topics that will be discussed, as necessary, include: QC, changes to the work schedule, equipment maintenance, exclusion zone (EZ) locations and setup (if required) and any other issues that may affect the activities being performed that day or in the near future.

Attendance at the daily briefing will be documented using the Daily Briefing Sign-In Sheet in Attachment 3.

5.10 TAIL-GATE BRIEFINGS

After arriving at the worksite, Team Leaders will conduct a tailgate safety meeting. They will brief their teams on potential hazards in the area where they will be working and will document that the briefing has been completed in the logbook. The tailgate briefing also affords the Team Leader with an opportunity to review the planned daily activities and confirm that team members understand these activities and their individual duties.

5.11 DOCUMENTATION

Documentation of training requirements is the responsibility of each employer. Written documentation verifying compliance with training and medical requirements must be submitted to the UXO ESS/QC before personnel enter the exclusion or contaminant reduction zones. This documentation will be kept on site at all times. Subcontractors will provide the required copies of training certificates and clearances prior to beginning fieldwork. No one will be allowed to work in an exclusion zone without the appropriate training and medical clearances. Access to training and medical monitoring records will be afforded to government personnel as required to confirm training/medical status.

5.12 VISITORS

All visitors to the site, even if escorted, must review the HASP and receive site-specific training. Visitors must sign in and out at the project office. The visitor sign-in sheet is provided as Attachment 4. Visitors will not be permitted in the restricted work areas unless they comply with site-specific requirements. Visitors not complying with the appropriate requirements shall not enter the restricted work areas; however, they may observe site activities and conditions from a safe distance. In addition, during intrusive activities, only UXO-qualified personnel shall be in the exclusion zone. If visitors or unexpected intruders enter the exclusion zone, all intrusive activities will cease until unauthorized personnel or persons are removed from the Exclusion Zone.



6.0 PERSONAL PROTECTIVE EQUIPMENT

6.1 GENERAL

Personal protective equipment (PPE) will be one of the control measures used to minimize personnel exposure to chemical and physical hazards at the job site. Through the AHA process, PPE requirements have been identified for each planned site task. These requirements will be communicated to the site personnel through the review of this HASP and the AHAs as part of site-specific safety and health training and daily briefings. PPE will be:

- Individually assigned and used
- Used, maintained, and stored by the workers assigned the PPE items; and
- Used, maintained, and stored in accordance with their training and with manufacturers' recommendations and intentions.

6.1.1 PPE Training

This training will, at a minimum, cover the following:

- When and what types of PPE are necessary,
- How to properly don, doff, adjust and wear PPE, and
- PPE limitations, proper care, inspection, testing, maintenance, useful life, storage and disposal requirements.

6.1.1.0.1 - Worker familiarity with these matters will be judged by the SUXOS through collection and review of training certificates and records, and through direct observation of worker's initial usage of PPE on site, as well as ongoing observations of ongoing usage throughout site activities.

6.1.1.0.2 - Employees working at this site will possess medical clearance to perform work duties while wearing prescribed PPE. This is accomplished through their participation in a suitable medical surveillance program.

6.2 ANTICIPATED PPE USAGE

Specific PPE requirements have been established for each planned field activity, and are prescribed in the AHAs of this HASP. Tetra Tech personnel and any subcontractors will be required to wear, as a minimum, Level D personnel protective equipment, which shall include (at a minimum):

- Steel-toe work shoes/boots;
- Work gloves;

- Rubber gloves and boots (when needed for working in wet areas);
- Hearing protection (when necessary);
- Communication (i.e. cell phone, radio, etc.);
- Standard work clothing (short/long sleeved shirts long pants);
- Hardhat when working with over head hazards;
- Safety glasses; and
- Personal floatation device when conditions warrant.

6.2.0.1 - Basic PPE used for dermal protection from chemical hazards (if required) typically will include:

- Nitrile or latex surgeons style gloves;
- Tyvek coveralls when there is potential for soiling work clothes; or,
- Impervious coveralls (Saranex and/or PVC coated Tyvek or Rainsuits) will be required when there is a potential for saturation of work clothes.

6.2.0.1 - NOTE: All electronic devices will be approved by the UXO ESS/QC prior to use. All electronic devices, spark and/or heat producing devices/materials will be prohibited during DMM transport, storage, handling, and intrusive activities.

6.3 REASSESSMENT OF PROTECTION LEVEL

Throughout the course of the fieldwork, PPE requirements may be modified (upgraded or downgraded) due to environmental concerns (e.g., dusty conditions, etc.). In addition, hearing protection should be used to protect against excessive noise.

6.3.1 Excessive Noise

In situation where excessive noise is an anticipated hazard of a task hearing protection has been selected and identified within the AHA. During activities where it is unknown whether excessive noise will be a hazard the following general rule of thumb will apply. A general rule of thumb is:

If workers standing within 2 feet of each other need to raise their voices to communicate, then excessive noise levels (>85dBA) are being approached and hearing protection should be employed until noise levels can be qualified/quantified.

6.3.1.0.1 - The UXO ESS/QC in consultation with the PESM, will determine if exposure monitoring or PPE upgrades are required. No alteration of PPE requirements or application of engineering controls shall occur without the approval of the UXO ESS/QC and/or the PESM.

7.0 MEDICAL SURVEILLANCE PROGRAM

All contractor and subcontractor personnel performing fieldwork at the site are required to have passed a complete medical surveillance examination in accordance with corporate policy. A physician's medical release for work will be confirmed by the UXO ESS/QC before an employee can begin site activities. At a minimum, the exam must be taken annually and upon termination of hazardous waste site work. The Tetra Tech PESM may require additional medical testing in consultation with the company physician and the UXO ESS/QC if an overt exposure or accident occurs, or if other site conditions warrant further medical surveillance.

7.0.1 - A physician's medical release for work will be received by the UXO ESS/QC before an employee can work in the exclusion zone. The examination must be current within one (1) year (up to two (2) years if appropriate documentation from the physician is received). An approved medical examination must also be offered upon termination of hazardous waste site-related work if the last examination was not taken within the previous six months. Additional medical testing may be required by the PESM in consultation with the CMC and the UXO ESS/QC if an over-exposure or accident occurs, if an employee exhibits symptoms of exposure, or if other site conditions warrant further medical surveillance.

7.1 MEDICAL DATA SHEET

All on-site personnel will complete the medical data sheet provided in Attachment 5. It is intended to provide basic information that would be useful to professional medical personnel if medical treatment or transport to emergency medical facilities is required. Whenever possible, this medical data sheet will accompany the personnel needing medical assistance. The medical data sheet will be maintained in a secure location. It will be considered confidential and will only be used on a need-to-know basis. A blank medical data sheet is included in Attachment 5 of the HASP.



8.0 EXPOSURE MONITORING/AIR SAMPLING PROGRAM

Direct reading instruments will be used at the site to evaluate the level of oxygen inside of the scow if it is required that personnel enter. As a result, specific air monitoring measures and requirements are established in Confined Space Entry Permit pertaining to the hazards and tasks of an identified operation. Additionally Section 1.0, the Health and Safety Guidance Manual contain detailed information regarding direct reading instrumentation, as well as general calibration procedures of various instruments.

8.0.1 - An Oxygen meter will be used to evaluate oxygen concentrations if entry into the scow is required. Oxygen monitoring will identify oxygen deficient atmospheres typically found in these types of containers. Any evidence of oxygen deficient atmosphere in the work areas will be treated as presenting a potential hazardous atmosphere and will require site personnel to retreat to an unaffected area.



9.0 SITE CONTROL MEASURES

The objective of site control is to prevent the entry of unauthorized personnel into the work area. A log will be used to keep track of site personnel entering active work zones.

9.1 WORK ZONES

The work zone will be a combination of zones identified including the Exclusion Zone (EZ), Contamination Reduction Zone (CRZ), and Support Zone. The SUXOS, with the concurrence of the UXO ESS/QC, will evaluate the need to establish zones and will configure the specific location boundaries as necessary. These specific locations will be communicated to field personnel prior to the commencement of new activities at the site. Decision-making criteria for each site set-up and subsequent control measures will consider the following:

- Activities required;
- Area needed to conduct operations;
- Traffic patterns and client requests;
- Size, type and number of DMM encountered; and
- Determined impact radius.

9.1.0.1 - More information on work zones and work zone configuration is available in Section 2.0 of the SSWP.

9.2 VISITORS

The potential exists for site visitors during the performance of the field work. Anticipated visitors may include:

- Personnel invited to observe or participate in operations by Tetra Tech NUS;
- Regulatory personnel (i.e., DOD, NJDEP, EPA, OSHA, etc.);
- Navy personnel; and,
- Other authorized visitors.

9.2.0.1 - Non-DOD personnel working on this project are required to gain initial access to the facility by coordinating with the Site Manager, SUXOS, or designee using the following established access procedures.

9.2.0.2 - Once access to the facility is obtained, personnel who require access to Tetra Tech work sites (areas of ongoing operations) will be required to obtain permission from the SUXOS and the facility contact. No site visitors will be permitted in the work area during material transfer, spreading, or surveying. If authorized visitors require access to these locations, all

activities will cease until the visitors have cleared the area. Upon gaining access to the work site, site visitors wishing to observe operational areas will be required to meet the minimum requirements as stipulated below.

- Site visitors will be routed to the UXO Team Leader who will sign them into the field logbook. Information to be recorded in the logbook will include the individuals name (proper identification required), who they represent, and the purpose for the visit. The UXO Team Leader is responsible for ensuring that site visitors are always escorted while on site.
- Site visitors wishing to enter work zones will be required to produce the necessary information supporting clearance on to the site. This includes information attesting to applicable training (40-hours of HAZWOPER training and medical surveillance as stipulated in Section 6.0, of this document). In addition, to enter the sites operational zones, visitors will be required to first go through site-specific training covering the topics stipulated in Section 4.0 of this HASP.

9.2.0.3 - Once the site visitors have completed the above items they will be permitted to enter the site and applicable operational areas. Visitors are required to observe the protective equipment and site restrictions in effect at the work areas visited. Any visitors not meeting the requirements as stipulated in this plan for site clearance will not be permitted to enter the site operational zones. Any incidence of unauthorized site visitation will cause on-site activities to be terminated until that visitor can be removed. Removal of unauthorized visitors will be accomplished with support from on-site security and NWS Earle POC, if necessary.

9.2.0.4 - At a minimum, the NWS Earle POC will be notified of any unauthorized visitors. Visitors will receive an additional site specific safety brief and be escorted while on the site. Additionally, work will cease if the escorted visitors encroach within the established exclusion area. Visitors will sign in on the Visitors Log upon arriving at the work site and sign out of the visitors log upon departure from the site.

9.3 SITE SECURITY

Access to the work areas will be restricted by physical barricades and/or on-site personnel. All non-UXO personnel entering the work area will be escorted by a UXO Technician. If non-essential personnel enter the work zone during transfer, spreading or DMM survey operations are being conducted, work will stop. The personnel will be briefed on the hazards by the UXO ESS/QC and will sign the visitor's log. Work will not continue until non-essential personnel have departed the work area.



10.0 EMERGENCY ACTION PLAN

10.1 INTRODUCTION

This section is to direct and guide field personnel in the event of an emergency. All site activities are coordinated with the client contacts. In the event of an onsite emergency, personnel will evacuate to a safe place of refuge and notify the NWS Earle Emergency Coordinator who is the Fire Chief. The NWS Earle emergency staff will coordinate on-site activities. They are the only authorized emergency responders who provide service in emergency situations. Tetra Tech and subcontractor personnel will notify the NWS Earle Emergency Dispatcher and only provide initial or incipient stage emergency response measures. Workers who are ill or who have suffered a non-serious injury may be transported by site personnel to nearby medical facilities, provided that such transport does not aggravate or further endanger the welfare of the injured or ill person. The NWS Earle emergency response agencies listed in this plan are fully capable of providing the most effective response, and as such, are designated as the primary responders. These agencies are located within a reasonable distance from the area of site operations, which ensures adequate emergency response time. The Tetra Tech PM and PESM are to be notified in the event of an onsite incident. This Emergency Action Plan conforms to the requirements of 29 CFR 1910.38(a), as allowed in 29 CFR 1910.120(l)(1)(ii).

10.1.0.1 - Tetra Tech will, through necessary services, provide the following emergency action measures:

- Incipient stage fire-fighting support and prevention,
- Removal of personnel from emergency situations,
- Initial medical support for injuries or illnesses requiring basic first aid, and
- Site control and security measures as necessary.

10.2 EMERGENCY PLANNING

Through the initial hazard/risk assessment effort, emergencies resulting from chemical, physical, or fire hazards are the types of emergencies that could be encountered during site activities. To minimize and eliminate the potential for these emergency situations, pre-emergency planning activities will include the following:

- Coordinating with local Emergency Response personnel to ensure that Tetra Tech emergency action activities are compatible with existing emergency response procedures. NWS Earle Fire Protection and Emergency Services will be notified about scheduled events and activities. This is most imperative in situations where their services may be required.



- Establishing and maintaining information at the project staging area (support zone) for easy access in the event of an emergency. This information will include the following:
 - Onsite personnel medical records (Medical Data Sheets).
 - A log book identifying personnel onsite each day.
 - Hospital route map with directions (these should also be placed in each site vehicle).
 - Emergency notification - phone numbers.

10.2.0.1 - The SUXOS will be responsible for the following tasks:

- Identifying a chain of command for emergency action.
- Educating site workers to the hazards and control measures associated with planned activities at the site, and providing early recognition and prevention, where possible.
- Periodically performing practice drills to ensure site workers are familiar with incidental response measures.
- Providing the necessary equipment to safely accomplish identified tasks.

10.3 EMERGENCY RECOGNITION AND PREVENTION

10.3.1 Recognition

Emergency situations that may be encountered during site activities will generally be recognized by visual observation. Visual observation is primarily relevant for physical hazards that may be associated with the proposed scope of work. Visual observation will also play a role in detecting some chemical hazards. Tasks to be performed at the site, potential hazards associated with those tasks, and the recommended control methods are discussed in detail in Section 2.0 of the SSWP. Additionally, early recognition of hazards will be supported by daily site surveys to eliminate a situation predisposed to an emergency. The UXO Team Leaders will be responsible for performing surveys of their work areas before initiating site operations and periodically while operations are being conducted. Findings will be documented by the Team Leaders in the logbook; however, all site personnel will be responsible for reporting hazardous situations. Where potential hazards exist, Tetra Tech will initiate control measures to prevent adverse effects to human health and the environment.

10.3.1.0.1 - The above actions will provide early recognition for potential emergency situations and allow Tetra Tech to initiate necessary control measures. However, if the UXO ESS/QC determines that control measures are not sufficient to eliminate the hazard; Tetra Tech will withdraw from the site and notify the appropriate response agencies listed in Appendix B of the Work Plan.

10.3.2 Prevention

Tetra Tech and subcontractor personnel will minimize the potential for emergencies by following the provisions of the Tetra Tech Health and Safety Program posted on the CRL and ensuring compliance with the HASP and applicable OSHA regulations. Daily site surveys of the work areas will also assist in the prevention of illness/injuries by identifying potential hazards and initiating appropriate control measures. The Shift supervisor will conduct these surveys at the beginning of each workday.

10.3.2.0.1 - During ordnance handling operations on the Pier Complex, Tetra Tech will station flagmen with approved radios at either end of the DMM survey/transfer ESQD arc on the main trestle. When placarded ordnance laden conveyances approach the ESQD with the intent of passing through the area to Trestle 1A, the flagman will notify the SS and UXO Team Leaders to secure their operations (i.e., cease work) in order to allow the ordnance conveyances to proceed down Trestle 1A. Once the ordnance vehicles are out of the area, the flagman will notify the SS that survey/transfer operations may be restarted. All other vehicles will be allowed to proceed and the flagmen will not be stationed on the main trestle when there is no ordnance handling operations at Piers 2 or 4. Communication between NWS Earle and the contractor for upcoming pier operations will be critical for efficient/timely DMM operations.

10.4 EVACUATION ROUTES, PROCEDURES, AND PLACES OF REFUGE

An evacuation will be initiated whenever recommended hazard controls are insufficient to protect the health, safety, or welfare of site workers. Specific examples of conditions that may initiate an evacuation include, but are not limited to, the following: severe weather conditions; fire or explosion.

10.4.0.1 - In the event of an emergency requiring evacuation, personnel will immediately stop activities and report to the designated safe place of refuge unless doing so would pose additional risks. When evacuation to the primary place of refuge is not possible, personnel will proceed to a designated alternate location and remain until further notification from the SUXOS. Other safe places of refuge will be identified before the commencement of site activities by the SUXOS and will be conveyed to personnel as part of the pre-activities training session. This information will be given during daily safety meetings. If possible, the safe place of refuge will also serve as the telephone communications point for that area. During an evacuation, personnel will remain at the refuge location until directed otherwise by the SUXOS (or UXO ESS/QC if the SUXOS is not present on site). The UXO ESS/QC will perform a head count at this location to account for and to confirm the location of site personnel. Emergency response personnel will be immediately notified of unaccounted personnel. The UXO ESS/QC will document the names of personnel on site (on a daily basis) in the site Health and Safety Logbook. This information will be used to perform the head count in the event of an emergency.

10.4.0.2 - Evacuation procedures will be discussed during the pre-activities training session before the initiation of project tasks.



10.5 EMERGENCY ALERTING AND ACTION/RESPONSE PROCEDURES

In the event of an emergency situation, such as fire, explosion, electrical storm, etc., an air horn or car horn will be sounded by the Shift Supervisor or UXO ESS/QC for three 5-second intervals indicating the initiation of evacuation procedures. All personnel in both the restricted and non-restricted areas will evacuate and assemble near the Support Zone or other. After the alert is sounded, and the area has been evacuated, site personnel will:

- Report to the designated refuge point.
- Give the SUXOS (or UXO ESS/QC if the SUXOS is not on site) pertinent incident details.

10.5.0.1 - Tetra Tech personnel will perform removal of personnel from emergency situations and may provide initial medical support for injuries/illnesses requiring only first aid level support. Medical attention above that level will require assistance and support from the designated emergency response agency. Attachment 6 provides the procedure to follow when reporting an injury/illness and the form to be used for this purpose.

10.5.0.2 - In the event that site personnel cannot mitigate the hazardous situation, the UXO Team Leader, will enact emergency notification procedures to secure additional assistance in the following manner:

10.5.0.3 - Dial the NWS Earle Emergency Center immediately and then call other pertinent emergency contacts listed in Appendix B of the SSWP to report the incident. Give the emergency operator the location of the emergency, the type of emergency, the number of personnel injured, and a brief description of the incident. Stay on the phone and follow the instructions given by the operator. The operator will then notify and dispatch the proper emergency response agencies.

10.6 INJURY/ILLNESS REPORTING

If any Tetra Tech personnel are injured or develop an illness as a result of working on site, the Tetra Tech “Injury/Illness Procedure” must be followed. Following this procedure is necessary for documenting the information obtained at the time of the incident.

10.6.0.1 - Any pertinent information regarding allergies to medications or other special conditions will be provided to medical services personnel. This information is listed on Medical Data Sheets filed on site (Attachment 6). If an exposure to hazardous materials has occurred, provide information on the chemical, physical, and toxicological properties of the subject chemical(s) to medical service personnel.

10.7 ROUTE TO MEDICAL CENTER

Tetra Tech will notify NWS Earle Emergency Services of any serious illness or injury. However workers who are ill or who have suffered a non-serious injury may be transported to the



Riverview Medical Center provided the transport can be completed in a safe manner for the injured or ill person.

Name and Address:

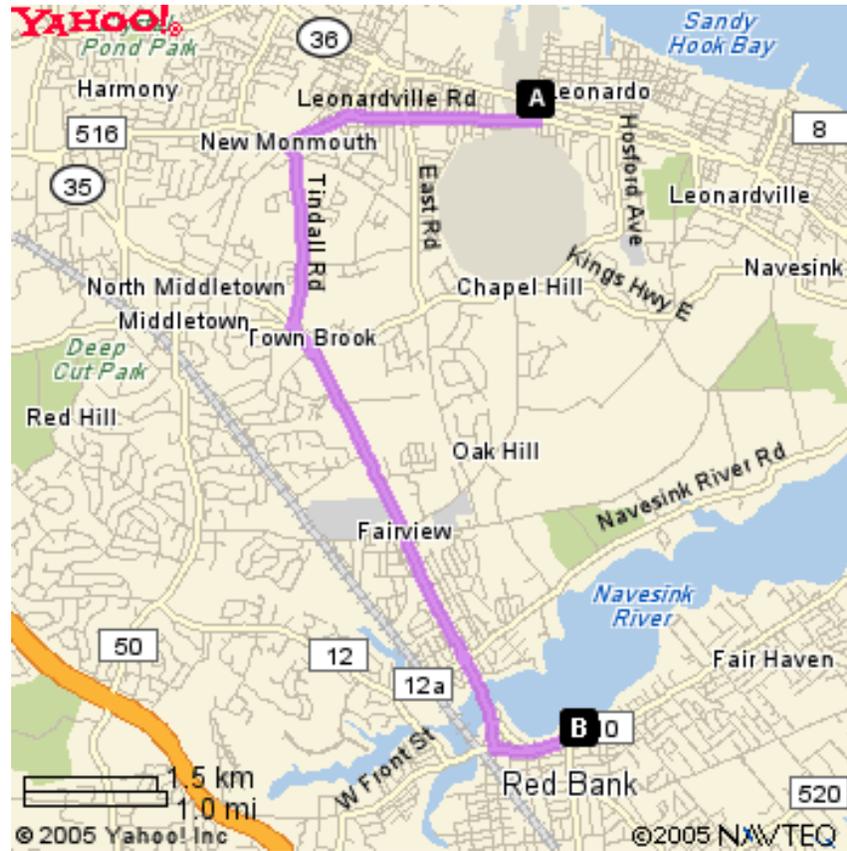
Riverview Medical Center
1 Riverview Plaza
Red Bank, New Jersey
410-546-6400

Driving Directions:

From the entrance to the Pier Area
Turn Right on Leonardville Rd - go 1.7 mi
Turn Left on Tindall Rd - go 1.3 mi
Tindall Rd becomes Rt-35 South - go 3.1 mi
Continue on N Bridge Ave - go 0.2 mi
Turn Left on W Front St - go 0.5 mi
Turn Left on Wharf Ave - go 0.1 mi
Turn Right on Riverview Plaza
Arrive at Medical Center on the Left
Distance: 7.1 miles, Travel Time: 14 mins



Figure 10-1. Route to Medical Center



11.0 ACCIDENT PREVENTION

Weekly and monthly project inspections will be conducted in accordance with the Tetra Tech Program, EHS 3-3. Attachment 7 contains the forms to be completed during the weekly and monthly project inspections. Weekly inspections are to be conducted by the SUXOS and monthly inspections are to be conducted by the Site Manager the SUXOS when the Site Manager is not on site. Quarterly inspections are required for all projects more than 3 months in length. These inspections will be conducted by the PM and PESM jointly. The quarterly inspection will include:

- A visual inspection of the site. Areas of the project site that may be accessed and inspected, include but are not limited to: exclusion zones, buildings, and waste storage areas;
- Completion of applicable and selected portions of the Monthly Inspection Checklists or equivalent documentation;
- A review of on-site records (e.g., agency approvals, permits, waste analyses, waste profiles, waste manifests, discharge monitoring reports, training records, etc.);
- Positive recognition of conformance;
- Non-conformances. Any non-conformances noted by the Site Manager that can be remedied during the conduct of the inspection will be corrected;
- Training of project personnel, when possible, to facilitate correction of non-conformance conditions; and,
- Identification of any observed best practices.

11.0.1 - The will stop work if any conditions or work practices are identified by the PESM which pose imminent danger to the environment or to the safety and health of personnel.

12.0 INCLEMENT WEATHER

12.1 INCLEMENT WEATHER

In the event of impending inclement weather (electric storms, high winds, heavy rains, hurricanes, floods, etc.), the UXO ESS/QC will be responsible for stopping work and directing on site personnel to suitable shelter. Depending on the nature and expected longevity of the inclement conditions, the UXO ESS/QC will determine if and when work may resume.

12.1.0.1 - Thunderstorms pose hazards both through lightning and through flash flooding in and around waterways (i.e. creeks). If storms with associated lightning are in the area, measures should be taken to avoid locations where lightning strikes are likely (i.e., near heavy equipment, under trees, open areas, elevated areas). Additional safety practices include:

- Safe shelters are fully enclosed buildings with wiring and plumbing;
- Avoid water;
- Stay away from doors and windows;
- DO NOT use corded telephones;
- Take off head sets; and,
- Turn off, unplug, and stay away from appliances, computers, power tools, & TV sets. Lightning may strike exterior electric and phone lines, inducing shocks to inside equipment.

12.1.0.2 - It is the responsibility of the UXO ESS/QC to track and monitor weather patterns/conditions that could have lightning strikes associated with them. This action is intended to support both worker safety as well as (transporting, handling, storage) safety practices associated with working with explosives and electrical detonating devices.

12.2 LIGHTNING RESTRICTIONS

All operations and activity on or near water shall cease during Phase I and Phase II lightning alerts.

12.2.1 Phase I Lightning Advisory

Alerting that lightning may develop within the next 30 minutes. Prepare for Phase Two. Work may continue but be prepared to stop work operations. Prepare for shutdown and evacuation. Prepare to seek cover.



12.2.2 Phase II Lightning Advisory

Lightning has been spotted and control of personnel is the responsibility of supervision and individual self-protection. Personnel access to roof or top levels of structures is prohibited. Electrical systems maintenance and any other operation requiring personnel risk of lightning exposure are prohibited. Operations MUST cease and personnel must seek cover (i.e., vehicle or field office).

12.2.2.0.1 - Non-UXO Work may resume when UXO Team Leader issues “All Clear” or 30-minutes has elapsed since the last spotted lightning/thunder. The UXO ESS/QC will monitor weather conditions. If conditions are suitable for lightning strikes, work with explosives and electrical detonating devices will be postponed until favorable conditions exist.

12.3 SEVERE WEATHER

Severe weather is defined as winds in excess of 35 knots (40.3 mph), heavy rain, hail, or the potential for lightning within 5 nautical miles that could affect NWS Earle within 30 minutes.

12.3.0.1 - Field personnel shall obey NWS Earle announcements regarding lightning warnings and other weather restrictions. This information will be provided by the NWS Earle POC. If necessary, the UXO Team Leader will regularly contact the National Oceanic and Atmospheric Administration (NOAA) weather radio (162.550 MHz Station KWO-35 New York, New York) or website www.noaa.gov, or other reliable weather source regarding weather status, particularly if the weather changes. Wind and lightning restrictions are indicated below:

Table 12-1. Wind Restrictions

Steady Wind	Gusts	Restriction
14 knots	22 knots	No erection or work on floats, spiders, or scaffolds
20 knots	25 knots	No mobile crane usage or personnel hoisting using man baskets, high rangers, condors, or similar equipment
30 knots	30 knots	No work on roofs, structure tops, or unprotected areas outside of guardrails.

12.3.1 Tornado Notification

The following tornado notifications will be observed:

- **Tornado Watch:** Conditions are suitable for a tornado.
- **Tornado Warning:** Tornado has been sighted, take cover immediately.

13.0 STANDARD OPERATING SAFETY PROCEDURES, ENGINEERING CONTROLS, AND WORK PRACTICES

The following sections describe standard operating health and safety procedures, engineering controls and work practices that will be observed on this project.

13.1 WORK SITE SAFETY

The UXO ESS/QC Team Leader will ensure that this HASP is maintained on site in an area that is readily accessible to site workers and approved visitors. This HASP will be maintained with current information, in clear view of onsite workers, and will be protected against the elements and against unauthorized removal.

13.2 DAILY LOG BOOK

The UXO Team Leader must make entries into the Daily Log Book including:

- Weather conditions;
- Site personnel;
- Indications or suspicion of exposure;
- Deviations from the HASP;
- General health and safety issues and corrective measures;
- First aid measures; and
- DMM findings.

13.3 BUDDY SYSTEM

The "buddy system" will be employed for site activities.

13.4 SAFE WORK PRACTICES

In addition to the task-specific work practices identified within the AHAs, the following general safe work practices are to be employed, when conducting work on-site.

13.4.1 General Safe Work Practices

These safe work practices establish a pattern of general precautions and measures for reducing risks associated with site operations.



- Wash hands and face thoroughly upon leaving a contaminated or suspected contaminated area prior to hand to mouth activities such as lunch, break times, etc.. A thorough shower and washing must be conducted as soon as possible, if excessive skin contact occurs;
- Take note of the location of the nearest telephone and emergency telephone numbers;
- Attend briefings on anticipated hazards, equipment requirements, safe work permits, emergency procedures, and communication methods before going on site;
- Plan and mark entrance, exit, and emergency escape routes;
- Rehearse unfamiliar operations, prior to implementation;
- Buddies should maintain visual contact with each other and with other on-site team members by remaining in close proximity to assist each other in the case of an emergency;
- Establish appropriate Safety Zones including Support, Contamination Reduction, and Exclusion Zones;
- Minimize the number of personnel and equipment in the Exclusion Zone;
- Non-essential vehicles and equipment should remain outside the Exclusion Zone;
- Establish appropriate decontamination procedures for leaving the site;
- Immediately report injuries, illnesses, and unsafe conditions, practices, defective equipment, and potential exposure incidents to the SUXOS (or UXO ESS/QC if the SUXOS is not on site);
- Matches, lighters, spark or heat producing tools or devices, electronic equipment (cell phones, pagers, etc. unless previously approved are restricted from entering in the Exclusion Zones and areas where explosives are stored, handle, transported, or employed;
- Smoking is only permitted in specified areas;
- Observe coworkers for signs of toxic exposure and heat or cold stress;
- Inform co-workers of potential symptoms of illness, such as headaches, dizziness, nausea, or blurred vision;
- All injuries and accidents will be reported to the UXO Team Leader for reporting to the UXO ESS/QC and PESM;



- Supervisors will ensure that employees observe and obey safety rules and regulations required for the safe conduct of work. Periodic surveys will be conducted by the UXO Team Leader to identify potential hazards as well as to insure compliance with this HASP;
- Alcoholic beverages and non-prescription drugs are prohibited on site;
- Horseplay or practical joking prohibited on site; and,
- Obey posted safety signs.

13.4.2 General Safe DMM Work Requirements:

Only essential personnel will be permitted within designated exclusion zones during DMM operations. Use of CB radios or other radio communication devices rated above 5 watts will not be permitted within 50' during DMM operations until the area is determined free of magnetic anomalies. General Safety Precautions and Rules -The following safety precautions and rules will be observed by site personnel:

- Report DMM or unidentified objects to the UXO Team Leader;
- Remove from the area any person showing evidence of explosive poisoning or dermatitis;
- Do not allow one person to work alone during any operations in areas potentially contaminated with explosives or related hazardous materials;
- Prohibit unnecessary personnel from visiting the operations site;
- Suspend operations immediately upon approach of an electrical storm within ten miles;
- If explosive materials are burning, or their ignition is imminent, immediately evacuate the area;
- Position vehicle(s) in the area capable of evacuating personnel in case of an accident or emergency; and,
- Have communications equipment in the area in case of an accident or emergency.

13.4.3 Equipment

The following general safe work practices apply to the use of equipment:

- Employees shall not handle or attempt to operate power tools or motorized vehicles without first being properly trained;
- Use of Seat belts on or in self propelled equipment is mandatory;

- Operators will obey warning and information signs;
- Always hand or lower materials, tools, or other objects to others, avoid throwing to decrease the risk of injury;
- De-energize equipment and machinery prior to attempting to make repairs. Use appropriate lock out/tag out procedures, in accordance with OSHA 29 CFR 1910.147 if appropriate; and,
- All equipment which is defective or in need of service shall be reported, tagged, and removed from service until repaired or replaced.

13.4.4 Safe Lifting Practices

The very nature of this work creates lifting hazards and they will be encountered. This hazard is more predominant in the early morning hours (prior to muscles becoming limber) and later in the day (as a result of fatigue). The following provisions shall be instituted in order to minimize hazards of this nature:

- Use machinery or multiple personnel for heavy lifts, where possible;
- Use proper lifting techniques;
 - Lift with your legs, not your back. Bend your knees move as close to the load as possible, and ensure good hand holds are obtainable.
 - Minimize the horizontal distance to the center of the lift to your center of gravity.
 - Minimize turning and twisting when lifting as the lower back is especially vulnerable at this time.
 - Break lifts into steps if the vertical distance (from the start point to the placement of the lift) is excessive.
 - Plan your lifts - Use assistance when lifting heavy items; lighter items may require assistance if placing on higher areas.
 - Periods of high frequency lifts or extended duration lifts should provide sufficient breaks to guard against fatigue and injury.

13.4.4.0.1 - Other considerations associated with lifting injuries and muscle strains include:

- Area available to maneuver the lift;
- Area of the lift - Work place clutter, slippery surfaces - Correct these situations/conditions before attempting a lift; and,
- Your overall physical condition, seek help when you need it.



13.5 COMMUNICATION

When team members are separated by distance great enough to make hand signals ineffective between team members, walkie-talkies will be provided for each crew to the UXO Team Leader and to the Shift supervisor. In addition, at least one mobile telephone will be available for communications with off-site personnel. The mobile telephone also will be available to contact emergency personnel in the event an emergency response (medical or otherwise) is deemed necessary. Prior to the initiation of field activities, the SS and UXO Team Leaders will test communication devices to ensure that they will function effectively for both onsite and offsite purposes (including contact with offsite emergency services). The SUXOS and/or UXO ESS/QC will approve communication devices prior to use to insure they will not affect electrically sensitive explosive devices.



14.0 FIRST AID EQUIPMENT

Based on the nature of the planned activities and on the information available on the work sites, there is limited potential for any significant emergency events to occur. Any emergency events encountered (if any) would most likely be limited to personal injury or minor spills or releases. As a result, limited emergency and first aid equipment will be required to be maintained onsite.

14.0.1 - The following represent emergency equipment to be maintained on-site during operations.

- First-aid kit(s).
- Eye wash units (as determined by UXO ESS/QC).

14.0.2 - First-aid kits purchased for the job-site shall be Type III, 16-unit kits meeting the specifications of American National Standards Institute (ANSI Z308.1-1998), and shall meet the kit basic fill requirements as specified in USACE EM 385-1-1, Section 3. These minimum fill requirements are listed in Table 14-1. The UXO ESS/QC will determine the number of kits necessary based on the number of personnel and the number of remote operations being conducted under the scope of work. It is the UXO ESS/QC's responsibility to assess work site applications for specific first-aid needs based on operations being conducted.

14.0.3 - The following items of PPE will be maintained on site to be available in case the need to provide first aid arises: One pocket mouth piece or CPR barrier, surgeon's gloves, disposable gown or coverall, surgical mask, and eye protection.

Table 14-1. First Aid Kit Basic (Minimum) Fill Requirements

Unit First Aid Item	Minimum Size or Volume (Metric)	Minimum Size or Volume (US)	Item Quantity per Unit Package	Unit Package Size
*Absorbent Compress	60 sq. cm	24 sq. in.	1	1
*Adhesive Bandage	2.5 x 7.5 cm	1 x 3 in.	16	1
*Adhesive Tape	457.2 cm	5 yd. (total)	1 or 2	1 or 2
*Antiseptic Swab	0.5 g	0.14 fl. Oz.	10	1
Antiseptic Wipe	2.5 x 2.5 cm	1 x 1 in.	10	1
Antiseptic Towelette	60 sq. cm	24 sq. in.	10	1
Bandage Compress (2 in.)	5 x 91 cm	2 x 36 in.	4	1
Bandage Compress (3 in.)	7.5 x 152 cm	3 x 60 in.	2	1
Bandage Compress (4 in.)	10 x 183 cm	4 x 72 in.	1	1
*Burn Treatment	0.5 g	0.14 fl. oz.	6	1
Eye Covering, with means of attachment			1	1
Eye Wash	30 ml	1 fl. oz. total	1	2
Eye Wash & Covering, with means of attachment			1	2
Gloves			2 pair	1
Roller Bandage, 4 in.	10 x 550 cm	4 in. x 6 yd.	1	1
Roller Bandage, 2 in.	5 x 550 cm	2 in. x 6 yd.	2	1
*Sterile Pad	7.5 x 7.5 cm	3 x 3 in.	4	1
*Triangular Bandage	101 x 101 x 142 cm	40 x 40 x 56 in.	1	1

* Minimum mandatory contents for basic fill kit. Additional items from this table are needed to meet 16-unit kit requirement.



15.0 CONFINED SPACE ENTRY PROCEDURES

It is not anticipated that any confined spaced entry will be required for this task order. According to the WMI, the scows and barges do not represent confined spaces. If it is determined that entry into the scows or barges is necessary, and that this is in actuality a confined space, the SUXOS and UXO ESS/QC will be required to complete the following procedures prior to initiating any confined space entry activities.

- Review the Tetra Tech Inc. Confined Space Entry Program. (CRL);
- Review the prime contractor, Weeks Marine, Inc. written Permit-Required Confined Space Entry Program/Procedures;
- Determine which program will be used on site; and,
- Perform confined space entries in a manner that is in strict compliance with OSHA 29 CFR 1910.146, "Permit-Required Confined Spaces".

15.0.1 - The space will be evaluated prior to entry, the entry points will be controlled with appropriate signage, barriers, and other controls in accordance with the OSHA requirements. A Confined Space Entry Permit will be completed and covered with the personnel involved with this task prior to the entry. Field personnel specifically trained under the guidelines of OSHA 29 CFR 1910.146 must be assigned to this project. A confined space is defined as an area that has one or more of the following characteristics:

- Is large enough and so configured that an employee can bodily enter and perform assigned work;
- Has limited or restricted means for entry or exit (for example, tanks, manholes, sewers, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry); and,
- Is not designed for continuous employee occupancy.

15.0.2 - Additionally, a Permit-Required Confined Space may also have one or more of the following characteristics:

- Contains or has a potential to contain a hazardous atmosphere;
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly caving walls or by a floor that slopes downward and tapers to a smaller cross-section; and,
- Contains any other recognized, serious, safety or health hazard.

15.0.3 - For further information on confined space operations, consult the PESM.

16.0 DOCUMENTATION

This section presents a summary of required health and safety logs, reports, and record keeping.

16.1 FIELD CHANGE REQUEST

The Field Change Request Form (FCR) is to be completed for initiating a change to the Work Plans. The SUXOS, PESM and Project Manager or designee must approve the FCR prior to implementation of new activities/practices. The original FCR will be kept in the project file. Approved changes will be reviewed with affected field personnel during the daily safety briefing. A Field Change Request Form is provided in Appendix D of the SSWP.

16.2 MEDICAL AND TRAINING RECORDS

Copies of medical clearances and training records (i.e., verification of 40 hour, 8 hour, supervisor, site-specific and three-day on-the-job training (OJT)) and medical clearance for hazardous waste site work and respirator use) will be maintained on site. Records for all subcontractor employees will also be kept on site. The Corporate Medical Consultant - Work Care in accordance with Tetra Tech EHS Program, Section EHS 1-8, will maintain all employee medical records.

16.3 ON-SITE LOG

The UXO ESS/QC or designee will keep a log each day of the personnel on site and personnel present will sign in/out of the Exclusion Zone daily.

16.4 WEEKLY AND MONTHLY SAFETY REPORTS

The SUXOS shall complete and submit weekly and monthly health and safety reports to the UXO ESS/QC who will maintain them on site and provide copies to the PESM. A report form is provided in Attachment 7.

16.5 ACCIDENT/INCIDENT REPORTS

Upon receiving a report that an incident has occurred on the site, the UXO ESS/QC will investigate the circumstances surrounding the incident. The PESM and PM may also participate in the investigation of serious incidents. The Accident/Incident Report and Investigation Report Forms in Appendix J will be used, as appropriate, to assist in the investigation. All accidents or incidents will be investigated, as appropriate, and an incident report will be completed. For Tetra Tech reporting purposes, the term accident refers to fatalities, lost time injuries, spills of (or exposure to) hazardous materials (radioactive materials, toxic materials, explosive or flammable materials), fire, explosion, property damage or the potential occurrence of these actions. Any information released from the health care provider,

which is not deemed confidential patient information, is to be attached to the appropriate form. Any medical information that is released by patient consent is to be filed in the individual's medical records and treated as confidential.

16.5.0.1 - The Accident/Incident Report Form included as Attachment 6 will be completed for all accidents/incidents. Written confirmation of verbal reports are to be submitted to the PESM within 24 hours of the accident/incident. Investigation Reports are to be submitted to the PESM within 72 hours.

16.6 OSHA FORM 300

If the project is anticipated to exceed three months duration for fieldwork, an OSHA Form 300 will be kept at the project site. All recordable injuries or illnesses will be recorded on this form. At the end of the project, the original form will be sent to the PESM for retention in the company files. Subcontractor employers must also meet the requirement for maintaining an OSHA Form 300. The Tetra Tech incident reporting and investigation form referenced in Section 16.5 meets the requirements for the OSHA Form 101 (supplemental record) and must be retained along with the OSHA Form 300 for all recordable injuries or illnesses.

16.7 HEALTH AND SAFETY LOGBOOKS

The UXO ESS/QC will maintain health and safety logbooks during site work. The daily site conditions, results of daily safety walk through, personnel air monitoring results and significant events will be recorded. The original logbooks will become part of the exposure records file.

16.8 HAZARD COMMUNICATION PROGRAM/MATERIAL SAFETY DATA SHEETS

The hazard communication program will be implemented on site and training on the program information and requirements will be provided in accordance with 29 CFR 1910.1200 and 1926.59, Hazard Communication, 1910.1201, Retention of Department of Transportation (DOT) Markings, Placards and Labels, and Tetra Tech Health and Safety Program EHS 4-2.

16.9 ENVIRONMENTAL, HEALTH, AND SAFETY INSPECTIONS

Weekly and monthly project inspections will be conducted in accordance with the Tetra Tech Program, EHS 3-3. Attachment 7 contains the forms to be completed during the weekly and monthly project inspections. Weekly inspections are to be conducted by the SUXOS and monthly inspections are to be conducted by the Site Manager or the SUXOS when the Site Manager is not on site. Quarterly inspections (if required) will be conducted by the Site Manager and PESM jointly. The quarterly inspection will include:

A visual inspection of the site. Areas of the project site that may be accessed and inspected, include but are not limited to: exclusion zones, buildings, and waste storage areas.

Completion of applicable and selected portions of the PESM Inspection Checklists or equivalent documentation.

A review of on-site records (e.g., agency approvals, permits, waste analyses, waste profiles, waste manifests, discharge monitoring reports, training records, etc.).

Positive recognition of conformance.

Non-conformances. Any non-conformances noted by the PESM that can be remedied during the conduct of the inspection will be corrected.

Training of project personnel, when possible, to facilitate correction of non-conformance conditions.

Identification of any observed best practices.

16.9.0.1 - The PESM will stop work if any conditions or work practices are identified which pose imminent danger to the environment or to the safety and health of personnel.

ATTACHMENT I
AHA MATRIX



Activity Hazard Analyses

Project: NWS Earle DMM Evaluation of Dredge Spoils

Location: NWS Earle, Leonardo, New Jersey

Activity: All (As Marked Below)

Analyzed By/Date: Steve Neill, UXO Safety Manager May 2006

APPLICABLE TASKS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
<input type="checkbox"/> Mob/Demob <input checked="" type="checkbox"/> Observation of Spoils Off-Loading <input checked="" type="checkbox"/> Evaluate of Spoils for DMM <input checked="" type="checkbox"/> DMM Identification and Management	1. Exposure to MPPEH	<ul style="list-style-type: none"> Follow the procedures detailed in Sections 2.0 of the SSWP, the SOPs in Appendix E of the SSWP, Section 4.1 of the HASP and reference EP 385-1-95a. Only UXO qualified personnel will assess and handle MPPEH. UXO personnel will not handle or move MPPEH unless a positive identification can be made.
<input type="checkbox"/> Mob/Demob <input checked="" type="checkbox"/> Observation of Spoils Off-Loading <input checked="" type="checkbox"/> Evaluate of Spoils for DMM <input checked="" type="checkbox"/> DMM Identification and Management	2. Potential CWM	<ul style="list-style-type: none"> If encountered withdraw upwind, secure the site and notify Navy POC
<input type="checkbox"/> Mob/Demob <input checked="" type="checkbox"/> Observation of Spoils Off-Loading <input checked="" type="checkbox"/> Evaluate of Spoils for DMM <input checked="" type="checkbox"/> DMM Identification and Management	2. Water Hazards - Drowning	<ul style="list-style-type: none"> All personnel will wear personal flotation devices (PDFs) when conducting activities outside the barricaded portions of the trestle, on barges (including crane barges) and on other marine craft Personnel will be instructed in water rescue techniques and procedures.
<input checked="" type="checkbox"/> Mob/Demob <input checked="" type="checkbox"/> Observation of Spoils Off-Loading <input checked="" type="checkbox"/> Evaluate of Spoils for DMM <input type="checkbox"/> DMM Identification and Management	3. Back Injuries and strains	<ul style="list-style-type: none"> Procedures in Section 4.2.9 of the HASP will be followed. Site personnel will be instructed on proper lifting techniques (keep back straight, lift with legs, limit twisting, etc.). Mechanical devices should be used to reduce manual handling of materials. Team lifting should be utilized if mechanical devices are not available. An individual will not lift loads greater than 50 pounds.



Activity Hazard Analyses

Project: NWS Earle DMM Evaluation of Dredge Spoils

Location: NWS Earle, Leonardo, New Jersey

Activity: All (As Marked Below)

Analyzed By/Date: Steve Neill, UXO Safety Manager May 2006

APPLICABLE TASKS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
<input checked="" type="checkbox"/> Mob/Demob <input checked="" type="checkbox"/> Observation of Spoils Off-Loading <input checked="" type="checkbox"/> Evaluate of Spoils for DMM <input checked="" type="checkbox"/> DMM Identification and Management	4. Slips/Trips/Falls	<ul style="list-style-type: none"> • Visually inspect work areas and mark, barricade, or eliminate slip, trip and fall hazards if feasible. • Maintain work areas safe and orderly (proper housekeeping EM 385-1-1 Section 14.C). • Unloading areas should be on even terrain. • Watch and prepare for uneven terrain, obstacles and debris in walk areas. • Replace work boots when worn out or the tread on the sole does not provide traction. • Tools and supplies/equipment will be properly stored.
<input checked="" type="checkbox"/> Mob/Demob <input checked="" type="checkbox"/> Observation of Spoils Off-Loading <input checked="" type="checkbox"/> Evaluate of Spoils for DMM <input checked="" type="checkbox"/> DMM Identification and Management	5. Sharp Objects/punctures	<ul style="list-style-type: none"> • Leather (minimum) or cut resistant gloves will be worn depending on the material working with. • All hand and power tools will be maintained in a safe condition. • When possible, blunt all sharp objects. • First aid kits will be available by the work area.
<input checked="" type="checkbox"/> Mob/Demob <input checked="" type="checkbox"/> Observation of Spoils Off-Loading <input checked="" type="checkbox"/> Evaluate of Spoils for DMM <input checked="" type="checkbox"/> DMM Identification and Management	6. Noise	<ul style="list-style-type: none"> • Reference the applicable provisions of EM 385-1-1 Section 5.C. • Reference Section 4.2.6 the HASP • Hearing protection with a noise reduction rating capable of maintaining personal exposure below 85 dBA (ear muffs or plugs) will be worn during heavy equipment and metal cutting operations (equipment operator and workers within 50 feet). • All equipment will be equipped with manufacturer's required mufflers. • Workers will be given auditory exams and hearing conservation training.
<input checked="" type="checkbox"/> Mob/Demob <input checked="" type="checkbox"/> Observation of Spoils Off-Loading <input checked="" type="checkbox"/> Evaluate of Spoils for DMM <input checked="" type="checkbox"/> DMM Identification and Management	7. Eye Injuries	<ul style="list-style-type: none"> • Reference the applicable provisions of EM 385-1-1 Section 5.B. • ANSI approved safety glasses will be worn for all field operations. • A portable 15-minute eye wash station will be located adjacent to work activities.



Activity Hazard Analyses

Project: NWS Earle DMM Evaluation of Dredge Spoils
Activity: All (As Marked Below)

Location: NWS Earle, Leonardo, New Jersey
Analyzed By/Date: Steve Neill, UXO Safety Manager May 2006

APPLICABLE TASKS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
<input checked="" type="checkbox"/> Mob/Demob <input checked="" type="checkbox"/> Observation of Spoils Off-Loading <input checked="" type="checkbox"/> Evaluate of Spoils for DMM <input checked="" type="checkbox"/> DMM Identification and Management	8. Overhead Hazards	<ul style="list-style-type: none"> • Reference the applicable provisions of EM 385-1-1 Section 5.D. • Personnel will be required to wear hard hats that meet ANSI Standard Z89.1 when involved in operations that have overhead hazards. • All ground personnel will stay clear of suspended loads and equipment swing areas. • All equipment will be provided with guards, canopies or grills to protect the operator from falling or flying objects. • All overhead hazards will be identified prior to commencing work operations. Reference the applicable provisions of EM 385-1-1 Section 5.B.
<input checked="" type="checkbox"/> Mob/Demob <input checked="" type="checkbox"/> Observation of Spoils Off-Loading <input checked="" type="checkbox"/> Evaluate of Spoils for DMM <input checked="" type="checkbox"/> DMM Identification and Management	9. Heavy Equipment Operation	<ul style="list-style-type: none"> • Supervisors and operators will ensure that the procedures in Section 4.2.5 of the HASP, applicable provisions of Section 16 of EM 385-1-1, and the equipment manufacturers' instructions/ recommendations are followed • All equipment will be initially inspected to certify that it is safe to use on site. Equipment will also be inspected before daily use. • Unsafe equipment will be taken out of service. It will be tagged and it will not be placed backing service until it has been repaired and function tested repaired. • Only operators trained, experienced and certified (documented) with the specific equipment will operate that equipment. • Equipment will have rollover protective structures and seat belts. Seat belts will be worn at all times. • Equipment will have guards, canopies or grills to protect ground personnel and the operator from flying objects. • Equipment will not be operated on grades that exceed manufacturer's recommendations. • Personnel will stay clear of suspended loads; slings, chains and ropes will be rated for the load they are expected to lift (EM 385-1-1 Section 15). • Staff will make eye contact with operators before approaching equipment and will not approach on blind sides. • Avoid equipment swing areas. • Know site hand signals (Table ?-1). • All equipment will be equipped with backup alarms. • The use of headphones for entertainment purposes is prohibited. • A 10-foot minimum safe separation distance will be maintained between equipment and overhead utility lines. • Equipment parked on an incline shall have the wheels chocked or track mechanisms blocked and the parking brake set. • Equipment will be shut down before and during fueling operations. • A spotter will be used for backing up equipment in congested areas.



Activity Hazard Analyses

Project: NWS Earle DMM Evaluation of Dredge Spoils

Location: NWS Earle, Leonardo, New Jersey

Activity: All (As Marked Below)

Analyzed By/Date: Steve Neill, UXO Safety Manager May 2006

APPLICABLE TASKS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
<input checked="" type="checkbox"/> Mob/Demob <input checked="" type="checkbox"/> Observation of Spoils Off-Loading <input checked="" type="checkbox"/> Evaluate of Spoils for DMM <input checked="" type="checkbox"/> DMM Identification and Management	10. Spills	<ul style="list-style-type: none"> Reference Paragraph 6.14.3 and the applicable provision of EM 385-1-1 Section 14. Reference Section 11.5.10 of the APP Spill and absorbent materials will be readily available. Contain, control and clean up the spill and affected area (soil, water). Manage and dispose of spill material appropriately. All waste materials generated will be contained in 55-gallon drums.
<input checked="" type="checkbox"/> Mob/Demob <input checked="" type="checkbox"/> Observation of Spoils Off-Loading <input checked="" type="checkbox"/> Evaluate of Spoils for DMM <input checked="" type="checkbox"/> DMM Identification and Management	11. Chemicals Brought On Site	<ul style="list-style-type: none"> Reference the applicable provisions of EM 385-1-1 Section 6.B. Identify all chemical hazards and provide training (Haz Com-Material Safety Data Sheets/MSDS) regarding safe handling and storage of chemicals for all personnel. The UXO ESS/QC will maintain copies of all MSDS for chemicals that are on site including those brought to the site by subcontractors.
<input checked="" type="checkbox"/> Mob/Demob <input checked="" type="checkbox"/> Observation of Spoils Off-Loading <input checked="" type="checkbox"/> Evaluate of Spoils for DMM <input checked="" type="checkbox"/> DMM Identification and Management	12. Fire	<ul style="list-style-type: none"> Reference Section 4.2.7 of the HASP and the applicable provisions of EM 385-1-1 Section 9. Only use NFPA-approved fuel cans with a pouring spout or funnel. Smoking and open flames are not permitted in fueling areas. A 2A:20B:C fire extinguisher will be located at each work site within the exclusion zone; and, a 4A:20B:C fire extinguisher will be located within 50 to 75 feet of all flammable/combustible liquid storage areas and refueling points. All gasoline-powered equipment will be grounded. Equip all heavy equipment with BC-type fire extinguishers.
<input checked="" type="checkbox"/> Mob/Demob <input checked="" type="checkbox"/> Observation of Spoils Off-Loading <input checked="" type="checkbox"/> Evaluate of Spoils for DMM <input checked="" type="checkbox"/> DMM Identification and Management	13. Biological Hazards; stings, bites and allergic reaction.	<ul style="list-style-type: none"> Follow and train personnel on the procedures outlined in Section 4.3 of the HASP and the applicable provisions of EM 385-1-1 Section 6.D. Avoid putting hands into hidden areas and holes. If evidence of biological hazards exists, review the procedures in the HASP and coordinate with the UXO ESS/QC for control measures. If allergic to bees/wasps, ensure an epinephrine (MSDS needed on site) kit is readily available. Make sure the UXO ESS/QC and SUXOS are informed of the condition and that the Medical Data sheet is updated and contains the necessary information.



Activity Hazard Analyses

Project: NWS Earle DMM Evaluation of Dredge Spoils

Location: NWS Earle, Leonardo, New Jersey

Activity: All (As Marked Below)

Analyzed By/Date: Steve Neill, UXO Safety Manager May 2006

APPLICABLE TASKS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
<input checked="" type="checkbox"/> Mob/Demob <input checked="" type="checkbox"/> Observation of Spoils Off-Loading <input checked="" type="checkbox"/> Evaluate of Spoils for DMM <input checked="" type="checkbox"/> DMM Identification and Management	14. Temperature Extremes	<ul style="list-style-type: none"> • Site personnel will be trained about signs and symptoms of heat and cold stress; • Follow procedures in Section 4.2.3 and 4.2.4 of the HASP for training and monitoring of employees.
<input checked="" type="checkbox"/> Mob/Demob <input checked="" type="checkbox"/> Observation of Spoils Off-Loading <input checked="" type="checkbox"/> Evaluate of Spoils for DMM <input checked="" type="checkbox"/> DMM Identification and Management	15. Lightning	<ul style="list-style-type: none"> • Reference EM 385-1-1 Section 6.J. • Follow the 30-second rule (time between lightning strike and thunder) for shutdown of operations, or as determined by the UXO ESS/QC. • Seek shelter in building (preferred) or vehicle. Immediately suspend operations when lightning is in the immediate vicinity and seek shelter.
<input checked="" type="checkbox"/> Mob/Demob <input checked="" type="checkbox"/> Observation of Spoils Off-Loading <input checked="" type="checkbox"/> Evaluate of Spoils for DMM <input checked="" type="checkbox"/> DMM Identification and Management	16. High Wind	<ul style="list-style-type: none"> • Reference EM 385-1-1 Section 6.J. • Ensure that all debris/materials are secured. • Shut down operations when wind speed is greater than 30 mph sustained.



TETRA TECH EC, INC

ACTIVITY HAZARD ANALYSIS

EQUIPMENT HAZARDS AND INSPECTION REQUIREMENTS

Project: NWS Earle DMM Evaluation of Dredge Spoils

Location: NWS Earle, Leonardo, New Jersey

Approved By/Date: Steve Neill, UXO Safety Manager May 2006

EQUIPMENT USED	POTENTIAL HAZARDS & INSPECTION REQUIREMENTS	PROTECTIVE MEASURES/CONTROLS & TRAINING REQUIREMENTS
<input checked="" type="checkbox"/> Level D PPE	1. Pre-use inspection 2. Weekly inspection	1. UXO personnel must read and comply with the provisions of the HASP.
<input checked="" type="checkbox"/> First Aid Kits	1. Pre-use inspection 2. Weekly inspection	2. Site-specific training must be provided to inform personnel of specific hazards (explosive, physical and biological) found at each project site.
<input checked="" type="checkbox"/> Portable Eye Wash	1. Pre-use inspection 2. Weekly inspection	3. At least 2 individuals on-site must have current CPR and First Aid training
<input checked="" type="checkbox"/> Fire Extinguishers	1. Pre-use inspection 2. Weekly inspection	4. UXO personnel will be instructed in the proper use of fire extinguishers.
<input checked="" type="checkbox"/> Site Vehicles	1. Pre-use inspection 2. Monthly inspection	5. UXO personnel will be instructed in the proper use of hand and power tools (if any) used on site.
<input checked="" type="checkbox"/> Heavy Equipment	1. Pre-use inspection 2. Daily inspection	
<input checked="" type="checkbox"/> Hand & Power Tools	1. Pre-use inspection 2. Daily inspection	
<input checked="" type="checkbox"/> Office Equipment	1. Pre-use inspection 2. Weekly inspection	
<input checked="" type="checkbox"/> Demo Kits	1. Pre-use inspection 2. Weekly inspection	

NOTE: Some of the equipment listed in this table may be provided by the client (prime contractor). In that case, inspection and maintenance of the equipment will be the responsibility of the client (prime contractor)

ATTACHMENT 2
HASP ACCEPTANCE FORM

ATTACHMENT 3
DAILY BRIEFING SIGN-IN SHEET



TETRA TECH EC, INC.

DAILY BRIEFING SIGN-IN SHEET

Project Information

Project Name/Location: _____ Date: _____

Person Presenting Brief: _____

Shift/Department: _____

Briefing Content

Awareness (Special EHS concerns, recent incidents, etc.): _____

Other Issues (Plan changes, attendee comments, etc.) _____

Attendees (Please Print Name)

Return to SUXOS following the

1. _____	16. _____
2. _____	17. _____
3. _____	18. _____
4. _____	19. _____
5. _____	20. _____
6. _____	21. _____
7. _____	22. _____
8. _____	23. _____
9. _____	24. _____
10. _____	25. _____
11. _____	26. _____
12. _____	27. _____
13. _____	28. _____
14. _____	29. _____
15. _____	30. _____



DAILY BRIEFING SIGN-IN SHEET (Continued)

Attendees (Please Print Name)

Project Name/Location: _____ Date: _____

- | | |
|-----------|-----------|
| 31. _____ | 59. _____ |
| 32. _____ | 60. _____ |
| 33. _____ | 61. _____ |
| 34. _____ | 62. _____ |
| 35. _____ | 63. _____ |
| 36. _____ | 64. _____ |
| 37. _____ | 65. _____ |
| 38. _____ | 66. _____ |
| 39. _____ | 67. _____ |
| 40. _____ | 68. _____ |
| 41. _____ | 69. _____ |
| 42. _____ | 70. _____ |
| 43. _____ | 71. _____ |
| 44. _____ | 72. _____ |
| 45. _____ | 73. _____ |
| 46. _____ | 74. _____ |
| 47. _____ | 75. _____ |
| 48. _____ | 76. _____ |
| 49. _____ | 77. _____ |
| 50. _____ | 78. _____ |
| 51. _____ | 79. _____ |
| 52. _____ | 80. _____ |
| 53. _____ | 81. _____ |
| 54. _____ | 82. _____ |
| 55. _____ | 83. _____ |
| 56. _____ | 84. _____ |
| 57. _____ | 85. _____ |
| 58. _____ | 86. _____ |

ATTACHMENT 4
VISITORS LOG

ATTACHMENT 5
MEDICAL DATA SHEET



TETRA TECH EC, INC.

MEDICAL DATA SHEET

This brief medical data sheet will be completed by all on-site personnel and will be kept in the Support Zone by the SSHO as a part of the project record during the performance of site operations. It will accompany personnel to medical facilities when medical assistance is needed or if transport to a hospital is required.

Project Information

Project Name: _____ Date: _____
 Project Location: _____

Personal & Medical Data

Name: _____ Age: _____
 Home Address: _____ Height: _____
 _____ Weight: _____
 Home Phone No. _____ Blood Type: _____

Drug or Other Allergies: _____

Particular Sensitivities: _____

Current Medications: _____

Medical Restrictions: _____

Previous Illness/Injury: _____
 (Surgery, diabetes, etc.) _____

Do you wear: Contacts Glasses Dentures Hearing Aid
 Pace Maker

Name, Address & Telephone Number of Personal Physician: _____

Name, Address & Telephone Number of Emergency Contact: _____

ATTACHMENT 6
INCIDENT REPORT



TETRA TECH EC, INC.

INCIDENT/NEAR MISS REPORT AND INVESTIGATION

Section 1, General Information

Short Description/Title Below: (limited to 125 characters). This is the description that will appear in the database listing.

Type of Incident/Near Miss (check all that apply):

Was a person injured or made ill:

By something at work By something outside the work environment No injury or illness

Did this incident occur in one of our major offices? Yes No List Office:

Did this incident occur in a foreign country? Yes No

Did this incident involve:

A strain?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Fire?	<input type="checkbox"/> Yes <input type="checkbox"/> No
A motor vehicle accident?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Property damage (>\$500)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
A repetitive motion injury?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Spill/release?	<input type="checkbox"/> Yes <input type="checkbox"/> No
A fall?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Permit exceedence?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Being struck by something?	<input type="checkbox"/> Yes <input type="checkbox"/> No		

Incident Information

Case #:	Site Case #:	Workers Comp #:
Where did the incident occur?	Project # (4 digits):	
Site/Location Name:	Delivery Order #'s:	
Date of incident:	Military time:	
TtEC Supervisor on duty:	Was Supervisor at incident scene? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Incident Location:		
What employee/employer category was involved in this incident?		
<input type="checkbox"/> TtEC permanent <input type="checkbox"/> TtEC craft/temp service <input type="checkbox"/> Subcontractor <input type="checkbox"/> Other		
Employer of affected employee?		
Weather conditions:	Adequate Lighting at Scene? <input type="checkbox"/> Yes <input type="checkbox"/> No	
What was the employee doing, or what was happening, just before the incident occurred? Describe the activity below, as well as the tools, equipment, or material the employee was using. Be specific. For example, "climbing a ladder while carrying roofing materials," "spraying chlorine from hand sprayer," or "daily computer key-entry."		

ATTACHMENT 7

WEEKLY/MONTHLY HEALTH & SAFETY INSPECTION REPORT FORM



TETRA TECH EC, INC.

WEEKLY AND MONTHLY HEALTH AND SAFETY REPORT

Project Name: _____

Location/Site: _____

SITE INFORMATION

Week Ending: _____
 Hours M/H: TtECI: _____
 Labor / Craft: _____
 Subcontractor: _____
 Numbers of TtEC: _____
 Labor / Craft: _____
 Subcontractors: _____
 Level of Protection: A, B, C, D

INJURIES AND ILLNESSES

Yes: No:
 Number of Personnel with Illness: 0
 Number of Personnel with Injuries: 0
 Number of Personnel seen by Medical: 0
 Number of Personnel to Dental: 0

Incident Reporting Data

Incident Reports: 0

Near Miss Reports: 0

High Loss Potential Incidents: 0

Vehicle Damage >\$500: 0

Property Loss > \$500: 0

Other

Lost time / Restricted Data

Lost Time Cases: 0

Lost Time Workdays: 0

Restricted Duty Cases: 0

Restricted Duty Workdays: 0

First Aid Cases: 0

MAJOR ACTIVITIES CONDUCTED THIS WEEK:

Heavy Equipment Operations:

Explosive Demolition or Burning Operations:

UXO Surface Sweep/Clearance Activities: Grids, Etc

Brush Clearance:

Geophysical Survey:

UXO Intrusive Clearance:

Construction Activities (fencing, renovation, magazines, roads, berms, etc.):

Other Site Issues:

FUTURE OR ONGOING ISSUES:



TETRA TECH EC, INC.

WEEKLY AND MONTHLY HEALTH AND SAFETY REPORT

SAFETY CONCERNS:

SITE AUDIT/INSPECTIONS CONDUCTED: Yes: No:

Weekly Health and Safety Inspection conducted by:
Monthly Health and Safety Inspection conducted by:
PESM Quarterly Inspection conducted by:
Internal Compliance Audits (Corporate Directed) conducted by:

HIPO ACTIVITIES

Hot Work	Yes: <input type="checkbox"/>	No: <input type="checkbox"/>	Dates:
Lockout/Tagout	Yes: <input type="checkbox"/>	No: <input type="checkbox"/>	Dates:
Confined Space Entry	Yes: <input type="checkbox"/>	No: <input type="checkbox"/>	Dates:
Excavation Daily Check List	Yes: <input type="checkbox"/>	No: <input type="checkbox"/>	Dates:
Crane On-Site	Yes: <input type="checkbox"/>	No: <input type="checkbox"/>	Dates:
Critical Lift Plan Performed	Yes: <input type="checkbox"/>	No: <input type="checkbox"/>	Dates:

Descriptive Summary of Accidents/Incidents/Near Miss Reports by Number:

INCIDENT REPORT:

MEDICAL CONDITIONS:

Other Issues

Air Monitoring:

Personal Air Monitoring

Recognition and/or Awards:

Site Specific Training:

Unique Exposure Hazards:

Site Specific Loss Control Programs:

Site Management Concerns:

Lessons Learned:

Regulator/Client Inspections:

UXO ESS/QC Approval (print):

Sign:

APPENDIX D

PROJECT FORMS



TETRA TECH EC, INC

DAILY BRIEFING SIGN-IN SHEET

Project Information

Project Name/Location: _____ Date: _____
Person Presenting Brief: _____
Shift/Department: _____

Briefing Content

Awareness (Special EHS concerns, recent incidents, etc.): _____

Other Issues (Plan changes, attendee comments, etc.) _____

Attendees (Please Print Name) - Return to SUXOS following the Briefing

- | | |
|-----------|-----------|
| 1. _____ | 16. _____ |
| 2. _____ | 17. _____ |
| 3. _____ | 18. _____ |
| 4. _____ | 19. _____ |
| 5. _____ | 20. _____ |
| 6. _____ | 21. _____ |
| 7. _____ | 22. _____ |
| 8. _____ | 23. _____ |
| 9. _____ | 24. _____ |
| 10. _____ | 25. _____ |
| 11. _____ | 26. _____ |
| 12. _____ | 27. _____ |
| 13. _____ | 28. _____ |
| 14. _____ | 29. _____ |
| 15. _____ | 30. _____ |



 TETRA TECH EC, INC.	<h2 style="margin: 0;">DAILY OPERATIONS REPORT – MEC</h2> <h3 style="margin: 0;">OPERATIONS <small>(Attach additional sheets if necessary)</small></h3>			
Project Number: _____		REPORT NUMBER: _____		
Title & Location: _____		Date & Time: _____		
Contractor: _____		Weather: _____		
Superintendent/SUXOS: _____				
WORK PERFORMED TODAY				
Description	Employer	No.	Trade	Hours
JOB SAFETY				
Was a Job Safety meeting held this date? (If yes attach copy of minutes)		Yes _____ No _____	Total Work Hours on Site This Date _____	
Were there any lost time accidents this date? (If yes attach copy of OSHA report)		Yes _____ No _____	Previous Cumulative Work Hours _____ (See Previous Report)	
			Total Cumulative Work Hours to Date _____	
List of Actions taken today / Inspections conducted.				
Equipment / material received today to be incorporated in job.				
Equipment on job site today, including number of hours used today.				
Remarks:				
Superintendent/SUXOS: _____			Date: _____	



 TETRA TECH EC, INC	<h2>MEC DATA AND ACCOUNTABILITY FORM</h2>		
FOR UXO TEAM USE			
Site Name: _____	Team Leader: _____		
Grid or Lane Number: _____	Work Area: _____	Date: _____	
Location: X (Lat): _____ Y (Long): _____		Location Type (UW or UG): _____	
Other Location Information: _____			
Depth (feet): _____	Inclination (Degrees): _____	Orientation (N-S, E-W): _____	
TARGET/ANOMALY CHARACTERISTICS			
Type of Target/Find: <input type="checkbox"/> Surface Find <input type="checkbox"/> Mag & Dig Target <input type="checkbox"/> Primary Geo Target <input type="checkbox"/> Validation (QA/QC) <input type="checkbox"/> No Dig			
Type of Anomaly: <input type="checkbox"/> UXO <input type="checkbox"/> MEC <input type="checkbox"/> Inert <input type="checkbox"/> Practice <input type="checkbox"/> MC (waste) <input type="checkbox"/> MD (scrap) <input type="checkbox"/> Metal Waste			
<input type="checkbox"/> No Find <input type="checkbox"/> Rock <input type="checkbox"/> Rust Layer <input type="checkbox"/> Oxidation <input type="checkbox"/> Misc.: _____			
Diameter/Width: _____	Length: _____	Estimated Weight: _____	
DIGITAL PHOTO RECORD			
Was photo taken? <input type="checkbox"/> Yes <input type="checkbox"/> No	Camera No.: _____	Frame No.: _____	File Name: _____
MUNITIONS NOMENCLATURE (If Known, Record Below and record fuze condition and disposition)			
Munitions Mark/Mod: _____	Fuze Mark/Mod: _____	N.E.W. Total: _____	
<input type="checkbox"/> Nose: _____ <input type="checkbox"/> Tail: _____			
<input type="checkbox"/> Transverse: _____ <input type="checkbox"/> Casing: _____			
MUNITIONS CHARACTERISTICS			
Munitions Filler: <input type="checkbox"/> Explosive <input type="checkbox"/> Inert <input type="checkbox"/> Propellant <input type="checkbox"/> Pyrotechnic <input type="checkbox"/> Unknown <input type="checkbox"/> Other: _____			
Munitions Category: <input type="checkbox"/> Depth Charges <input type="checkbox"/> Land Mine <input type="checkbox"/> Projectiles <input type="checkbox"/> Sea Mines			
<input type="checkbox"/> Bombs <input type="checkbox"/> Grenades <input type="checkbox"/> Misc. Explosive Devices <input type="checkbox"/> Pyrotechnics and Flares <input type="checkbox"/> Small Arms			
<input type="checkbox"/> Clusters/Dispensers <input type="checkbox"/> Guided Missiles <input type="checkbox"/> Mortars <input type="checkbox"/> Rockets <input type="checkbox"/> Torpedoes			
FUZE CHARACTERISTICS			
Fuze Location(s) (check all that apply):		Breaks in Fuze Body?	Fuze Markings:
<input type="checkbox"/> Nose <input type="checkbox"/> Tail <input type="checkbox"/> Transverse <input type="checkbox"/> Casing		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Fuze Type(s): <input type="checkbox"/> Hydrostatic <input type="checkbox"/> MT Long Delay <input type="checkbox"/> Powder Train Time Fuze <input type="checkbox"/> Nose MT/Tail Impact Inertia			
<input type="checkbox"/> All-ways Acting <input type="checkbox"/> Impact <input type="checkbox"/> MT Superquick <input type="checkbox"/> Pressure <input type="checkbox"/> Pt-initiating-Base-detonating			
<input type="checkbox"/> Base Detonating <input type="checkbox"/> Influence <input type="checkbox"/> Piezo-Electric <input type="checkbox"/> Proximity (VT)			
<input type="checkbox"/> Electric <input type="checkbox"/> Mech Time (MT) <input type="checkbox"/> Point Detonating (PD) <input type="checkbox"/> Nose MT/Tail Pressure			
Fuze Length: _____	Fuze Diameter: _____	Diameter of Fuze Well: _____	
MEC STATUS & PHYSICAL CONDITION (Check all that apply)			
<input type="checkbox"/> Armed <input type="checkbox"/> Unarmed <input type="checkbox"/> Fired <input type="checkbox"/> Unfired			
<input type="checkbox"/> Intact <input type="checkbox"/> Broken Open <input type="checkbox"/> Filler Visible <input type="checkbox"/> Soil Staining			
FOR SUXOS USE			
Disposition: (Clarify Under Remarks)			Date: _____
<input type="checkbox"/> Transferred <input type="checkbox"/> Transported <input type="checkbox"/> Left In Place <input type="checkbox"/> Destroyed <input type="checkbox"/> BIP <input type="checkbox"/> Other : _____			
Client Notifications By: _____	Signature: _____	Date: _____	
Transferred To: _____	Signature: _____	Date: _____	
Destroyed By: _____	Signature: _____	Date: _____	
Remarks: _____			
SUXOS Signature: _____			Date: _____
Revised April 2006			



 TETRA TECH EC, INC.		SURVEILLANCE CHECKLIST			
Activity	Frequency of Surveillance	Forms to be Used	Process Mapped	QC Procedure	Corrective Action / Failure Criteria
Project Management Planning	Periodic Inspection	QC Surveillance	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	QC Specialist will · Verify the following documentation is in the project file: a. Task Initiation Procedure (TIP)/Risk Management Plan (RMP) (CRL Procedure PO-2) b. Fully executed contract. c. Project charge numbers d. Contract Notice Checklist (CRL Procedure PO-5). e. Project Readiness Review Meeting (Attachment 2) f. Client Kickoff Meeting (Attachment 3) g. Peer-reviewed work plan	· Document not approved for use by appropriate personnel · Any one of the listed documents not in the project file · Where appropriate, a Deficiency Notice will be issued and a causal analysis/corrective action will be developed.
Document Review	Periodic Inspection	QC Surveillance Document Review Form	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	QC Specialist will · Verify a Document Review has been conducted on all project Documents. Project documents include, but are not limited to, the TIP, management plans, work plans and procedures, stand alone QA/QC plans, technical reports, specifications, drawings, and test reports. (PO-7) · Verify the document review is documented on the document review form	· Document Review not Conducted · Document Review not Documented IAW (PO-7) · Where appropriate, a Deficiency Notice will be issued and a causal analysis/corrective action will be developed.
D6 Mobilization/ Site Preparation	3 Phase Inspection, Periodic Inspection	QC Project Checklist QC Preparatory Inspection QC Initial Inspection QC Surveillance	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	QC Specialist will · Document that the Project Readiness Review (PRR) meeting has been conducted IAW PO1 Attach 2 · Utilize the Project Checklist during Site Preparation	· Any element of the Project Checklist not complete that involves safety · A PRR meeting not conducted and documented · Where appropriate, a Deficiency Notice will be issued and a causal analysis/corrective action will be developed.
Documentation Control	Periodic Inspection	QC Surveillance	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	QC Specialist Verify · Files will be administered and set up with file numbering or topical index system appropriate for the size of the project. (CRL Procedure PO-8) · That documents and records submitted to Project Files are legible, complete · The documentation control plan is communicated at the Project Readiness Review Meeting. · Documents and records listed on the Records Retention Matrix (PO-8 Attachment 6) are maintained.	· A Document Control Plan not implemented on the project · Any element not conforming to the specification of the Document Control Plan · Where appropriate, a Deficiency Notice will be issued and a causal analysis/corrective action will be developed.
Data Management	3 Phase Inspection, Periodic Inspection	QC Surveillance	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	QC Specialist will · verify project data is managed in a access database (or equivalent) · Verify all data is backed up on a daily basis · Compare electronic data with written reported results and verify consistency/ accuracy of the data.	· Any element not conforming to the specifications · Where appropriate, a Nonconformance report will be issued and a causal analysis/corrective action will be developed.
DMM Observation of Transfer Operations	3 Phase Inspection, Periodic Inspection	QC Preparatory Inspection QC Initial Inspection QC Surveillance	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	QC Specialist will observe all transfer operations in search of DMM · Verify UXO Team observes 100% of transfer operations. Fail criteria will be any transfer operations conducted without UXO technicians on site.	· Any element not conforming to the specifications · Any transfer operations conducted without UXO technicians on site. · Where appropriate, a Nonconformance report will be issued and a causal analysis/corrective action will be developed.

		<h2 style="text-align: center;">SURVEILLANCE CHECKLIST</h2>			
Activity	Frequency of Surveillance	Forms to be Used	Process Mapped	QC Procedure	Corrective Action / Failure Criteria
UXO Escort/ Avoidance Operations	3 Phase Inspection, Periodic Inspection	QC Preparatory Inspection QC Initial Inspection QC Surveillance	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	QC Specialist will verify that UXO Technician is conducting avoidance activities while conducting UXO Escort Duties. · Verify no DMM are moved or disturbed during this phase of the project. Fail criteria will be any DMM moved or disturbed.	· Any element not conforming to the specifications · Any DMM moved or disturbed during Escort/ Avoidance Operations. · Where appropriate, a Nonconformance report will be issued and a causal analysis/corrective action will be developed.
UXO Visual Survey Operation and certification in accordance with ESS Revision 1	3 Phase Inspection, Periodic Inspection	QC Preparatory Inspection QC Initial Inspection QC Surveillance	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	QC Specialist will verify the UXO Team completed a 100% visual survey for DMM on dredge debris. · Ensure DMM have been located, identified, and removed from the dredge debris.	· Any element not conforming to the specifications · Where appropriate, a Nonconformance report will be issued and a causal analysis/corrective action will be developed.
Field Data Entry	3 Phase Inspection, Periodic Inspection	QC Surveillance	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	QC Specialist will verify · That the data entry is complete, accurate, and consistent and meets project objectives · Data is being recorded in real time not after the fact	· Any element not conforming to the specifications · Where appropriate, a Nonconformance report will be issued and a causal analysis/corrective action will be developed.
D-7 Logbook Entries	3 Phase Inspection, Periodic Inspection	QC Surveillance	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	QC Specialist will verify · That the data entry is complete, accurate, and consistent and meets project objectives · Data is being recorded in real time not after the fact	· Any element not conforming to the specifications · Where appropriate, a Deficiency Notice will be issued and a causal analysis/corrective action will be developed.
MPPEH Processing/ Certification	3 Phase Inspection, Periodic Inspection	QC Preparatory Inspection QC Initial Inspection QC Surveillance	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	QC Specialist will · Observe the MPPEH Processing procedure · Re-Inspect a % of the Scrap · Ensure no energetic material remains in the Certified MPPEH.	· Any MPPEH found in the Processing Area · Any energetic material discovered in the certified MPPEH · Any element not conforming to the specifications · Where appropriate, a Nonconformance report will be issued and a causal analysis/corrective action will be developed.
DMM Transfer to Navy EOD	3 Phase Inspection, Periodic Inspection	QC Surveillance	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	QC Specialist will · Observe the transfer all DMM to Navy EOD control for transportation and treatment and ensure DMM transfer is conducted in a safe and effective manner.	· Any unsafe transfer procedures observed · Where appropriate, a Deficiency Notice will be issued and a causal analysis/corrective action will be developed.
Safety Meeting including Tailgate Safety Brief	3 Phase Inspection, Periodic Inspection	QC Surveillance	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	QC Specialist will · Observe the morning safety meeting · Observe the tailgate safety meetings	· Safety Meetings not taking place · Where appropriate, a Deficiency Notice will be issued and a causal analysis/corrective action will be developed.
Equipment Management	3 Phase Inspection, Periodic Inspection	QC Surveillance	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	QC Specialist will Verify · A Inventory with serial numbers of all equipment to be utilized is completed · Components are marked with unique identifiers such as color coded electrical tape for individual acquisition teams · Equipment Damaged on the Project will have an Incident Report completed on the incident. (EHS 1-7)	· Any element not conforming to the specifications · Where appropriate, a Deficiency Notice will be issued and a causal analysis/corrective action will be developed.

 TETRA TECH EC, INC.		SURVEILLANCE CHECKLIST			
Activity	Frequency of Surveillance	Forms to be Used	Process Mapped	QC Procedure	Corrective Action / Failure Criteria
Equipment Checks	3 Phase Inspection, Periodic Inspection	QC Surveillance	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	QC Specialist will Verify · All required Equipment Checks are completed Daily · Equipment checks are documented	· Any element not conforming to the specifications · Where appropriate, a Nonconformance report will be issued and a causal analysis/corrective action will be developed.
Acceptance Quality Control	3 Phase Inspection, Periodic Inspection	QC Surveillance	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	QC Specialist will · Ensure that all production work is completed on the areas to be sampled. · Ensure all Nonconforming situations are corrected prior to starting Acceptance Sampling. · Initially recheck 25% of dredge material determined to be DMM-free prior to certification in accordance with ESS Revision 1 and movement off site. · After 4 rechecks, if no DMM have been found, the rechecks may change to 10%. · If DMM is found in any recheck, that portion of the debris will be rejected and the UXO Team will complete a resurvey of that dredge material. · QC specialist will recheck that debris. At this point the rechecks will be increased to 25% until 4 rechecks have been free of DMM. · Document the Acceptance Sampling on the appropriate Acceptance Sampling Log.	· Any element not conforming to the specifications · The dredge debris will be returned to the UXO team for cure and will require causal analysis/corrective action if a DMM item is located in the dredge debris during QC Acceptance Sampling · A Nonconformance report will be issued and a causal analysis/corrective action will be developed if the item fails Acceptance Sampling.
 Other	3 Phase Inspection, Periodic Inspection	QC Preparatory Inspection QC Initial Inspection QC Surveillance	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	QC Specialist will perform random surveillance and evaluation of the following activities: · As required by the project or client objectives.	· Any element not conforming to the specifications · Where appropriate, a Nonconformance report or Deficiency Notice will be issued and a causal analysis/corrective action will be developed.



 TETRA TECH EC, INC.	<h2 style="margin: 0;">PREPARATORY PHASE INSPECTION REPORT</h2>		
Project Name: _____ Project No: _____ Report No: _____ UXO Team: _____ Location: _____ Date: _____			
I. Definable Feature of Work			
<input type="checkbox"/> Project Management <input type="checkbox"/> Field Data Entry <input type="checkbox"/> Data Management <input type="checkbox"/> DMM Observation of Transfer Operations <input type="checkbox"/> UXO Escort/ Avoidance Operations <input type="checkbox"/> UXO Visual Survey/Certification Operation <input type="checkbox"/> MPPEH Processing/ Certification <input type="checkbox"/> DMM Transfer to Navy EOD <input type="checkbox"/> Equipment Management/ Checks <input type="checkbox"/> Safety Meetings <input type="checkbox"/> Mobilization/Demobilization <input type="checkbox"/> Acceptance Sampling <input type="checkbox"/> Documentation Control <input type="checkbox"/> Document Review <input type="checkbox"/> Other:			
II. References (DOD Inst. , Corporate references, SOPs, etc.):			
III. Personnel Present (employees performing the work) Attach supplemental sheet if necessary			
Name	Position	Company	
IV. Submittals Reviewed (Work Plan, EHSP, Permits, etc.)			
Submittals Reviewed.	Item No.	Date	Approval Authority
Have all submittals been approved?		<input type="checkbox"/> Yes	<input type="checkbox"/> No
If No, what items have not been submitted/ approved?			
Are all submittals on hand?		<input type="checkbox"/> Yes	<input type="checkbox"/> No
If No, what items are missing?			
Check approved submittals against delivered material. (This should be done as material arrives.)			
Comments:			
V. Resources (Personnel & Equipment)			
Are adequate resources on hand to effectively conduct work?		<input type="checkbox"/> Yes	<input type="checkbox"/> No
If No, what action will be taken?			
VI. Procedures (Project Manger should be involved in this stage of the inspection)			
Review contract specifications. (List special requirements such as location accuracy, format for deliverables, etc.)			



 TETRA TECH EC, INC.	<h2 style="margin: 0;">PREPARATORY PHASE INSPECTION REPORT</h2>
Project Name: _____ Project No: _____ Report No: _____ UXO Team: _____ Location: _____ Date: _____	
Discuss procedure for accomplishing the work (Reference WP Section or SOP).	
Clarify any differences (revisions needed).	
VII. Resolve Differences (What did you do to resolve outstanding issues/problems)	
Comments:	
VIII. Testing/ Surveillance	
Identify Tests/ Surveillance to be performed, frequency, and by whom.	
Where will the testing to take place (in the test bed, at a selected monument, etc.)?	
Is the Testing/ Surveillance Plan Adequate?	
IX. Safety	
Review applicable portion of the Health and Safety Plan.	
Has the Activity Hazard Analysis been approved? <input type="checkbox"/> Yes <input type="checkbox"/> No	
X. Results of Inspection	
<input type="checkbox"/> Acceptable <input type="checkbox"/> Unacceptable NCR #:	
Name:	Signature:
Date:	
QCM Comments	
QCM Review	
<input type="checkbox"/> Concur <input type="checkbox"/> Non-Concur Signature: _____ Date _____	
XI. Distribution	
<input type="checkbox"/> PM <input type="checkbox"/> SITE MGR <input type="checkbox"/> UXO ESS/QC <input type="checkbox"/> SUXOS <input type="checkbox"/> CLIENT REP	
 	
Revised 4/27/2005	



 TETRA TECH EC, INC.	<h2 style="margin: 0;">INITIAL PHASE INSPECTION REPORT</h2>	
Project Name: _____ Report No: _____ Project No: _____ Location: _____ Date: _____		
V. Resolve Differences		
Comments:		
VI. Safety (Review work conditions using HASP and AHAs)		
Comments:		
VII. Results of Inspection		
<input type="checkbox"/> Acceptable <input type="checkbox"/> Unacceptable NCR #: _____		
Name: _____	Signature: _____	Date: _____
QC Manager Comments		
QC Manager Review		
<input type="checkbox"/> Concur <input type="checkbox"/> Non-Concur Signature: _____ Date: _____		
VIII. Distribution		
<input type="checkbox"/> PM <input type="checkbox"/> SITE MGR <input type="checkbox"/> UXO ESS/QC <input type="checkbox"/> SUXOS <input type="checkbox"/> CLIENT REP		
		Revised May 2006



 TETRA TECH EC, INC.	<h2 style="margin: 0;">FOLLOW-UP INSPECTION/SURVEILLANCE REPORT</h2>															
Project Name: _____ Report No: _____ Project No: _____ Location: _____ Date: _____																
I. Definable Feature of Work																
<table style="width: 100%; border: none;"> <tr> <td><input type="checkbox"/> Project Management</td> <td><input type="checkbox"/> Field Data Entry</td> <td><input type="checkbox"/> Data Management</td> </tr> <tr> <td><input type="checkbox"/> DMM Observation of Transfer Operations</td> <td><input type="checkbox"/> UXO Escort/ Avoidance Operations</td> <td><input type="checkbox"/> UXO Visual Survey/Certification Operation</td> </tr> <tr> <td><input type="checkbox"/> MPPEH Processing/ Certification</td> <td><input type="checkbox"/> DMM Transfer to Navy EOD</td> <td><input type="checkbox"/> Equipment Management/ Checks</td> </tr> <tr> <td><input type="checkbox"/> Safety Meetings</td> <td><input type="checkbox"/> Mobilization/Demobilization</td> <td><input type="checkbox"/> Acceptance Sampling</td> </tr> <tr> <td><input type="checkbox"/> Documentation Control</td> <td><input type="checkbox"/> Document Review</td> <td><input type="checkbox"/> Other:</td> </tr> </table>		<input type="checkbox"/> Project Management	<input type="checkbox"/> Field Data Entry	<input type="checkbox"/> Data Management	<input type="checkbox"/> DMM Observation of Transfer Operations	<input type="checkbox"/> UXO Escort/ Avoidance Operations	<input type="checkbox"/> UXO Visual Survey/Certification Operation	<input type="checkbox"/> MPPEH Processing/ Certification	<input type="checkbox"/> DMM Transfer to Navy EOD	<input type="checkbox"/> Equipment Management/ Checks	<input type="checkbox"/> Safety Meetings	<input type="checkbox"/> Mobilization/Demobilization	<input type="checkbox"/> Acceptance Sampling	<input type="checkbox"/> Documentation Control	<input type="checkbox"/> Document Review	<input type="checkbox"/> Other:
<input type="checkbox"/> Project Management	<input type="checkbox"/> Field Data Entry	<input type="checkbox"/> Data Management														
<input type="checkbox"/> DMM Observation of Transfer Operations	<input type="checkbox"/> UXO Escort/ Avoidance Operations	<input type="checkbox"/> UXO Visual Survey/Certification Operation														
<input type="checkbox"/> MPPEH Processing/ Certification	<input type="checkbox"/> DMM Transfer to Navy EOD	<input type="checkbox"/> Equipment Management/ Checks														
<input type="checkbox"/> Safety Meetings	<input type="checkbox"/> Mobilization/Demobilization	<input type="checkbox"/> Acceptance Sampling														
<input type="checkbox"/> Documentation Control	<input type="checkbox"/> Document Review	<input type="checkbox"/> Other:														
II. Type of Inspection																
<input type="checkbox"/> Follow-up <input type="checkbox"/> Surveillance																
II. References (DOD Inst, Corporate references, SOPs, etc.):																
III. Activities/Conditions Observed																
Conducted By:	Signature:	Date:														
X. UXO ESS/QC Review																
<input type="checkbox"/> Acceptable <input type="checkbox"/> Unacceptable		NCR #:														
Comments:																
Name:	Signature:	Date:														
XI. Distribution																
<input type="checkbox"/> PM <input type="checkbox"/> SUXOS <input type="checkbox"/> UXOESS/QC <input type="checkbox"/> UXO Quality Manager <input type="checkbox"/> Client Rep																
 		Revised May 2006														



 TETRA TECH EC, INC.		<h2>DEFICIENCY NOTICE</h2>	
		Deficiency Notice No.	
Client:		Project Number:	
Project:		Specific Process:	
Description of Process			
I. Description of Deficiency (<i>Items involved, specification, code or standard to which items do not comply, submit sketch if applicable</i>)			
Name and Signature of Person Reporting Deficiency		Title/Company	Date
II. Root Cause Analysis			
Immediate Causes: What actions and conditions contributed to this event? Check all that apply:			
Substandard Acts			
<input type="checkbox"/> Operating equipment without authority		<input type="checkbox"/> Inadequate inspection/peer review	
<input type="checkbox"/> Failure to follow/improper execution of procedure		<input type="checkbox"/> Poor judgment	
<input type="checkbox"/> Using equipment improperly		<input type="checkbox"/> Failure to communicate—written and/or verbal	
<input type="checkbox"/> Improper servicing/maintenance of equipment		<input type="checkbox"/> Acceptance of defective equipment/material	
<input type="checkbox"/> Under influence of alcohol/drugs		<input type="checkbox"/> Other substandard acts	
<input type="checkbox"/> Horseplay			
Substandard Conditions			
<input type="checkbox"/> Personnel not properly qualified or trained		<input type="checkbox"/> Inadequate oversight	
<input type="checkbox"/> Defective equipment/material		<input type="checkbox"/> Inadequate procedure/instruction	
Enter brief explanation of each immediate cause below:			
Basic Causes: What specific personal or job management system factors contributed to this event? Check all that apply:			
Personal Factors		Job Factors	
<input type="checkbox"/> Inadequate physical/physiological capability		<input type="checkbox"/> Inadequate leadership and/or supervision	
<input type="checkbox"/> Inadequate mental/psychological capability		<input type="checkbox"/> Inadequate engineering	
<input type="checkbox"/> Physical or physiological stress		<input type="checkbox"/> Inadequate purchasing	
<input type="checkbox"/> Lack of knowledge		<input type="checkbox"/> Inadequate maintenance	
<input type="checkbox"/> Lack of skill		<input type="checkbox"/> Inadequate tools and equipment	
<input type="checkbox"/> Improper motivation		<input type="checkbox"/> Inadequate work standards	
<input type="checkbox"/> Other personal factors		<input type="checkbox"/> Excessive wear and tear	
		<input type="checkbox"/> Abuse and misuse	
		<input type="checkbox"/> Change	
		<input type="checkbox"/> Other job factors	

 TETRA TECH EC, INC.	<h2 style="margin: 0;">DEFICIENCY NOTICE</h2>		
Enter brief explanation of each basic cause below:			
Name and Signature of Person Conducting RCA	Title/Company	Date	
III. Corrective Action			
Name and Signature of Person Recommending CA	Title/Company	Date	
Re-Inspection Results			
IV. Re-Inspection Reissued Under: <input type="checkbox"/> Accepted Deficiency Notice Number: <input type="checkbox"/> Rejected Non-Conformance Report Number:			
Name and Signature of Person Re-Inspection	Title/Company	Date	
V. <input type="checkbox"/> Responsible Organization	<input type="checkbox"/> QA/QC	<input type="checkbox"/> SM	<input type="checkbox"/> Project Manager
Name (<i>Signature</i>)	Name (<i>Signature</i>)	Name (<i>Signature</i>)	Name (<i>Signature</i>)
Date	Date	Date	Date
<input type="checkbox"/> Accepted <input type="checkbox"/> Rejected <input type="checkbox"/> Accepted with Comments	<input type="checkbox"/> Accepted <input type="checkbox"/> Rejected <input type="checkbox"/> Accepted with Comments	<input type="checkbox"/> Accepted <input type="checkbox"/> Rejected <input type="checkbox"/> Accepted with Comments	<input type="checkbox"/> Accepted <input type="checkbox"/> Rejected <input type="checkbox"/> Accepted with Comments
 			Revised May 2006



 TETRA TECH EC, INC.		<h2 style="margin: 0;">NON-CONFORMANCE REPORT</h2>	
		Report No.	
Client:		Project Number:	
Project:		Specific Process:	
Description of Process			
I. Description of Nonconformance (<i>Items involved, specification, code or standard to which items do not comply, submit sketch if applicable</i>)			
Name and Signature of Person Reporting Nonconformance		Title/Company	Date
II. Root Cause Analysis			
Immediate Causes: What actions and conditions contributed to this event? Check all that apply:			
Substandard Acts			
<input type="checkbox"/> Operating equipment without authority	<input type="checkbox"/> Inadequate inspection/peer review		
<input type="checkbox"/> Failure to follow/improper execution of procedure	<input type="checkbox"/> Poor judgment		
<input type="checkbox"/> Using equipment improperly	<input type="checkbox"/> Failure to communicate—written and/or verbal		
<input type="checkbox"/> Improper servicing/maintenance of equipment	<input type="checkbox"/> Acceptance of defective equipment/material		
<input type="checkbox"/> Under influence of alcohol/drugs	<input type="checkbox"/> Other substandard acts		
<input type="checkbox"/> Horseplay			
Substandard Conditions			
<input type="checkbox"/> Personnel not properly qualified or trained	<input type="checkbox"/> Inadequate oversight		
<input type="checkbox"/> Defective equipment/material	<input type="checkbox"/> Inadequate procedure/instruction		
Enter brief explanation of each immediate cause below:			
Basic Causes: What specific personal or job management system factors contributed to this event? Check all that apply:			
Personal Factors		Job Factors	
<input type="checkbox"/> Inadequate physical/physiological capability	<input type="checkbox"/> Inadequate leadership and/or supervision		
<input type="checkbox"/> Inadequate mental/psychological capability	<input type="checkbox"/> Inadequate engineering		
<input type="checkbox"/> Physical or physiological stress	<input type="checkbox"/> Inadequate purchasing		
<input type="checkbox"/> Lack of knowledge	<input type="checkbox"/> Inadequate maintenance		
<input type="checkbox"/> Lack of skill	<input type="checkbox"/> Inadequate tools and equipment		
<input type="checkbox"/> Improper motivation	<input type="checkbox"/> Inadequate work standards		
<input type="checkbox"/> Other personal factors	<input type="checkbox"/> Excessive wear and tear		
	<input type="checkbox"/> Abuse and misuse		
	<input type="checkbox"/> Change		
	<input type="checkbox"/> Other job factors		
Enter brief explanation of each basic cause below:			



 TETRA TECH EC, INC.	NON-CONFORMANCE REPORT		
Name and Signature of Person Conducting RCA	Title/Company	Date	
III. Recommended Disposition <i>(Submit sketch, if applicable)</i>			
Name and Signature of Person Recommending Disposition	Title/Company	Date	
IV. Evaluation of Disposition by Tetra Tech EC, Reason for Disposition			
V. Corrective Action	<input type="checkbox"/> Required	<input type="checkbox"/> Not Required	
VI. <input type="checkbox"/> QA/QC	<input type="checkbox"/> Project Manager	<input type="checkbox"/> Client <i>(if applicable)</i>	<input type="checkbox"/> Other
Name <i>(Signature)</i>	Name <i>(Signature)</i>	Name <i>(Signature)</i>	Name <i>(Signature)</i>
Date	Date	Date	Date
<input type="checkbox"/> Accepted <input type="checkbox"/> Rejected <input type="checkbox"/> Accepted with Comments	<input type="checkbox"/> Accepted <input type="checkbox"/> Rejected <input type="checkbox"/> Accepted with Comments	<input type="checkbox"/> Accepted <input type="checkbox"/> Rejected <input type="checkbox"/> Accepted with Comments	<input type="checkbox"/> Accepted <input type="checkbox"/> Rejected <input type="checkbox"/> Accepted with Comments
VII. Verification of Disposition		<input type="checkbox"/> Required <input type="checkbox"/> Not Required	
By	Signature	Title	Date
 			Page 2



CORRECTIVE ACTION REQUEST			
		CAR No.:	
Project/Location		CAR Issue Date	
Responsible Organization		Discussed With	
Response Assigned to		Response Due Date	
Requirement Violated/Finding			
Recommended Corrective Action			
Initiated by	Date	Approved By	Date
Remedial Action to Correct Condition (<i>Include Cause</i>):			
Scheduled Completion Date:			
Corrective Action to Prevent Recurrence			
Response Submitted By:		Date:	
Evaluation Comments:		<input type="checkbox"/> Accept	<input type="checkbox"/> Reject
Verification Comments:		<input type="checkbox"/> Accept	<input type="checkbox"/> Reject
Evaluated By	Date	Verified By	Date



 TETRA TECH EC, INC.	LESSONS LEARNED REPORT FORM	
Client:	Project Number:	
Project:	Location:	
Type Of Project:		
I. TOPIC		
II. DESCRIPTION (Narrative of relevant events, problem, impact)		
III. LESSON(S) LEARNED (e.g. Project Specific, Location Specific, Company-wide):		
IV. RECOMMENDED FUTURE ACTION (e.g., Revise Project Procedures, Company Procedures, Additional Training):.		
V. EVALUATION BY DEPARTMENT HEAD (e.g., Support Recommendation, Alternate Recommendation):		
VI. List supporting data/ references (if applicable)		
Reference/ Supporting Data:	Location:	
VII. <input type="checkbox"/> PM	<input type="checkbox"/> QCM	<input type="checkbox"/> Director of UXO Operations
Name (<i>Signature</i>)	Name (<i>Signature</i>)	Name (<i>Signature</i>)
Date	Date	Date
<input type="checkbox"/> Accepted <input type="checkbox"/> Rejected <input type="checkbox"/> Accepted with Comments Comments:	<input type="checkbox"/> Accepted <input type="checkbox"/> Rejected <input type="checkbox"/> Accepted with Comments Comments:	<input type="checkbox"/> Accepted <input type="checkbox"/> Rejected <input type="checkbox"/> Accepted with Comments Comments:
VIII. Forward Approved Lessons Learned Report to VP of Support Services		
Name (<i>Signature</i>)	Date	<input type="checkbox"/> Accepted <input type="checkbox"/> Rejected <input type="checkbox"/> Accepted with Comments Comments:



APPENDIX E

STANDARD OPERATING PROCEDURE

**SOP 1
STANDARD OPERATING PROCEDURE
FOR
OBSERVATION OF DREDGE SPOILS/DEBRIS OFF-LOAD
OPERATIONS**

**CONSTRUCTION SUPPORT
DISCARDED MILITARY MUNITIONS VISUAL SURVEY OPERATIONS
at
NAVAL WEAPONS STATION EARLE
Leonardo, New Jersey**

TETRA TECH

JUNE 2006

1 **APPROVALS**

2 This Standard Operating Procedure (SOP) contains the procedures and other information that
3 will be needed by Tetra Tech field staff to conduct visual observations to identify and remove
4 discarded military munitions (DMM) during transfer of these materials from scows to Trestle 2
5 (regular materials) or a flat top barge (over size debris). By their signatures, the undersigned
6 certify this SOP is approved for implementation at NHB and will be used to direct surface
7 clearance and intrusive investigation operations.

8

9 **APPROVED BY:**

10

11

Dave Keller
UXO Operations Manager
(425) 482-7749

Date

Patrick Saveall
Senior UXO Supervisor
TBD

Date

TBD
UXO Environmental Safety Specialist
TBD

Date

12



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

TABLE OF CONTENTS

1.0	PURPOSE.....	1
2.0	SCOPE.....	1
3.0	GENERAL REQUIREMENTS	1
3.1	NOTIFICATION/COORDINATION PROCESS	1
3.2	TRAINING REQUIREMENTS.....	1
3.3	EQUIPMENT/MATERIAL REQUIREMENTS.....	2
3.3.1	Munitions Detection Equipment.....	2
3.3.2	Other Equipment/Materials	2
3.4	DAILY BRIEFING.....	3
3.5	TAIL-GATE BRIEFING	3
3.6	EXCLUSION ZONES.....	4
4.0	OBSERVATION OF SPOILS/DEBRIS OFF-LOADING.....	5
4.1	ANOMALIES OTHER THAN MPPEH.....	7
5.0	REFERENCES.....	7
ATTACHMENT 1	OFF-LOADING OBSERVATION EQUIPMENT CHECKLIST	
ATTACHMENT 2	VEHICLE CHECKLIST	
ATTACHMENT 3	OFF-LOADING OBSERVATION ACTIVITIESCHECKLIST	
ATTACHMENT 4	MEC DATA AND ACCOUNTABILITY FORM	
	MEC ACCOUNTABILITY FORM	



1.0 PURPOSE

The purpose of this standard operating procedure (SOP) is to provide specific procedures for observation of dredge spoils/debris off-loading to identify and remove discarded military munitions (DMM) from materials generated during construction activities at the new Pier 3 location in the Pier Complex at Naval Weapons Station (NWS) Earle. These procedures will be conducted in accordance with the *Site-Specific Work Plan* (SSWP) (of which this SOP is a part) and the *Site-Specific Health and Safety Plan* (HASP). In addition, all work will be conducted and performed in accordance with the NWS Earle Operational Risk Management (ORM) Plan and New Jersey Department of Environmental protection (NJDEP) Water Quality Certificate issued for this project.

2.0 SCOPE

This SOP is applicable to all Tetra Tech employees and subcontractors engaged in the observation of dredge spoils/debris off-loading to identify and remove DMM. The SOP including procedures for setup, performance of all observation tasks and recording appropriate data for any DMM or other munitions and explosives of concern (MEC) recovered. Specific requirements are defined for notification, personnel, training, equipment/material and observation activities. MPPEH handling, transportation, and storage and disposition is described in SOP 3.

3.0 GENERAL REQUIREMENTS

3.1 NOTIFICATION/COORDINATION PROCESS

The Senior UXO Supervisor (SUXOS) is responsible for management of all munitions and explosives of concern (MPPEH)-related activities. As the senior UXO qualified manager on site, he will be responsible for proper coordination of activities with project management, the client, and local emergency and support service providers. Before beginning MPPEH operations, the SUXOS will notify security/police, fire, and medical personnel, as well as any other appropriate personnel/organizations per the approved SSWP. The Site Manager and the Navy Point of contact (POC) will be informed of the project schedule and the expected impacts in accordance with the SSWP.

3.2 TRAINING REQUIREMENTS

All personnel working on the site, including subcontractor personnel, will meet the general training and qualifications requirements listed in the SSWP. In addition, personnel will receive training on the site-specific hazards and any supplemental training needed to support safe execution of specific types of MPPEH operations performed. For the observation of dredge spoils/debris off-loading, this supplemental training will include:

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31

- Equipment Training
 - Gators (or other approved personnel transport vehicles for the trestle)
 - Light Plants
 - Metal detectors
 - Radios/Walkie-Talkies (including approved operating channels)
 - Electronic data recording devices (if used)
- Safety Training
 - DMM/MD specific to task
 - Crane safety
 - Safety for Work over or near water

4.0.1 - The site-specific training will include step-by-step review of all SOPs to ensure that all UXO team members clearly understand the procedures for operation of equipment; conduct of emergency procedures specific to the task and work area; and, data recording.

3.3 EQUIPMENT/MATERIAL REQUIREMENTS

3.3.1 Munitions Detection Equipment

All detection equipment used by the observation teams will be initially verified to be working properly by the UXO Environmental Safety Specialist/Quality Control Specialist (UXO ESS/QC) by passing it over an established target location or selected metallic item placed on the ground. The team leaders will verify functionality of the equipment at the beginning of each shift using the same procedure. Detection equipment is limited to Schonstedt ferrous metal detectors that will aid the UXO observation teams in locating potential DMM that may be buried beneath dredge spoils or debris.

3.3.1.0.1 - If the equipment requires repair, is new equipment, or is spare equipment, it must be inspected and confirmed operational prior to field use by the UXOQC.

3.3.2 Other Equipment/Materials

- Transport vehicles (Gators [or other small personnel transporters] for use on Trestle 2 and pickup trucks for use on the piers and for transport to and from the site.)
- Light Plants
- Communication radios or Walkie-Talkies
- Non-sparking fiberglass probes



- 1 • Safety and other equipment listed on the Observation Activities Equipment Checklist
2 (Attachment 1)

3 3.3.2.0.1 - Each UXO Team Leader will inspect all equipment to be used prior to commencing
4 operations each day to ensure that proper tools and equipment are available and ready to use.
5 The Team Leaders will complete an Observation Activities Equipment Checklist to verify
6 successful completion of the inspection (Attachment 1). The Team Leaders will also complete a
7 Vehicle Inspection Checklist to ensure that site vehicles are kept in good operating condition
8 and are safe to operate. Not all items on this checklist will apply to the Gators (or other small
9 personnel transport vehicles for use on Trestle 2).

10 **3.4 DAILY BRIEFING**

11 At the beginning of each shift, the Shift Supervisor will hold a daily briefing. At a minimum this
12 briefing will include:

- 13 • Work assignments
14 • Review of emergency procedures
15 • Review of ordnance safety
16 • Review of communications procedures and equipment
17 • Review of any site-specific hazards and the measures that will be used to mitigate
18 those hazards
19 • A description of any known utilities in work areas
20 • Procedures for coordination of daily activities personnel performing non-MEC
21 activities.

22 3.4.0.1 - Other topics that may be discussed, as necessary, including QC, changes to the work
23 schedule, equipment maintenance, exclusion zone locations and set-up, and any issues that
24 may affect the activities being performed that day (or in the near future).

25 3.4.0.2 - During the daily briefing, the Shift Supervisor will also assign selected work sites to
26 each of the UXO teams for transfer observation. The Shift supervisor will complete the top
27 portion of the Spoils/Debris Transfer Observation Activities Checklist (Attachment 3) and
28 transfer it to the designated UXO Team Leader along with any other supplemental information
29 needed (maps, etc.). The top portion of this checklist verifies that the UXO Team Leader has
30 received the necessary information to support his daily activities including information on utilities
31 that may be present in the work area, and daily briefing and safety information.

32 **3.5 TAIL-GATE BRIEFING**

33 After arriving at the worksite, Team Leaders will conduct a tail-gate safety meeting. The daily
34 briefing may serve as the tailgate briefing if the content covers those additional issues normally



1 reserved for discussion during the tailgate briefing. If the daily briefing is combined with the
2 tailgate meeting it will include:

- 3 • Review of site task assignments for the day
- 4 • Review of instrument function test procedures/requirements
- 5 • Review of task-specific hazards for that site
- 6 • Review of any other task or location specific information needed to safely complete
7 the assigned daily work

8 3.5.0.1 - The Team Leader will document the tail-gate briefing on the Spoils/Debris Transfer
9 Observation Checklist.

10 **3.6 EXCLUSION ZONES**

11 The exclusion zone (EZ) is defined as the area where explosive hazard or contamination is
12 either known or likely to be present, or where activity with the potential to cause harm to
13 personnel is occurring. The EZ for all observation operations will initially be 236 feet from the
14 outermost boundaries of the work area. The Team Leaders will establish the EZ boundaries
15 and the UXO ESS/QC will verify that the size of the area is correct. This EZ is based on the
16 hazardous fragment distance of 236 feet for the munition with the greatest fragmentation
17 distance (MGFD) established by the Department of Defense Explosives Safety Board
18 (DDESB)(DOD 2003).

19 Personnel authorized to work within the EZ are as defined in the Essential Personnel and
20 Personnel Limits in Conventional MEC Exclusion Zones as published by the U.S. Army Corps of
21 Engineers (USACE) (USACE 2004). Tetra Tech personnel and other essential personnel will
22 not be allowed in the EZ without the following:

- 23 • Use of the buddy system
- 24 • Personal protective equipment (PPE) in accordance with HASP
- 25 • Medical authorization
- 26 • Training certification
- 27 • Understanding of the HASP
- 28 • Approval of SUXOS

29 An expanded EZ may be required if MPPEH larger than the MGFD are recovered. The
30 expanded EZ would be established based on the actual fragmentation range of the DMM
31 encountered in accordance with EODB 60A 1-1-4, Protection of Personnel and Property (U.S.
32 Navy 1990); DDESB TP-16 Methodologies for Calculating Primary Fragment Characteristics
33 (DOD 2003); and NAVSEA OP 5, Volume 1, Table 7-9.

1 The Chief of Naval Operations has issued an exception (waiver) for the EZ on this project,
2 Navy and Navy contractor personnel non-essential to the survey operation who require ingress
3 and egress for Trestle 1A, which bi-sects the exclusion zone, for non-ordnance related activities
4 will be allowed to enter the EZ under carefully controlled circumstances (Navy 2006a; Navy
5 2006b). During ordnance handling operations at the Pier Complex, WMI will station flagmen
6 with approved radios/Walkie-Talkies at either end of the DMM survey/transfer Explosive Safety
7 Quantity Distance (ESQD) arc on the main trestle. The flagmen will stop all placarded ordnance
8 laden conveyances and will notify the SUXOS (or Shift Supervisor if the SUXOS is not on site)
9 to secure MEC operations in order to allow the ordnance conveyances to proceed down Trestle
10 1A. Once the ordnance vehicles are out of the area, the survey/transfer operation will restart.
11 Ordnance handling operations at the Pier Complex take priority at all times and transit delays of
12 ordnance conveyances will be kept to a minimum. All other vehicles will be allowed to proceed
13 and the flagmen will not be stationed on the main trestle when there are no ordnance handling
14 operations underway. Communications between NWS Earle and the Site Manager and SUXOS
15 team for upcoming pier operations will be critical for efficient/timely DMM operations and to
16 ensure the safety of all personnel utilizing the Pier Complex.

17 **4.0 OBSERVATION OF SPOILS/DEBRIS OFF-LOADING**

18 This section contains the specific procedures to be utilized for observation of spoils/debris off-
19 loading. All general requirements presented in Section 3 will also be met. The observation will
20 be conducted using the following procedures:

- 21 • Transport personnel and equipment to the work areas.
- 22 • Start up the light plants (if applicable) and ensure that they properly placed to
23 provide the required light for off-loading operations.
- 24 • Set up an appropriate EZ for off-loading operations. The Team Leader will establish
25 the EZ and the UXO ESS/QC will verify that the size is correct.
- 26 • Notify the Site Project Office prior to commencing off-loading operations (Team
27 Leaders)
- 28 • Station one UXO Technician on the crane with the crane operator. This individual
29 will coordinate the placement of spoils/debris to ensure safety and facilitate
30 inspection during the following phase of work. The UXO technician will follow the
31 instructions and safety guidelines provided by the crane operator at all times.



- 1 • Station one UXO Technician on the trestle (or barge) where spoils or debris are
2 being placed. This technician will be stationed in a safe location at least 25 feet
3 from the point where spoils/debris will be placed. This individual will make the crane
4 operator aware of his/her position and will maintain line-of-sight contact with the
5 operator at all times. The UXO technician stationed on the trestle (or barge) will not
6 enter the swing radius of the crane while the crane is in operation and unsecured.

- 7 • Begin transfer operations; observe the spoils during off-loading to identify any
8 potential DMM or other MPPEH. If potential MPPEH is observed the UXO technician
9 making the observation will immediately stop work. The crane will be secured and
10 the UXO Team will re-locate the item for inspection.

- 11 • Identify potential MPPEH:
 - 12 ○ If the item is found is DMM or other MEC, the UXO Team will determine if the item
13 is safe to move. If so, the item will be transported to the off load point for the work
14 area and turned over to the Shift Supervisor. It will be handled in accordance with
15 the procedures in the work plan and SOP 3
 - 16 ○ If the item is DMM or other MEC and it is not safe to move the UXO Team will
17 contact the Shift supervisor. The Shift Supervisor will make the proper
18 notifications
 - 19 ○ If the item found is MPPEH and is determined to be free of explosives, it will be
20 placed in a an approved container for consolidation of such items. At the end of
21 the shift this container will be removed from the work area and transported to a
22 pre-designated holding area for like items. It will be handled in accordance with
23 the procedures in the work plan and SOP 3.

- 24 • Record appropriate data for any DMM or other MEC on the MEC Data and
25 Accountability Form (Attachment 4).

- 26 • Continue observing off-load operations, stopping as appropriate to inspect
27 suspicious items.

- 28 • Notify the Site Project Office when observation operations are complete for the shift.

29 The Team Leader will inform the Site Office when observation activities are completed, and will
30 complete the remaining items on the Spoils/Debris Transfer Observation Activities Checklist
31 (Attachment 3) to document successful completion of required activities.

32 All required information must be entered into the data form (electronic or manual) at the time of
33 the surface clearance. All information on the top of the form will be completed in the field by the
34 UXO team. The lower portion of the form will be completed by the Senior UXO Supervisor.
35 These logs contain blocks for tracking the disposition of MPPEH so that status of these
36 items/material can be ascertained at any time. **NOTE: A photograph should be taken of**



1 **each piece of MEC recovered to document the item.** The Surface Clearance and Intrusive
2 Activities Checklists (Attachment 2) will be submitted to the Senior UXO Supervisor at the end
3 of each day.

4 **4.1 ANOMALIES OTHER THAN MPPEH**

5 It is possible that hazardous and non-hazardous material other than MPPEH may be located
6 during the off-loading operations, including metal debris, chemicals, and other hazards.

7 **Metal Debris**—Metal debris located during the operations will remain in place.

8 **Chemicals**—Locating industrial-type chemicals is a possibility during off-loading operations. If
9 any evidence of chemical contamination is detected, all intrusive activities will cease, the UXO
10 Team will leave the area and the team leader will notify the Shift supervisor. The area will be
11 evaluated by the SUXOS and UXOSO. Operations will continue only when it is safe to proceed.

12 **Other Hazards**—If sealed drums, contaminated soils, or other suspect materials or conditions
13 that would indicate a potential health or safety hazard are encountered during the off-loading
14 operations, work efforts will cease, the UXO Team will leave the area and the team leader will
15 notify the Shift supervisor. The area will be evaluated by the SUXOS and UXOSO. Operations
16 will continue only when it is safe to proceed and the notification procedures followed.

17 **5.0 REFERENCES**

18 DOD (Department of Defense). 2003. *Methodologies for Calculating Primary Fragment*
19 *Characteristics*. DDESB TP 16, Revision 1. December 1, 2003.

20 USACE (U.S. Army Corps of Engineers). 2004. *Essential Personnel and Personnel Limits in*
21 *Conventional MEC Exclusion Zones*. Military Munitions Response Program Center of
22 Expertise Interim Guidance Document 04-01. April 8, 2004.

23 U.S. Navy. 2001. *Ammunition and Explosives Ashore: Safety Regulations for Handling,*
24 *Storing, Production, Renovation, and Shipping*. NAVSEA OP 5, Volume 1. Seventh
25 Revision.

ATTACHMENT 1
OFF-LOADING OBSERVATION EQUIPMENT CHECKLIST



TETRA TECH EC, INC.

OFF-LOADING OBSERVATION EQUIPMENT CHECKLIST

Basic Equipment (Required for all UXO work)

✓	Quantity	Item Description
<input type="checkbox"/>	1	Air horn
<input type="checkbox"/>	2 rolls	Caution tape
<input type="checkbox"/>	1	Emergency eye wash
<input type="checkbox"/>	1	Fire extinguisher
<input type="checkbox"/>	1	First-Aid Kit
<input type="checkbox"/>	1	Flashlight
<input type="checkbox"/>	1 pair	Gloves, leather (or other approved work gloves)
<input type="checkbox"/>	2	Radios (2-way) or Walkie-Talkies (as approved)
<input type="checkbox"/>	1	Metal detector (See work plan for make and model)
<input type="checkbox"/>	2	Rakes, forks or other approved tools
<input type="checkbox"/>	2	Warning signs for exclusion zone
<input type="checkbox"/>	2 rolls	Tape, duct
<input type="checkbox"/>	2 rolls	Tape, plastic
<input type="checkbox"/>	1	Toolbox, general hand tools
<input type="checkbox"/>	1	Trowel
<input type="checkbox"/>	3	Water bottle, 1 liter
<input type="checkbox"/>	--	Field log book and field forms (as appropriate)

Site-Specific Items (Write in items and quantity)

✓	Quantity	Item Description
<input type="checkbox"/>		_____

Revised April 2006

ATTACHMENT 2
VEHICLE/HEAVY EQUIPMENT INSPECTION CHECKLIST



TETRA TECH EC, INC.

VEHICLE/HEAVY EQUIPMENT INSPECTION CHECKLIST

Project: _____ Equipment Type: _____
 Equipment No. _____ Model: _____
 Manufacturer: _____ Date: _____
 Engine Hrs/Mileage _____ Team Number: _____

Equipment Checklist (Check all that apply and provide description of corrections needed)

	Condition Good	Correction Needed
Steering	_____	_____
Service Brakes	_____	_____
Emergency Brakes	_____	_____
Retarder	_____	_____
Transmission	_____	_____
Controls	_____	_____
Hydraulic Leaks	_____	_____
Exhaust System	_____	_____
Warning Gauges	_____	_____
Windshield	_____	_____
Lights	_____	_____
Mirrors	_____	_____
Seat and Seat Belts	_____	_____
Tires/Tread	_____	_____
Regular Horn	_____	_____
Back-up Alarm	_____	_____
Steps, Hand-holds	_____	_____
Fire Extinguisher	_____	_____
Rollover Cage	_____	_____
Other:	_____	_____
Other:	_____	_____
Remarks:	_____ _____ _____	

Approvals

Operator's Signature (Team Leader):	Date:
SUXOS Signature:	Date:
Equipment Supervisor's Signature (Repairs or Adjustments Completed):	Date:

ATTACHMENT 3
OFF-LOADING DAILY ACTIVITIES CHECKLIST



TETRA TECH EC, INC.

OFF-LOADING DAILY ACTIVITIES CHECKLIST

Project Information

Project Name:	_____	Date:	_____
Project Location:	_____	Team No.	_____
Work Area:	_____		

SUXOS Checklist items

Name: _____

Check Items Complete

- Conduct daily briefing (safety, emergency procedures, munitions information, etc.).
- Notify team leader of utilities or other dangers. _____
- Assign work area and provide data package.

UXO Team Leader Checklist Items

Name: _____

Check Items Complete

- Ensure that all necessary data have been provided by the SUXOS for daily operations.
- Conduct vehicle inspection.
- Conduct tailgate safety briefing.
- Perform equipment inspections and operational tests (record in log book).
- Verify daily heavy equipment inspection.
- Identify known utilities.
- Ensure that work area is secure as required (road closures, exclusion zone set up, etc.).
- Notify site office of start time for ordnance operations.
- Ensure that all required data have been recorded (data sheets, log books, photo log, etc.).
- Ensure that site restoration required is complete.
- Notify site office of stop time for ordnance operations.

Approvals

SUXOS Signature:	_____	Date:	_____
UXOQC Signature :	_____	Date :	_____

ATTACHMENT 4
MEC DATA AND ACCOUNTABILITY FORM
MEC ACCOUNTABILITY LOG



TETRATECH EC, INC.

MEC DATA AND ACCOUNTABILITY FORM**FOR UXO TEAM USE**

Site Name: NWS Earle, Leonardo, New Jersey

Team Leader:

Grid or Lane Number:

Work Area:

Date:

Location: X (Lat): _____ Y (Long): _____ Location Type (UW or UG): _____

Other Location Information: _____

Depth (feet): _____ Inclination (Degrees): _____ Orientation (N-S, E-W): _____

TARGET/ANOMALY CHARACTERISTICSType of Target/Find: Surface Find Mag & Dig Target Primary Geo Target Validation (QA/QC) No DigType of Anomaly: UXO MEC Inert Practice MC (waste) MD (scrap) Metal Waste No Find Rock Rust Layer Oxidation Misc.: _____

Diameter/Width:

Length:

Estimated Weight:

DIGITAL PHOTO RECORDWas photo taken? Yes No

Camera No.:

Frame No.:

File Name:

MUNITIONS NOMENCLATURE (If Known, Record Below and record fuze condition and disposition)

Munitions Mark/Mod:

Fuze Mark/Mod:

N.E.W. Total:

 Nose: _____ Tail: _____ Transverse: _____ Casing: _____**MUNITIONS CHARACTERISTICS**Munitions Filler: Explosive Inert Propellant Pyrotechnic Unknown Other: _____Munitions Category: Depth Charges Land Mine Projectiles Sea Mines Bombs Grenades Misc. Explosive Devices Pyrotechnics and Flares Small Arms Clusters/Dispensers Guided Missiles Mortars Rockets Torpedoes**FUZE CHARACTERISTICS**

Fuze Location(s) (check all that apply):

 Nose Tail Transverse Casing

Breaks in Fuze Body?

 Yes No

Fuze Markings:

Fuzing Type(s): Hydrostatic MT Long Delay Powder Train Time Fuze Nose MT/Tail Impact Inertia All-ways Acting Impact MT Superquick Pressure Pt-initiating -Base-detonating Base Detonating Influence Piezo-Electric Proximity (VT) Electric Mech Time (MT) Point Detonating (PD) Nose MT/Tail Pressure

Fuze Length:

Fuze Diameter:

Diameter of Fuze Well:

MEC STATUS & PHYSICAL CONDITION (Check all that apply) Armed Unarmed Fired Unfired Intact Broken Open Filler Visible Soil Staining**FOR SUXOS USE**

Disposition: (Clarify Under Remarks)

 Transferred Transported Left In Place Destroyed BIP Other : _____

Date:

Client Notifications By:

Signature:

Date:

Transferred To:

Signature:

Date:

Destroyed By:

Signature:

Date:

Remarks:

SUXOS Signature:

Date:

Revised April 2006

**SOP 2
STANDARD OPERATING PROCEDURE
FOR
VISUAL OBSERVATION OF DREDGE SPOILS/DEBRIS FOR DMM**

**CONSTRUCTION SUPPORT
DISCARDED MILITARY MUNITIONS VISUAL SURVEY OPERATIONS
at
NAVAL WEAPONS STATION EARLE
Leonardo, New Jersey**

TETRA TECH

JUNE 2006

1 **APPROVALS**

2 This Standard Operating Procedure (SOP) contains the procedures and other information that
3 will be needed by Tetra Tech field staff to conduct visual observations to identify and remove
4 discarded military munitions (DMM) in dredge spoils and debris staged on Trestle 2 (regular
5 materials) or on a flat top barge (larger debris). By their signatures, the undersigned certify this
6 SOP is approved for implementation at NWS Earle and will be used to direct surface clearance
7 and intrusive investigation operations.

8

9 **APPROVED BY:**

10

11

Dave Keller
UXO Operations Manager
(425) 482-7749

Date

Patrick Saveall
Senior UXO Supervisor
TBD

Date

TBD
UXO Environmental Safety Specialist
TBD

Date

12



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

TABLE OF CONTENTS

1.0	PURPOSE.....	1
2.0	SCOPE.....	1
3.0	GENERAL REQUIREMENTS	1
3.1	NOTIFICATION/COORDINATION PROCESS	1
3.2	TRAINING REQUIREMENTS.....	1
3.3	EQUIPMENT/MATERIAL REQUIREMENTS.....	2
3.3.1	Munitions Detection Equipment.....	2
3.3.2	Other Equipment/Materials	3
3.4	DAILY BRIEFING.....	3
3.5	TAIL-GATE BRIEFING	4
3.6	EXCLUSION ZONES.....	4
4.0	OBSERVATION OF STAGED SPOILS/DEBRIS	5
4.1	ANOMALIES OTHER THAN MPPEH.....	7
5.0	REFERENCES.....	8
ATTACHMENT 1	SPOILS/DEBRIS VISUAL SURVEY EQUIPMENT CHECKLIST	
ATTACHMENT 2	VEHICLE CHECKLIST	
ATTACHMENT 3	SPOILS/DEBRIS VISUAL SURVEY ACTIVITIES CHECKLIST	
ATTACHMENT 4	MEC DATA AND ACCOUNTABILITY FORM	
	MEC ACCOUNTABILITY LOG	



1.0 PURPOSE

The purpose of this standard operating procedure (SOP) is to provide specific procedures for observation of dredge spoils/debris staged on Trestle 2 and/or a flat top barge to identify and remove discarded military munitions (DMM) from the material. These materials were generated during construction activities at the new Pier 3 location in the Pier Complex at Naval Weapons Station (NWS) Earle. These procedures will be conducted in accordance with the *Site-Specific Work Plan (SSWP)* (of which this SOP is a part) and the *Site-Specific Health and Safety Plan (HASP)*. In addition, all work will be conducted and managed in accordance with the NWS Earle Operational Risk Management (ORM) Plan and New Jersey Department of Environmental protection (NJDEP) Water Quality Certificate issued for this project.

2.0 SCOPE

This SOP is applicable to all Tetra Tech employees and subcontractors engaged in the visual observation/evaluation of dredge spoils/debris to identify and remove DMM. The SOP including procedures for setup, performance of all observation tasks and recording appropriate data for any DMM or other munitions and explosives of concern (MEC) recovered. Specific requirements are defined for notification, personnel, training, equipment/material and observation activities. MPPEH handling, transportation, and storage and disposition are described in SOP 3.

3.0 GENERAL REQUIREMENTS

3.1 NOTIFICATION/COORDINATION PROCESS

The Senior UXO Supervisor (SUXOS) is responsible for management of all munitions and explosives of concern (MPPEH)-related activities. As the senior UXO qualified manager on site, he will be responsible for proper coordination of activities with project management, the client, and local emergency and support service providers. Before beginning MPPEH operations, the SUXOS will notify security/police, fire, and medical personnel, as well as any other appropriate personnel/organizations per the approved SSWP. The Site Manager and the Navy Point of contact (POC) will be informed of the project schedule and the expected impacts in accordance with the SSWP.

3.2 TRAINING REQUIREMENTS

All personnel working on the site, including subcontractor personnel, will meet the general training and qualifications requirements listed in the SSWP. In addition, personnel will receive training on the site-specific hazards and any supplemental training needed to support safe execution of specific types of MPPEH operations performed. For the observation of dredge



1 spoils/debris staged on Trestle 2 and/or the flat top barge, this supplemental training will
2 include:

3

4 • Equipment Training

5 ○ Gators (or other approved personnel transport vehicles for the trestle)

6 ○ Light Plants

7 ○ Metal detectors

8 ○ Radios/Walkie-Talkies (including approved operating channels)

9 ○ Electronic data recording devices (if used)

10 • Safety Training

11 ○ DMM/MD specific to task

12 ○ Heavy equipment safety (hand signals, areas to avoid, etc.)

13 ○ Crane safety

14 ○ Safety for Work over or near water

15 4.0.1 - The site-specific training will include step-by-step review of all SOPs to ensure that all
16 UXO team members clearly understand the procedures for operation of equipment; conduct of
17 emergency procedures specific to the task and work area; and, data recording.

18 **3.3 EQUIPMENT/MATERIAL REQUIREMENTS**

19 **3.3.1 Munitions Detection Equipment**

20 Metal detectors are optional for this task and will typically not be used due to the copious
21 amounts of metal present in the trestle and barge utilized to stage spoils/debris for visual
22 observation. If detectors are used the procedures in this section will be applicable. All
23 detection equipment used by the observation teams will be initially verified to be working
24 properly by the UXO Environmental Safety Specialist/Quality Control Specialist (UXO ESS/QC)
25 by passing it over an established target location or selected metallic item placed on the ground.
26 The team leaders will verify functionality of the equipment at the beginning of each shift using
27 the same procedure. Detection equipment is limited to Schonstedt ferrous metal detectors that
28 will aid the UXO observation teams in locating potential DMM that may be buried beneath
29 dredge spoils or debris.

30 3.3.1.0.1 - If the equipment requires repair, is new equipment, or is spare equipment, it must be
31 inspected and confirmed operational prior to field use by the UXO ESS/QC.



1 **3.3.2 Other Equipment/Materials**

- 2 • Heavy equipment including mini-excavators and mini-loaders (operated by non-UXO
- 3 Tetra Tech construction staff)
- 4 • Transport vehicles (Gators [or other small personnel transporters] for use on Trestle
- 5 2 and pickup trucks for use on the piers and for transport to and from the site.)
- 6 • Light Plants
- 7 • Communication radios or Walkie-Talkies
- 8 • Rock rakes, garden forks or other appropriate and approved hand tools
- 9 • Non-sparking fiberglass probes
- 10 • Safety and other equipment listed on the Observation Activities Equipment Checklist
- 11 (Attachment 1)

12 3.3.2.0.1 - Each UXO Team Leader will inspect all equipment to be used prior to commencing
13 operations each day to ensure that proper tools and equipment are available and ready to use.
14 The Team Leaders will complete an Observation Activities Equipment Checklist to verify
15 successful completion of the inspection (Attachment 1). The Team Leaders will also complete a
16 Vehicle Inspection Checklist to ensure that site vehicles are kept in good operating condition
17 and are safe to operate. Not all items on this checklist will apply to the Gators (or other small
18 personnel transport vehicles for use on Trestle 2).

19 **3.4 DAILY BRIEFING**

20 At the beginning of each shift, the Shift Supervisor will hold a daily briefing. At a minimum this
21 briefing will include:

- 22 • Work assignments
- 23 • Review of emergency procedures
- 24 • Review of ordnance safety
- 25 • Review of communications procedures and equipment
- 26 • Review of any site-specific hazards and the measures that will be used to mitigate
- 27 those hazards
- 28 • A description of any known utilities in work areas
- 29 • Procedures for coordination of daily activities personnel performing non-MEC
- 30 activities (procedures for ingress and egress of Navy personnel and non-Navy
- 31 contractor on Trestle A1 in the exclusion zone).



1 3.4.0.1 - Other topics that may be discussed, as necessary, including QC, changes to the work
2 schedule, equipment maintenance, exclusion zone locations and set-up, and any issues that
3 may affect the activities being performed that day (or in the near future).

4 3.4.0.2 - During the daily briefing, the Shift Supervisor will also assign selected work sites for
5 each of the UXO teams for transfer observation. The Shift Supervisor will complete the top
6 portion of the DMM Visual Survey Activities Checklist (Attachment 3) and transfer it to the
7 designated UXO Team Leader along with any other supplemental information needed (maps,
8 etc.). The top portion of this checklist verifies that the UXO Team Leader has received the
9 necessary information to support his daily activities including information on utilities that may be
10 present in the work area, and daily briefing and safety information.

11 **3.5 TAIL-GATE BRIEFING**

12 After arriving at the worksite, Team Leaders will conduct a tail-gate safety meeting. The daily
13 briefing may serve as the tailgate briefing if the content covers those additional issues normally
14 reserved for discussion during the tailgate briefing. If the daily briefing is combined with the
15 tailgate meeting it will include:

- 16 • Review of site task assignments for the day
- 17 • Review of instrument function test procedures/requirements (if applicable)
- 18 • Review of task-specific hazards for that site (heavy equipment, work over/near water,
19 cranes)
- 20 • Review of any other task or location specific information needed to safely complete
21 the assigned daily work
- 22 • Review of hand signals or other specialized communications for work near heavy
23 equipment (may not be needed daily)

24 3.5.0.1 - The Team Leader will document the tail-gate briefing on the DMM Visual Survey
25 Activities Checklist.

26 **3.6 EXCLUSION ZONES**

27 The exclusion zone (EZ) is defined as the area where explosive hazard or contamination is
28 either known or likely to be present, or where activity with the potential to cause harm to
29 personnel is occurring. The EZ for all observation operations will initially be 236 feet from the
30 outermost boundaries of the work area. The Team Leaders will establish the EZ boundaries
31 and the UXO ESS/QC will verify that the size of the area is correct. This EZ is based on the
32 hazardous fragment distance of 236 feet for the munition with the greatest fragmentation
33 distance (MGFD) established by the Department of Defense Explosives Safety Board
34 (DDESB)(DOD 2003).



1 Personnel authorized to work within the EZ are as defined in the Essential Personnel and
2 Personnel Limits in Conventional MEC Exclusion Zones as published by the U.S. Army Corps of
3 Engineers (USACE) (USACE 2004). Tetra Tech personnel and other essential personnel will
4 not be allowed in the EZ without the following:

- 5 • Use of the buddy system
- 6 • Personal protective equipment (PPE) in accordance with HASP
- 7 • Medical authorization
- 8 • Training certification
- 9 • Understanding of the HASP
- 10 • Approval of SUXOS

11 An expanded EZ may be required if MPPEH larger than the MGFDF are recovered. The
12 expanded EZ would be established based on the actual fragmentation range of the DMM
13 encountered in accordance with EODB 60A 1-1-4, Protection of Personnel and Property (U.S.
14 Navy 1990); DDESB TP-16 Methodologies for Calculating Primary Fragment Characteristics
15 (DOD 2003); and NAVSEA OP 5, Volume 1, Table 7-9.

16 The Commander of Naval Operations has issued an exception (waiver) for the EZ on this
17 project, Navy and Navy contractor personnel non-essential to the survey operation who require
18 ingress and egress for Trestle 1A, which bi-sects the exclusion zone, for non-ordnance related
19 activities will be allowed to enter the EZ under carefully controlled circumstances (Navy 2006a;
20 Navy 2006b). During ordnance handling operations at the Pier Complex, WMI will station
21 flagmen with approved radios/Walkie-Talkies at either end of the DMM survey/transfer
22 Explosive Safety Quantity Distance (ESQD) arc on the main trestle. The flagmen will stop all
23 placarded ordnance laden conveyances and will notify the SUXOS (or Shift Supervisor if the
24 SUXOS is not on site) to secure MEC operations in order to allow the ordnance conveyances to
25 proceed down Trestle 1A. Once the ordnance vehicles are out of the area, the survey/transfer
26 operation will restart. Ordnance handling operations at the Pier Complex take priority at all
27 times and transit delays of ordnance conveyances will be kept to a minimum. All other vehicles
28 will be allowed to proceed and the flagmen will not be stationed on the main trestle when there
29 are no ordnance handling operations underway. Communications between NWS Earle and the
30 Site Manager and SUXOS team for upcoming pier operations will be critical for efficient/timely
31 DMM operations and to ensure the safety of all personnel utilizing the Pier Complex.

32 **4.0 OBSERVATION OF STAGED SPOILS/DEBRIS**

33 This section contains the specific procedures to be utilized for observation of staged
34 spoils/debris on Trestle 2 and/or flat top barges. All general requirements presented in Section
35 3 will also be met. The observation will be conducted using the following procedures:



- 1 • Transport personnel and equipment to the work areas.
- 2 • Start up the light plants (if applicable) and ensure that they are properly placed to
- 3 provide the required light for off-loading operations.
- 4 • Set up an appropriate EZ for spoils/debris observation operations. The Team
- 5 Leader will establish the EZ and the UXO ESS/QC will verify that the size is correct.
- 6 • Notify the Site Project Office prior to beginning evaluation of spoils/debris for DMM
- 7 (Team Leaders)

8 **Trestle Operations**

- 9 • Station UXO Team (2-person team) on the trestle to observe spoils being spread for
- 10 inspection using the mini earth moving equipment. The technicians will be stationed
- 11 in a safe location at least 25 feet from the point where spoils are being mechanically
- 12 spread. These individual will make the equipment operators aware of their position
- 13 and will maintain line-of-sight contact with the operator at all times. They will not
- 14 enter the swing/working radius of the equipment it is in operation and unsecured.
- 15 Additional heavy equipment safety guidelines are provided in the approved HASP.
- 16 • After each batch of spoils is spread, ensure that the earth moving machinery is
- 17 secured and begin the spoils observation process. Use rock rakes, garden forks or
- 18 other appropriate and approved tools to gently work through and examine the spread
- 19 spoils

20 **Barge Operations**

- 21 • Station UXO Team on the barge where large dredge debris has been staged. This
- 22 team will be teamed with a crane operator to assist in visual observation of all
- 23 materials as needed to identify DMM. The team will use hand tools and visually
- 24 inspect debris for any evidence of DMM. If necessary, the team may request that the
- 25 crane operator move items for better inspection. When the crane is in operation, the
- 26 team will make the crane operator aware of their position and will maintain line-of-
- 27 sight contact with the operator at all times. The team will not enter the swing radius
- 28 of the crane while the crane is in operation and unsecured.

29 **All Operations**

- 30 • If potential MPPEH is observed the UXO technician making the observation will
- 31 immediately stop work. The equipment in operation will be secured (earth moving
- 32 machinery or cranes) and the UXO Team will examine the item(s) observed.
- 33 • Identify potential MPPEH:
 - 34 ○ If the item is found is DMM or other MEC, the UXO Team will determine if the item
 - 35 is safe to move. If so, the item will be transported to the off load point for the work



- 1 area and turned over to the Shift Supervisor. It will be handled in accordance with
2 the procedures in the work plan and SOP 3
- 3 ○ If the item is DMM or other MEC and it is not safe to move the UXO Team will
4 contact the Shift supervisor. The Shift Supervisor will make the proper
5 notifications
 - 6 ○ If the item found is MPPEH and is determined to be free of explosives, it will be
7 placed in an approved container for consolidation of such items. At the end of the
8 shift this container will be removed from the work area and transported to a pre-
9 designated holding area for like items. It will be handled in accordance with the
10 procedures in the work plan and SOP 3.
- 11 ● Record appropriate data for any DMM or other MEC on the MEC Data and
12 Accountability Form (Attachment 4).
 - 13 ● Continue observing operations, stopping as appropriate to inspect suspicious items.
 - 14 ● After each batch of spoils/debris is inspected and deemed free of explosive
15 materials, notify the Shift supervisor. This individual will confirm that all necessary
16 work is complete, coordinate certification of the material in accordance with ESS
17 Revision 1, and notify equipment operators and crane operators, who will stockpile
18 the material and load it back onto scows or barges for transport to the disposal site.
 - 19 ● Notify the Site Project Office when observation operations are complete for on each
20 shift, or when operations are interrupted for any reason.
 - 21 ● Shut down light plants (if appropriate) and secure the work area.
 - 22 ● Transport personnel and equipment off of the trestle and/or barge.

23 The Team Leader will inform the Site Office when observation activities are completed, and will
24 complete the remaining items on the Observation Activities Checklist (Attachment 3) to
25 document successful completion of required activities.

26 All required information must be entered into the data form (electronic or manual) at the time of
27 the surface clearance. All information on the top of the form will be completed in the field by the
28 UXO team. The lower portion of the form will be completed by the Senior UXO Supervisor.
29 These logs contain blocks for tracking the disposition of MPPEH so that status of these
30 items/material can be ascertained at any time. **NOTE: A photograph should be taken of**
31 **each piece of MEC recovered to document the item.** The Observation Activities Checklist
32 (Attachment 3) will be submitted to the SUXOS at the end of each day.

33 **4.1 ANOMALIES OTHER THAN MPPEH**

34 It is possible that hazardous and non-hazardous material other than MPPEH may be located
35 during the off-loading operations, including metal debris, chemicals, and other hazards.



- 1 **Metal Debris**—Metal debris located during the operations will remain in place.
- 2 **Chemicals**—Locating industrial-type chemicals is a possibility during off-loading operations. If
3 any evidence of chemical contamination is detected, all intrusive activities will cease, the UXO
4 Team will leave the area and the team leader will notify the Shift supervisor. The area will be
5 evaluated by the SUXOS and UXOSO. Operations will continue only when it is safe to proceed.
- 6 **Other Hazards**—If sealed drums, contaminated soils, or other suspect materials or conditions
7 that would indicate a potential health or safety hazard are encountered during the off-loading
8 operations, work efforts will cease, the UXO Team will leave the area and the team leader will
9 notify the Shift supervisor. The area will be evaluated by the SUXOS and UXOSO. Operations
10 will continue only when it is safe to proceed and the notification procedures followed.

11 5.0 REFERENCES

- 12 DOD (Department of Defense). 2003. *Methodologies for Calculating Primary Fragment*
13 *Characteristics*. DDESB TP 16, Revision 1. December 1, 2003.
- 14 USACE (U.S. Army Corps of Engineers). 2004. *Essential Personnel and Personnel Limits in*
15 *Conventional MEC Exclusion Zones*. Military Munitions Response Program Center of
16 Expertise Interim Guidance Document 04-01. April 8, 2004.
- 17 U.S. Navy. 2001. *Ammunition and Explosives Ashore: Safety Regulations for Handling,*
18 *Storing, Production, Renovation, and Shipping*. NAVSEA OP 5, Volume 1. Seventh
19 Revision.



ATTACHMENT 1
DMM VISUAL SURVEY EQUIPMENT CHECKLIST



TETRA TECH EC, INC.

DMM VISUAL SURVEY EQUIPMENT CHECKLIST

Basic Equipment (Required for all UXO work)

✓	Quantity	Item Description
<input type="checkbox"/>	1	Air horn
<input type="checkbox"/>	2 rolls	Caution tape
<input type="checkbox"/>	1	Emergency eye wash
<input type="checkbox"/>	1	Fire extinguisher
<input type="checkbox"/>	1	First-Aid Kit
<input type="checkbox"/>	1	Flashlight
<input type="checkbox"/>	1 pair	Gloves, leather (or other approved work gloves)
<input type="checkbox"/>	2	Radios (2-way) or Walkie-Talkies (as approved)
<input type="checkbox"/>	1	Metal detector (See work plan for make and model)
<input type="checkbox"/>	2	Rakes, forks or other approved tools
<input type="checkbox"/>	2	Warning signs for exclusion zone
<input type="checkbox"/>	2 rolls	Tape, duct
<input type="checkbox"/>	2 rolls	Tape, plastic
<input type="checkbox"/>	1	Toolbox, general hand tools
<input type="checkbox"/>	1	Trowel
<input type="checkbox"/>	3	Water bottle, 1 liter
<input type="checkbox"/>	--	Field log book and field forms (as appropriate)

Site-Specific Items (Write in items and quantity)

✓	Quantity	Item Description
<input type="checkbox"/>		_____

Revised April 2006

ATTACHMENT 2
VEHICLE/HEAVY EQUIPMENT INSPECTION CHECKLIST



TETRA TECH EC, INC.

VEHICLE/HEAVY EQUIPMENT INSPECTION CHECKLIST

Project: _____ Equipment Type: _____
 Equipment No. _____ Model: _____
 Manufacturer: _____ Date: _____
 Engine Hrs/Mileage _____ Team Number: _____

Equipment Checklist (Check all that apply and provide description of corrections needed)

	Condition Good	Correction Needed
Steering	_____	_____
Service Brakes	_____	_____
Emergency Brakes	_____	_____
Retarder	_____	_____
Transmission	_____	_____
Controls	_____	_____
Hydraulic Leaks	_____	_____
Exhaust System	_____	_____
Warning Gauges	_____	_____
Windshield	_____	_____
Lights	_____	_____
Mirrors	_____	_____
Seat and Seat Belts	_____	_____
Tires/Tread	_____	_____
Regular Horn	_____	_____
Back-up Alarm	_____	_____
Steps, Hand-holds	_____	_____
Fire Extinguisher	_____	_____
Rollover Cage	_____	_____
Other:	_____	_____
Other:	_____	_____
Remarks:	_____ _____ _____	

Approvals

Operator's Signature (Team Leader):	Date:
SUXOS Signature:	Date:
Equipment Supervisor's Signature (Repairs or Adjustments Completed):	Date:

ATTACHMENT 3

DMM VISUAL SURVEY DAILY ACTIVITIES CHECKLIST



TETRA TECH EC, INC.

DMM VISUAL SURVEY DAILY ACTIVITIES CHECKLIST

Project Information

Project Name:	_____	Date:	_____
Project Location:	_____	Team No.	_____
Work Area:	_____		

SUXOS Checklist items

Name: _____

Check Items Complete

- Conduct daily briefing (safety, emergency procedures, munitions information, etc.).
- Notify team leader of utilities or other dangers. _____
- Assign work area and provide data package.

UXO Team Leader Checklist Items

Name: _____

Check Items Complete

- Ensure that all necessary data have been provided by the SUXOS for daily operations.
- Conduct vehicle inspection.
- Conduct tailgate safety briefing.
- Perform equipment inspections and operational tests (record in log book).
- Verify daily heavy equipment inspection.
- Identify known utilities.
- Ensure that work area is secure as required (road closures, exclusion zone set up, etc.).
- Notify site office of start time for ordnance operations.
- Ensure that all required data have been recorded (data sheets, log books, photo log, etc.).
- Ensure that site restoration required is complete.
- Notify site office of stop time for ordnance operations.

Approvals

SUXOS Signature:	_____	Date:	_____
UXOQC Signature :	_____	Date :	_____

ATTACHMENT 4
MEC DATA AND ACCOUNTABILITY FORM
MEC ACCOUNTABILITY LOG



TETRATECH EC, INC.

MEC DATA AND ACCOUNTABILITY FORM

FOR UXO TEAM USE

Site Name: NWS Earle, Leonardo, New Jersey

Team Leader:

Grid or Lane Number:

Work Area:

Date:

Location: X (Lat): _____ Y (Long): _____ Location Type (UW or UG): _____

Other Location Information: _____

Depth (feet): _____ Inclination (Degrees): _____ Orientation (N-S, E-W): _____

TARGET/ANOMALY CHARACTERISTICS

Type of Target/Find: Surface Find Mag & Dig Target Primary Geo Target Validation (QA/QC) No Dig

Type of Anomaly: UXO MEC Inert Practice MC (waste) MD (scrap) Metal Waste

No Find Rock Rust Layer Oxidation Misc.: _____

Diameter/Width:

Length:

Estimated Weight:

DIGITAL PHOTO RECORD

Was photo taken? Yes No

Camera No.:

Frame No.:

File Name:

MUNITIONS NOMENCLATURE (If Known, Record Below and record fuze condition and disposition)

Munitions Mark/Mod:

Fuze Mark/Mod:

N.E.W. Total:

Nose: _____ Tail: _____

Transverse: _____ Casing: _____

MUNITIONS CHARACTERISTICS

Munitions Filler: Explosive Inert Propellant Pyrotechnic Unknown Other: _____

Munitions Category: Depth Charges Land Mine Projectiles Sea Mines

Bombs Grenades Misc. Explosive Devices Pyrotechnics and Flares Small Arms

Clusters/Dispensers Guided Missiles Mortars Rockets Torpedoes

FUZE CHARACTERISTICS

Fuze Location(s) (check all that apply):

Nose Tail Transverse Casing

Breaks in Fuze Body?

Yes No

Fuze Markings:

Fuzing Type(s): Hydrostatic MT Long Delay Powder Train Time Fuze Nose MT/Tail Impact Inertia

All-ways Acting Impact MT Superquick Pressure Pt-initiating -Base-detonating

Base Detonating Influence Piezo-Electric Proximity (VT)

Electric Mech Time (MT) Point Detonating (PD) Nose MT/Tail Pressure

Fuze Length:

Fuze Diameter:

Diameter of Fuze Well:

MEC STATUS & PHYSICAL CONDITION (Check all that apply)

Armed

Unarmed

Fired

Unfired

Intact

Broken Open

Filler Visible

Soil Staining

FOR SUXOS USE

Disposition: (Clarify Under Remarks)

Transferred Transported Left In Place Destroyed BIP Other : _____

Date:

Client Notifications By:

Signature:

Date

Transferred To:

Signature:

Date:

Destroyed By:

Signature

Date:

Remarks:

SUXOS Signature:

Date:

**SOP 3
STANDARD OPERATING PROCEDURE
FOR
MANAGEMENT AND ACCOUTABILITY FOR DMM**

**CONSTRUCTION SUPPORT
DISCARDED MILITARY MUNITIONS VISUAL SURVEY OPERATIONS
at
NAVAL WEAPONS STATION EARLE
Leonardo, New Jersey**

TETRA TECH

JUNE 2006

1 **APPROVALS**

2 This Standard Operating Procedure (SOP) contains the procedures and other information that
3 will be needed by Tetra Tech field staff to handle, transport and manage materials potentially
4 posing an explosive hazard (MPPEH) that are recovered during visual observation
5 (examination) of dredge spoils and debris generated during construction of the new Pier 3 at
6 NWS Earle. By their signatures, the undersigned certify this SOP is approved for
7 implementation at NWS Earle and will be used to direct MPPEH handling and management.

8
9 **APPROVED BY:**

10
11

Dave Keller
UXO Operations Manager
(425) 482-7749

Date

Patrick Saveall
Senior UXO Supervisor
TBD

Date

TBD
UXO Environmental Safety Specialist
TBD

Date



TABLE OF CONTENTS

1			
2			
3	1.0	PURPOSE.....	1
4	2.0	SCOPE.....	1
5	3.0	GENERAL REQUIREMENTS	1
6	3.1	NOTIFICATION/COORDINATION PROCESS	1
7	3.2	TRAINING REQUIREMENTS.....	1
8	3.3	EQUIPMENT/MATERIAL REQUIREMENTS.....	2
9	3.3.1	Transport Vehicles and Containers	2
10	3.3.2	Other Equipment/Materials	2
11	3.4	DAILY BRIEFING.....	3
12	3.5	TAIL-GATE BRIEFING	3
13	3.6	EXCLUSION ZONES.....	4
14	4.0	MPPEH HANDLING	5
15	5.0	MPPEH INSPECTION.....	6
16	5.1	INSPECTORS.....	7
17	5.2	TRANSPORT OF MPPEH	7
18	5.2.1	Vehicle Operator Requirements	8
19	5.2.2	Vehicle Attendant Requirements	8
20	5.2.3	General Transport Requirements	9
21	5.2.4	Smoking.....	10
22	5.2.5	Fires.....	10
23	5.2.6	Accidents Involving Explosives.....	10
24	5.2.7	Vehicle Requirements.....	10
25	5.2.8	Vehicle Inspections.....	11
26	5.2.9	Placarding.....	12
27	5.2.10	Loading and Unloading.....	13
28	5.2.11	Transporting Explosives with ATVs	13
29	5.3	STORAGE OF MPPEH.....	14
30	5.3.1	Storage Requirements, Restrictions and Housekeeping	14
31	5.3.2	Placarding and Marking.....	15



1	5.4	RECORD KEEPING/ACCOUNTABILITY FOR MPPEH	16
2	5.4.1	Accountability for Explosive MPPEH Items	16
3	5.4.2	Accountability for MPPEH Certified Explosive Free	16
4	6.0	REFERENCES.....	17
5			
6	ATTACHMENT 1	MAGAZINE INSPECTION CHECKLIST	
7	ATTACHMENT 2	MEC DATA AND ACCOUNTABILITY FORM	
8	ATTACHMENT 3	MEC ACCOUNTABILITY LOG	
9	ATTACHMENT 4	RSL/CONTAINER INVENTORY FORM	
10			
11			



1.0 PURPOSE

The purpose of this standard operating procedure (SOP) is to provide specific procedures for handling and management of materials potentially posing an explosive hazard (MPPEH) that is recovered from dredge spoils/debris staged on Trestle 2 and/or a flat top barge. The spoils are anticipated to contain discarded military munitions (DMM) and may contain other munitions and explosives of concern (MEC), as well as munitions constituents (MC) or munitions debris (MD). These procedures will be conducted in accordance with the *Site-Specific Work Plan* (SSWP) (of which this SOP is a part) and the *Site-Specific Health and Safety Plan* (HASP). In addition, all work will be conducted and managed in accordance with the NWS Earle Operational Risk Management (ORM) Plan and New Jersey Department of Environmental protection (NJDEP) Water Quality Certificate issued for this project.

2.0 SCOPE

This SOP is applicable to all Tetra Tech employees and subcontractors engaged in the handling or management of MPPEH. The SOP including procedures for identification, transport, storage and turnover of items to the NWS Earle, as appropriate for disposal and disposition. Specific requirements are defined for notification, personnel, training, equipment/material and data recording/tracking.

3.0 GENERAL REQUIREMENTS

3.1 NOTIFICATION/COORDINATION PROCESS

The Senior UXO Supervisor (SUXOS) is responsible for management of all MPPEH-related activities. As the senior UXO qualified manager on site, he will be responsible for proper coordination of activities with project management, the client, and local emergency and support service providers. Before beginning MPPEH handling operations, the SUXOS will notify security/police, fire, and medical personnel, as well as any other appropriate personnel/organizations per the approved SSWP. The Site Manager and the Navy Point of contact (POC) will be informed of the project schedule and the expected impacts in accordance with the SSWP.

3.2 TRAINING REQUIREMENTS

All personnel working on the site, including subcontractor personnel, will meet the general training and qualifications requirements listed in the SSWP. In addition, personnel will receive training on the site-specific hazards and any supplemental training needed to support safe execution of specific types of MPPEH operations performed. For the handling and management of MPPEH this supplemental training will include:

- Procedures



- 1 ○ Inspection and identification of MPPEH
- 2 ○ Transport of munitions and explosives of concern (MEC) specific to each work
- 3 area and the storage site
- 4 ○ Storage procedures
- 5 ○ Inventory procedures (as needed)
- 6 ○ Turnover procedures (as needed)
- 7 ○ Handling of non-explosive Munitions constituents (MC) and Munitions debris (MD)
- 8 ● Safety Training
- 9 ○ DMM/MD specific to task
- 10 ○ Handling and transport of MEC
- 11 ○ Crane safety
- 12 ○ Safety for Work over or near water

13

14 The numbering below is incorrect or out of sequence

15 3.2.0.1 - The site-specific training will include step-by-step review of all SOPs to ensure that all
16 UXO team members clearly understand the procedures for operation of equipment; conduct of
17 emergency procedures specific to the task and work area; and, data recording.

18 **3.3 EQUIPMENT/MATERIAL REQUIREMENTS**

19 **3.3.1 Transport Vehicles and Containers**

20 The vehicles used to transport MPPEH include the Gators (or other small personnel transport
21 vehicles for the trestle) and pickup trucks. In addition, wooden transport boxes or buckets of
22 sand will be needed to secure MPPEH during transport. The Team Leaders will complete a
23 Vehicle Inspection Checklist as part of their daily routine for ME work at the project site.
24 Vehicles used to transport MPPEH will also be subjected to the inspection procedures in this
25 SOP to ensure that they safe and suitable for transporting explosive items (See Section 5.2.7).
26 Safety inspections will be documented on the Vehicle Inspection Checklist (See SOP 1) and in
27 the UXO ESS/QC logbook as appropriate.

28 **3.3.2 Other Equipment/Materials**

- 29 ● Ready Storage Locker(s) – Provided by NWS Earl
- 30 ● Fencing for the non-explosive MPPEH storage area
- 31 ● Drums for storage of non-explosive MPPEH



1 **3.4 DAILY BRIEFING**

2 At the beginning of each shift, the Shift Supervisor will conduct a daily briefing.

3 At a minimum this briefing will include:

- 4 • Work assignments
- 5 • Review of emergency procedures
- 6 • Review of ordnance safety
- 7 • Review of communications procedures and equipment
- 8 • Review of any site-specific hazards and the measures that will be used to mitigate
- 9 those hazards
- 10 • A description of any known utilities in work areas
- 11 • Procedures for coordination of daily activities personnel performing non-MEC
- 12 activities (procedures for ingress and egress of Navy personnel and non-Nay
- 13 contractor on Trestle A1 in the exclusion zone).
- 14 • Review of MPPEH management procedures as necessary and appropriate

15 3.4.0.1 - Other topics that may be discussed, as necessary, including QC, changes to the work
16 schedule, equipment maintenance, exclusion zone locations and set-up, and any issues that
17 may affect the activities being performed that day (or in the near future). The briefing will be
18 documented per the instructions in SOPs 1 and 2.

19 **3.5 TAIL-GATE BRIEFING**

20 After arriving at the worksite, Team Leaders will conduct a tail-gate safety meeting. The daily
21 briefing may serve as the tailgate briefing if the content covers those additional issues normally
22 reserved for discussion during the tailgate briefing. If the daily briefing is combined with the
23 tailgate meeting it will include:

- 24 • Review of site task assignments for the day
- 25 • Review of instrument function test procedures/requirements (if applicable)
- 26 • Review of task-specific hazards for that site (heavy equipment, work over/near water,
- 27 cranes)
- 28 • Review of any other task or location specific information needed to safely complete
- 29 the assigned daily work
- 30 • Review of hand signals or other specialized communications for work near heavy
- 31 equipment (may not be needed daily)
- 32 • Review of MPPEH management procedures as necessary and appropriate



1 3.5.0.1 - The briefing will be documented per the instructions in SOPs 1 and 2..

2 **3.6 EXCLUSION ZONES**

3 The exclusion zone (EZ) is defined as the area where explosive hazard or contamination is
4 either known or likely to be present, or where activity with the potential to cause harm to
5 personnel is occurring. The EZ for all observation operations will initially be 236 feet from the
6 outermost boundaries of the work area. The Team Leaders will establish the EZ boundaries
7 and the Shift Supervisor or UXOSO will verify that the size of the area is correct. This EZ is
8 based on the hazardous fragment distance of 236 feet for the munition with the greatest
9 fragmentation distance (MGFD) established by the Department of Defense Explosives Safety
10 Board (DDESB)(DOD 2003).

11 Personnel authorized to work within the EZ are as defined in the Essential Personnel and
12 Personnel Limits in Conventional MEC Exclusion Zones as published by the U.S. Army Corps of
13 Engineers (USACE) (USACE 2004). Tetra Tech personnel and other essential personnel will
14 not be allowed in the EZ without the following:

- 15 • Use of the buddy system
- 16 • Personal protective equipment (PPE) in accordance with HASP
- 17 • Medical authorization
- 18 • Training certification
- 19 • Understanding of the HASP
- 20 • Approval of SUXOS

21 An expanded EZ may be required if MPPEH larger than the MGFD are recovered. The
22 expanded EZ would be established based on the actual fragmentation range of the DMM
23 encountered in accordance with EODB 60A 1-1-4, Protection of Personnel and Property (U.S.
24 Navy 1990); DDESB TP-16 Methodologies for Calculating Primary Fragment Characteristics
25 (DOD 2003); and NAVSEA OP 5, Volume 1, Table 7-9.

26 The Chief of Naval Operations has issued an exception (waiver) for the EZ on this project,
27 Navy and Navy contractor personnel non-essential to the survey operation who require ingress
28 and egress for Trestle 1A, which bi-sects the exclusion zone, for non-ordnance related activities
29 will be allowed to enter the EZ under carefully controlled circumstances (Navy 2006a; Navy
30 2006b). During ordnance handling operations at the Pier Complex, WMI will station flagmen
31 with approved radios/Walkie-Talkies at either end of the DMM survey/transfer Explosive Safety
32 Quantity Distance (ESQD) arc on the main trestle. The flagmen will stop all placarded ordnance
33 laden conveyances and will notify the SUXOS to secure MEC operations in order to allow the
34 ordnance conveyances to proceed down Trestle 1A. Once the ordnance vehicles are out of the
35 area, the survey/transfer operation will restart. Ordnance handling operations at the Pier
36 Complex take priority at all times and transit delays of ordnance conveyances will be kept to a



1 minimum. All other vehicles will be allowed to proceed and the flagmen will not be stationed on
2 the main trestle when there are no ordnance handling operations underway. Communications
3 between NWS Earle and the UXO PM and SUXOS team for upcoming pier operations will be
4 critical for efficient/timely DMM operations and to ensure the safety of all personnel utilizing the
5 Pier Complex

6 **4.0 MPPEH HANDLING**

7 MPPEH is material that is not known with certainty to present an explosive hazard, but may
8 contain hidden or small amounts of explosive material. MPPEH must be assumed to present an
9 explosive hazard until it is visually inspected and/or processed, and certified safe. Site
10 personnel shall take all actions necessary to ensure that MPPEH that is either transferred within
11 or released from DoD control is either (a) initially 100 percent inspected and independently re-
12 inspected, or (b) processed by DDESB approved means with appropriate post-processing
13 inspection (e.g. sampling); and for which the explosive safety status is documented as either
14 safe or hazardous. Handling requirements for MPPEH may vary by site, but generally include:

- 15 • Locations used for collected MPPEH processing operations (e.g. consolidation,
16 inspection, sorting, storage, treatment, transfer, and release) shall be sited as an ES
17 (exposed site) at not less than the ILD (intra-line distance) from surrounding PES
18 (potential explosion sites). MPPEH not documented as safe, or documented as
19 hazardous shall be sited as a PES.
- 20 • Siting approval is not required for locations on operational ranges that are used
21 temporarily during range clearance activities for intermediate management of
22 collected MPPEH prior to transfer to a MPPEH processing point. Ensure MPPEH
23 collection points are located so their ESQD (Explosive Safety Quantity Distance)
24 arcs, based on hazard classification and NEW (Net Explosive Weight), remain within
25 the operational range's impact area and buffer zones.
- 26 • The responsible party must maintain an accurate inventory and chain of custody at
27 all times.
- 28 • The responsible party must inspect MPPEH and document as safe or hazardous.
29 Attachment 1 provides guidance and definitions to assist with further classification as
30 MEC, MC or MD.

31 On Navy sites the material must also be classified as to the degree of explosion hazard. Items
32 will be classified as:

- 33 • 5X - entirely safe
- 34 • 3X – material that is expected to be free of explosives, but not enough information is
35 available to certify it safe. 3X material is MPPEH.



- 1 • For MPPEH going to DRMO the first signature (certifier) may be either qualified DoD
2 personnel or qualified contractor personnel. The second Signature (verifier) must be
3 a technically qualified DoD person, and U.S. citizen.
- 4 • The certification and verification signatures must be directly above the typed or
5 clearly stamped or legibly printed full name, rank/rate, complete organization name
6 and address, and phone number (commercial and DSN) of the personnel that
7 certified and verified the inspection. Each generating activity shall ensure that its
8 servicing DRMO has a current list of the personnel (and their sample signatures)
9 who are qualified and authorized to inspect, certify and verify MPPEH.

10 **5.1 INSPECTORS**

11 Personnel who inspect, re-inspect, and document MPPEH as safe, or MPPEH as hazardous
12 shall:

- 13 • Be trained in the recognition and safe handling of used or unused military munitions
14 and/or specific types of MPPEH.
- 15 • Be trained in demilitarization and trade security procedures that apply to all material
16 that is to be released from DoD control.
- 17 • Be trained in identification, management (e.g. marking, segregating, storing), and
18 processing of MPPEH.
- 19 • Demonstrate or provide proof of adequate training and experience in the recognition
20 and safe handling of used and unused military munitions and other MPPEH, and in
21 the processing of MPPEH.
- 22 • Be certified in conformance with contract requirements by the DoD component
23 directly responsible for controlling the transfer or release of MPPEH as being
24 technically qualified to perform such functions.

25 **5.2 TRANSPORT OF MPPEH**

26 Transport of MPPEH will be limited to conveying MPPEH from the work areas to the RSL or the
27 designated storage container for MPPEH, depending on whether the items are designated as
28 explosive or explosive free. Tetra Tech will not transport MPPEH out of the Pier Complex or on
29 public roadways at any time.

30 Transport vehicles will vary depending on the location where MPPEH is found. Ingress/egress
31 for work areas on the north end of Trestle 2 is via a gangway near Section 23 of the trestle.
32 Explosive MPPEH found in these northern work areas will be transported to the gangway using
33 Gators or other small personnel transport vehicles. The MPPEH will be placed in a wood-lined
34 box or bucket of sand for transport. This container will be off-loaded over the gangway and
35 placed in a pickup truck or other designated vehicle for transport along the main Trestle to the



1 RSL. Ingress/egress for the southern work area on Trestle 2 is via the direct connection to the
2 main trestle (i.e., the crews in this area can drive a pickup truck directly to the work area.
3 Explosive MPPEH found in this area will be loaded directly into the pickup for transport to the
4 RSL. The pickup will have a wood-lined bed or the MPPEH will be placed in a wood-lined box
5 or bucket of sand for transport.

6 Items certified to be explosive free (non-explosive MC and MD) will be consolidated in buckets
7 or other containers at the work areas. At the end of each shift these containers will be
8 transported to a designated storage area near the RSL using the same types of vehicles used
9 for transport of explosive items; however, it will not be necessary for these items to be in wood-
10 lined boxes or buckets of sand.

11 All MPPEH, regardless of explosive status, will be secured during transport.

12 **5.2.1 Vehicle Operator Requirements**

13 Tetra Tech personnel operating vehicles transporting explosive MPPEH items (DMM or other
14 MEC) will meet following guidelines:

- 15 • The driver will be properly licensed and not be an unlawful user of or addicted to
16 alcohol, narcotics, or other dangerous drugs.
- 17 • The driver will report to his supervisor when taking any medication, regardless if
18 prescription or over the counter medication.
- 19 • The driver will inspect the transport vehicle prior to loading and transporting Class 1
20 materials.
- 21 • The driver will be familiar with applicable local, state and federal laws and
22 regulations governing the transportation of explosive materials.
- 23 • The licensed person or another qualified employee will attend the vehicle
24 transporting Class/Division (C/D) 1.1, 1.2 or 1.3 materials at all times.

25 **5.2.2 Vehicle Attendant Requirements**

26 A vehicle attendant will:

- 27 • Be physically in or on the vehicle, or have it within his field of vision and be able to
28 reach it quickly without any interference.
- 29 • Be awake and alert and not engaged in other duties or activities that divert his
30 attention from the vehicle.
- 31 • Be aware of the C/D explosive materials in the motor vehicle and its inherent
32 dangers.



- 1 • Be aware of the measures and procedures to be followed in order to protect the
- 2 public from such inherent dangers.
- 3 • Be familiar with the vehicle he is assigned to attend.
- 4 • Be trained, authorized and capable of moving the vehicle when required.

5 **Exception to the above attendant requirements:** a vehicle laden with Class 1 materials may
6 be left unattended if parked in a "safe haven" in accordance with the provisions of 49 CFR Part
7 397.

8 **5.2.3 General Transport Requirements**

9 When transporting explosives or any hazardous material, it will be properly and accurately
10 documented on shipping papers in accordance with 49 CFR Part 172.

11 **5.2.3.1 Emergency Response Information**

12 The driver will have the following information as required by 49 CFR Part 172, Subpart G:

- 13 • Immediate hazard to life and health.
- 14 • Risks of fire or explosion.
- 15 • Immediate precautions to be taken in the event of an accident/incident.
- 16 • Immediate methods for handling fires.
- 17 • First aid measures.
- 18 • An emergency response phone number.

19 **5.2.3.2 Written Route Plan**

20 The driver will have a written route plan that includes all routes to be followed for the
21 transportation of explosives.

22 **5.2.3.3 Reference Materials for Transport**

23 The driver will have the following materials for reference:

- 24 • Copy of 49 CFR Part 397
- 25 • This Procedure
- 26 • Emergency Response Guidebook
 - 27 ○ Transportation of Hazardous Materials.
 - 28 ○ Driving and Parking Rules, and
 - 29 ○ Federal Motor Carrier Safety Regulations.



1 **5.2.3.4 State and Local Explosive and Hazmat Transportation Permits**

2 The driver will have all state and local explosive and hazardous materials transportation permits,
3 if applicable.

4 **5.2.4 Smoking**

5 No person will smoke or carry a lighted cigarette, cigar or pipe on or within 25 feet of a motor
6 vehicle that contains Class 1 material.

7 **5.2.5 Fires**

8 A motor vehicle containing hazardous material will not:

- 9 ○ Be operated near an open fire unless the driver has first taken precautions to
10 determine he can pass the fire safely, without stopping.
11 ○ Be parked within 300 feet of an open fire.

12 **5.2.6 Accidents Involving Explosives**

13 In the event of an accident involving any motor vehicle transporting explosives:

- 14 • Every means available will be employed to prevent unnecessary persons from
15 congregating at the accident scene. Unnecessary persons include: those not
16 employed in the protection of people and property, those not needed for the removal
17 of hazards or wreckage or those not responsible for the cargo.
- 18 • The same means will be used to prevent people from smoking, to keep flames away,
19 to safeguard against the aggravation of the hazards at hand and to warn others.
- 20 • In the event any vehicle carrying dangerous explosive materials is entangled with
21 another vehicle or structure, no attempt will be made to disentangle the wreckage
22 until the explosive material and fragments of the material are removed and placed at
23 least 200 feet from the wreckage and any habitation.
- 24 • In the event of a fire involving carrying explosive material, every effort should be
25 made to give a warning of danger of explosion to habitants in the vicinity and other
26 users of the highway. Employees should attempt to fight the fire, with the fire fighting
27 equipment readily available, until such a time as the fire reaches the compartment
28 the explosives are contained in and possible detonation is imminent.

29 **5.2.7 Vehicle Requirements**

30 The following requirements apply to vehicle used to transports explosive materials. Section
31 5.2.10 contains criteria for transporting explosive materials using ATVs such as the Gators
32 proposed for this project.



- 1 • Vehicles used for the transportation of explosive will be strong enough to carry the
2 load.
- 3 • Be in good mechanical condition.
- 4 • Have tight floors.
- 5 • When a vehicle, with an open body (pick-up), transports explosive materials, they will
6 be loaded into a portable magazine or closed container and that portable magazine
7 or container will be securely fastened to the truck bed and protected from the
8 elements with a fire resistant tarpaulin, or metal camper type shell with a locking
9 access opening.
- 10 • Any exposed spark producing metal on the inside of the body, portable magazine, or
11 closed container, will be covered with wood or other non-sparking material to prevent
12 contact with the explosive material. Exposed spark producing metal need not be
13 covered in a vehicle transporting blasting agents and/or oxidizing agents.
- 14 • Each motor vehicle transporting explosive material will be equipped with fire
15 extinguisher as follows:
 - 16 ○ Trucks of less than 14,000 lbs. GVW rating: Minimum of 2 extinguishers with a
17 total fire extinguisher rating of at least 4-A: 70-B: C
 - 18 ○ Trucks over 14,000 lbs. GVW rating and tractor semi-trailer units: Two or more
19 extinguishers with a total fire extinguisher rating of at least 4-A: 70-B: C
 - 20 ○ Only extinguishers listed or approved by a nationally recognized fire equipment-
21 testing laboratory will be used on vehicles carrying explosive materials. They will
22 be designed, constructed and maintained to permit visual determination of
23 whether they are fully charged.
 - 24 ○ Extinguishers will be located where they are accessible for immediate use.
 - 25 ○ Extinguishers will be examined and recharged periodically in accordance with the
26 manufacturer recommendations, and
 - 27 ○ Where trucks are operated in temperatures below 0 degrees Celsius, dry powder
28 extinguishers will be pressurized with nitrogen gas.

29 **5.2.8 Vehicle Inspections**

30 The following criteria apply to inspection of vehicles used to transport explosive materials:

- 31 • A motor vehicle for transporting explosive materials will be inspected each day
32 before use to determine it is in proper condition for the safe transportation, including:
- 33 • The fire extinguishers are charged and ready for use.



- 1 • All electrical wiring is protected and fastened to prevent short-circuiting.
- 2 • Chassis, motor, pan and underside of body is reasonably clean and free of excess
- 3 oil and grease.
- 4 • Fuel tanks, feed lines and crossover lines are secure and have no leaks.
- 5 • Brakes, lights, horns, windshield wipers, and defrosters, and steering apparatus are
- 6 functioning properly.
- 7 • Tires have proper inflation and are free of defects.
- 8 • Tires will be checked for proper inflation and general conditions after each 2 hours of
- 9 travel or 100 miles, whichever comes first, and at every stop. Flat or overheated
- 10 tires will be removed from the vehicle immediately. After removal of the tire, it will be
- 11 placed far enough away from the vehicle so that spontaneous ignition of the tire will
- 12 not endanger the vehicle or its cargo. The tire will not be placed on the vehicle until
- 13 it has cooled down below the danger level, nor will it be used again until the cause of
- 14 its overheating has been corrected.
- 15 • No metal, tools, oils, matches, firearms, batteries, flammable substances, acids,
- 16 oxidizing materials or corrosive compounds will be carried on the body of any motor
- 17 vehicle transporting explosive materials except as permitted by regulations of the
- 18 U.S. Department of Transportation.

19 **5.2.9 Placarding**

20 The following requirements apply to placarding for transport of explosive materials:

- 21 • Motor vehicles, when used for transporting any quantity of explosive materials over a
- 22 public highway, will display the placards and markings required by 49 CFR 172.500
- 23 Subpart F.
- 24 • Before a placarded vehicle transports explosive materials over public roads a DOT
- 25 Hazmat security plan must be in the driver's possession.
- 26 • Placard vehicles transporting explosive material on both sides and the front and rear.
- 27 • When mixed loads are transported, display the placards for the most hazardous
- 28 cargo.
- 29 • Explosive placards will be diamond shape and measure 10-3/4 inches on each side.
- 30 The placards will be orange with a white border and the symbol and print will be
- 31 black.
- 32 • Further information on class, division, segregation and compatibility of explosive
- 33 material can be found in 49 CFR 177.848, and 49 CFR 172.504.



1 **5.2.10 Loading and Unloading**

2 The following provisions apply to loading and unloading explosive materials:

- 3 • Load hazardous materials in accordance with the compatibility and segregation
4 tables in 49 CFR 177.848.
- 5 • No bale hooks or other metal tools will be used for the loading, unloading or handling
6 of explosives.
- 7 • No package, or other container of explosives, except barrels or kegs, will be rolled.
- 8 • No package of explosives will be dropped or thrown.
- 9 • Special care will be exercised to ensure packages or containers of explosive material
10 will not catch fire from sparks or hot gasses from the vehicle exhaust tailpipe.

11 **5.2.11 Transporting Explosives with ATVs**

12 The following provisions apply to transport of explosive materials with an ATV or other similar
13 small transport vehicles:

- 14 • Operators must be trained in the operation of ATVs.
- 15 • Never transport explosives with a two-wheeled vehicle, or a Type 1 ATV (handle
16 bars and one seat, without roll cage).
- 17 • Thoroughly inspect ATVs and correct all deficiencies before transporting explosives.
18 ATVs must be clean and in good mechanical condition.
- 19 • Equip ATVs with approved spark arrestors and a portable fire extinguisher.
- 20 • Do not exceed the manufacturer's load rating and in no case will the weight of the
21 explosives exceed 50 pounds.
- 22 • Never transport blasting caps on the same ATV with other explosives, unless
23 contained within a MK-663 container.
- 24 • Explosives will be packaged in the original or equivalent containers and be properly
25 secured in the cargo equipment.
- 26 • If placarding is required use scaled down placards if necessary to fit the space that is
27 available.
- 28 • During lightning storms park the ATV and move all personnel a safe distance away.
- 29 • Do not operate radios while transporting electric blasting caps on an ATV. Check
30 the safe transmitting distances for the radios being utilized.



- 1 • Keep explosives away from sources of electricity, heat or flames, radio frequency
2 and static electricity.

3 **5.3 STORAGE OF MPPEH**

4 Explosive MPPEH recovered during this project will be stored in a Ready Service Locker (RSL)
5 provided by NWS Earle. There will be one RSL located at the southwest corner of abandoned
6 Trestle 2 where the screening of dredge spoils will take place). A second RSL will be placed on
7 the flat top barge where over sized materials/debris will be inspected. The placement of these
8 RSLs and the associated EQSD are presented in the approved explosive safety submission
9 (ESS). The provisions that govern the operation and inspection of these lockers are discussed
10 in the following sections.

11 Non-explosive MPPEH will be stored in drums or other approved containers staged in a secure
12 fenced area near the RSL on the Trestle. The Shift Supervisors will maintain control of the
13 secure storage area.

14 **5.3.1 Storage Requirements, Restrictions and Housekeeping**

15 For magazines on DoD sites, the explosive limits and storage compatibility requirements will be
16 in the magazine siting document or the Explosive Safety Submission (ESS). For this project,
17 the explosive limit for the RSLs has been set at 100 lbs. NEW. DMM and other MEDC will be
18 stored up to that limit observing the following requirements:

- 19 • Explosive materials must not be stored against the interior walls and must not
20 interfere with ventilation.
- 21 • Metal containers must never be opened inside or within 50' of a magazine (RSL).
- 22 • All tools used in or near a magazine must be non-sparking.
- 23 • Smoking, matches or any other spark producing devices are not permitted in any
24 magazine, within 50' of any outdoor magazine, or within any room containing an
25 indoor magazine.
- 26 • Magazines must be kept clean, dry and free of trash. Floors (the interior) should be
27 swept regularly or wiped down regularly. All utensils used to clean and maintain
28 magazines must have no spark producing metal parts and may be stored in the
29 magazine.
- 30 • Floors stained with leakage from explosive materials should be cleaned according to
31 instructions of the explosive manufacturer.
- 32 • The area surrounding magazines should be kept clear of rubbish, brush, dry grass
33 and trees for 25' in all directions.
- 34 • Volatile materials are to be kept at least 50' from outdoor magazines.



1 **5.3.2 Placarding and Marking**

2 On DoD installations the firefighting symbol of the most hazardous material present is required
3 outside the storage site. Unless there are security concerns regarding the public identification
4 of the magazine' s contents, a placard must be displayed on the magazine door, and/or down
5 the access road if visibility to the magazine is obstructed. If all material in a storage area is
6 covered by one fire symbol, it may be posted at the entry, control point or access road. If
7 security concerns preclude the use of placarding to identify the contents of a magazine, ensure
8 that appropriate means are put in place for identifying the contents in the event of an emergency
9 or other such need.

10 Any person storing explosive material shall inspect those magazines at least every seven days.
11 This inspection does not need to be an inventory, but must be sufficient to determine if there
12 has been unauthorized or attempted entry into the magazine, or unauthorized removal of any of
13 the contents of the magazine.

14 Ensure all required placarding, explosive limits and safety precautions are posted and that
15 conditions in the magazine are in compliance with the posted requirements. Magazines will be
16 inspected in accordance with requirements established in SB 742-1. Inspection procedures will
17 consider:

- 18 • housekeeping;
- 19 • fire hazards, fire breaks and fire protection equipment;
- 20 • compatibility of contents;
- 21 • net explosive weight limits;
- 22 • grounding system and lightning protection;
- 23 • security systems;
- 24 • contents identification, arrangement, and segregation;
- 25 • posting of fire, chemical hazard and safety information, and explosive limits;
- 26 • first aid equipment;
- 27 • unnecessary combustible material;
- 28 • abnormal odors, thermometer condition and log (if installed);
- 29 • evidence of tampering, forced entry, or sabotage;

30 Magazine inspection and results should be recorded on the Magazine Inspection Checklist
31 (Attachment 1). Changes in the physical condition of the magazine (leaks, seepage, crumbling
32 concrete, etc.) will be annotated on this form.



1 **5.4 RECORD KEEPING/ACCOUNTABILITY FOR MPPEH**

2 The following sections present the requirements/procedures for accountability of explosives.
3 These requirements/procedures will apply to the management of all recovered MPPEH at NWS
4 Earle.

5 **5.4.1 Accountability for Explosive MPPEH Items**

6 Explosive MPPEH items found during observation of dredge spoils/debris, or MPPEH items that
7 cannot be certified explosive free, will be documented and tracked throughout the project using
8 the following records:

9

- 10 • MEC DATA AND ACCOUNTABILITY FORM
- 11 • MEC ACCOUNTABILITY LOG
- 12 • RSL INVENTORY CARD

13 The MEC Data and Accountability Form (Attachment 2) will be used by the field teams to record
14 pertinent information regarding the status and condition of all explosive MPPEH items found. In
15 addition, this form will be used to track the transfer of MPPEH from the team to the Shift
16 Supervisor and ultimately to the NWS Earle explosive ordnance disposal (EOD) team for
17 disposition. MPPEH will not be turned over to EOD until EOD personnel have signed off on the
18 accountability form and accepted custody of the MPPEH.

19 The MEC Accountability Log (Attachment 3) is use to summarize the tracking data from the
20 MEC Data and Accountability Forms. This log contains a one line entry for each item indicating
21 when the item was found, when the item was placed in the RSL and when the item was turned
22 over to NWS Earle EOD.

23 The RSL Inventory Card (Attachment 3) will be used to keep track of the items currently in the
24 storage locker. Items will be entered on the inventory when they are placed in the locker and
25 they will be removed from the inventory when they are transferred to NWS Earle EOD
26 personnel. At the end of each working shift, the Shift Supervisor will use the RSL Inventory
27 Card to conduct an inventory of the locker and ensure that all items are accounted for. The
28 results of this inventory will be reported to the Navy POC.

29 **5.4.2 Accountability for MPPEH Certified Explosive Free**

30 MPPEH items that can be certified as explosive free will be tracked using the field logbooks and
31 container inventory forms (See Attachment 3). These items will be consolidate in the work area
32 during each shift and transported to a secure storage location near the RSL at the end of each
33 shift. IN the storage area, the certified items will be placed in storage drums or other approved
34 containers in the custody of the Shift Supervisor. The logbook will contain a record of the



1 estimated amount and general type of explosive free MPPEH found. Inventory sheets on the
2 drums (storage containers) will contain a detailed inventory of the items placed in the container.

3 **6.0 REFERENCES**

4 DOD (Department of Defense). 2003. *Methodologies for Calculating Primary Fragment*
5 *Characteristics*. DDESB TP 16, Revision 1. December 1, 2003.

6 USACE (U.S. Army Corps of Engineers). 2004. *Essential Personnel and Personnel Limits in*
7 *Conventional MEC Exclusion Zones*. Military Munitions Response Program Center of
8 Expertise Interim Guidance Document 04-01. April 8, 2004.

9 U.S. Navy. 2001. *Ammunition and Explosives Ashore: Safety Regulations for Handling,*
10 *Storing, Production, Renovation, and Shipping*. NAVSEA OP 5, Volume 1. Seventh
11 Revision.



ATTACHMENT 1
MAGAZINE INSPECTION CHECKLIST



TETRA TECH EC, INC.

MAGAZINE INSPECTION CHECKLIST

Project Information

Project Name: _____ Date: _____
 Project Location: _____ Time: _____
 Work Area: _____

Inspection Checklist items *(Check Items Complete)*

- Inspected By: _____
- Ensure that the area in and around the magazine is free of debris, flammable materials and other dangerous items
 - Ensure that the magazine is in good condition (Doors, ventilation, locks)
 - Check for signs of unauthorized entry (Locks, eco-block containment, structural damage [bullets])
 - Ensure that items in the magazine are properly stored (check separation, aisle space and storage containers)
 - Ensure that no fire hazards are present; fire breaks are present; and, proper fire fighting equipment is available
 - Ensure that lightening protection is in place
 - Confirm the compatibility of magazine contents
 - Check for unusual odors, abnormal temperature or leaking materials
 - Ensure that placards and warning notices are posted (including NEW limits)
 - Ensure that safety information is posted
 - Ensure that first aid equipment is present at identified location near the magazine (Are first aid supplies complete?)

Comments *(Note any actions needed or taken)*

Verification of Completion

SUXOS
 Signature: _____ Date: _____
 UXOQC Signature: _____ Date: _____

ATTACHMENT 2
MEC DATA AND ACCOUNTABILITY FORM



TETRATECH EC, INC.

MEC DATA AND ACCOUNTABILITY FORM

FOR UXO TEAM USE

Site Name: NWS Earle, Leonardo, New Jersey

Team Leader:

Grid or Lane Number:

Work Area:

Date:

Location: X (Lat): _____ Y (Long): _____ Location Type (UW or UG): _____

Other Location Information: _____

Depth (feet): _____ Inclination (Degrees): _____ Orientation (N-S, E-W): _____

TARGET/ANOMALY CHARACTERISTICS

Type of Target/Find: Surface Find Mag & Dig Target Primary Geo Target Validation (QA/QC) No Dig

Type of Anomaly: UXO MEC Inert Practice MC (waste) MD (scrap) Metal Waste

No Find Rock Rust Layer Oxidation Misc.: _____

Diameter/Width:

Length:

Estimated Weight:

DIGITAL PHOTO RECORD

Was photo taken? Yes No

Camera No.:

Frame No.:

File Name:

MUNITIONS NOMENCLATURE (If Known, Record Below and record fuze condition and disposition)

Munitions Mark/Mod:

Fuze Mark/Mod:

N.E.W. Total:

Nose: _____ Tail: _____

Transverse: _____ Casing: _____

MUNITIONS CHARACTERISTICS

Munitions Filler: Explosive Inert Propellant Pyrotechnic Unknown Other: _____

Munitions Category: Depth Charges Land Mine Projectiles Sea Mines

Bombs Grenades Misc. Explosive Devices Pyrotechnics and Flares Small Arms

Clusters/Dispensers Guided Missiles Mortars Rockets Torpedoes

FUZE CHARACTERISTICS

Fuze Location(s) (check all that apply):

Nose Tail Transverse Casing

Breaks in Fuze Body?

Yes No

Fuze Markings:

Fuzing Type(s): Hydrostatic MT Long Delay Powder Train Time Fuze Nose MT/Tail Impact Inertia

All-ways Acting Impact MT Superquick Pressure Pt-initiating -Base-detonating

Base Detonating Influence Piezo-Electric Proximity (VT)

Electric Mech Time (MT) Point Detonating (PD) Nose MT/Tail Pressure

Fuze Length:

Fuze Diameter:

Diameter of Fuze Well:

MEC STATUS & PHYSICAL CONDITION (Check all that apply)

Armed

Unarmed

Fired

Unfired

Intact

Broken Open

Filler Visible

Soil Staining

FOR SUXOS USE

Disposition: (Clarify Under Remarks)

Transferred Transported Left In Place Destroyed BIP Other : _____

Date:

Client Notifications By:

Signature:

Date

Transferred To:

Signature:

Date:

Destroyed By:

Signature

Date:

Remarks:

SUXOS Signature:

Date:

ATTACHMENT 3
MEC ACCOUNTABILITY LOG

ATTACHMENT 4
RSL/CONTAINER INVENTORY FORM

APPENDIX F

RECORDS OF CHANGE



TETRA TECH EC, INC.

FIELD CHANGE REQUEST

Project Information

Project Name: _____ Date: _____
Charge Number: _____ Change No.: _____
Location: _____
Project Manager: _____

Information on Change

Description of Change:

Reason for Change:

Recommended Disposition:

FCR Review & Distribution

SUXOS: _____ Date : _____
UXOSO : _____ Date : _____
PM: _____ Date : _____
PESM: _____ Date : _____

Distribution: SUXOS UXO ESS/QC PESM CLIENT



