Draft
Work Plan
Remedial Action
Munitions Response Program

WAIKANE VALLEY IMPACT AREA
KANEOHE, HAWAII

January 2014

Department of the Navy
Naval Facilities Engineering Command, Pacific
258 Makalapa Drive, Suite 100
Pearl Harbor, HI 96860-3134

Contract Number N62470-12-D-7107
Task Order KB01

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PH-PACDIV 4330/62 (REV 2-94)

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BY DIRECTION OF THE
RESIDENT OFFICER IN CHARGE OF CONSTRUCTION

Draft
Work Plan
Remedial Action
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WAIKANE VALLEY IMPACT AREA
KANEOHE, HAWAII

January 2014

Prepared for:

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Naval Facilities Engineering Command, Pacific
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Prepared under:
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LIST OF ACRONYMS

AOC	area of concern
ARAR	applicable or relevant and appropriate requirement
BIP	blown in place
BMP	Best Management Practices
BSE	Bering Sea Eccotech
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CWA	Clean Water Act
DDESB	Department of Defense Explosive Safety Board
DFW	definable features of work
DN	deficiency notice
DOD	Department of Defense
DON	Department of the Navy
DOT	Department of Transportation
EOD	explosive ordnance disposal
ESS	explosives safety submission
GIS	Geographic Information System
GPS	Global Positioning System
HAR	Hawaii Administrative Rules
HRS	Hawaii Revised Statutes
HAZWOPER	Hazardous Waste Operations and Emergency Response
HEAT	high-explosive anti-tank
IVS	instrument verification strip
LUC	land use control
MCBH	Marine Corps Base Hawaii
MD	munitions debris
MDAS	Munitions Documented as Safe
MEC	munitions and explosives of concern
mm	millimeter
MPPEH	material potentially presenting an explosive hazard
MRS	munitions response site
NAVSEA	Naval Sea Systems Command
NEDD	Naval Electronic Data Deliverable
NIRIS	Naval Installation Restoration Information Solution
OSHA	Occupational Safety and Health Administration
PM	Project Manager
QA	quality assurance
QC	Quality Control
QCM	Quality Control Manager
QCP	Quality Control Plan
QR	qualitative reconnaissance
RA	remedial action
RAO	remedial action objective

RCRA	Resource Conservation and Recovery Act
RI	remedial investigation
SI	site inspection
SM	Site Manager
SUV	sport utility vehicle
SUXOS	senior unexploded ordnance supervisor
TBC	to be determined
UFP-QAPP	Uniform Federal Policy for Quality Assurance Project Plans
U.S.C.	United States Code
USMC	United States Marine Corps
UXO	unexploded ordnance
UXO TI	UXO Technician I
UXO TII	UXO Technician II
UXO TIII	UXO Technician III
UXOQCS	UXO quality control specialist
UXOSO	UXO Safety Officer
WVIA	Waikane Valley Impact Area

PROCESS SUPERVISOR'S STATEMENT

I have read and understand this work plan. To the best of my knowledge, the processes described within this work plan can be done in a safe, healthful, and environmentally sound manner. I have made sure all persons assigned to this process are qualified, have read and understood the requirements of this work plan, and have signed the "Process Worker's Statement" for this process. I will ensure that the work plan has current procedures. If a major change to the work plan is necessary, I will ensure that the process is stopped until the work plan is revised and approved. If unexpected safety, health, or environmental hazards are found, I will make sure the process is stopped until the hazards have been eliminated.

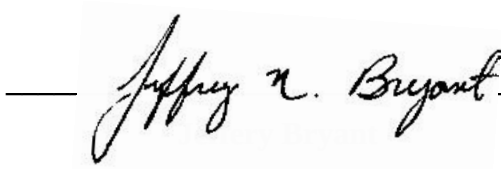
NAME	SIGNATURE	ORGANIZATION	DATE

PROCESS WORKER'S STATEMENT

I have read this work plan and I have received adequate training to perform the process according to this work plan. I will follow the work plan unless I identify a hazard not addressed in it or encounter an operation I cannot perform according to the work plan. If that occurs, I will stop the process and notify my immediate supervisor of the problem.

NAME	SIGNATURE	ORGANIZATION	DATE

Prepared by:



Technical Lead, Munitions Response Services

Approved by:

Director, Range Services

SECTION 1 INTRODUCTION

1.1 Purpose

This work plan provides guidance for the geophysical investigation, ordnance removal, and fence removal/repair/replacement being conducted as part of the remedial action (RA) at Waikane Valley Impact Area (WVIA), Marine Corps Base Hawaii (MCBH), Kaneohe, Hawaii. The basis for the work plan is the *Draft Final Remedial Design, Waikane Valley Impact Area, Kaneohe, Hawaii* (February 2013).

1.2 Scope

The scope of this work plan is for geophysical investigation, ordnance removal, and fence removal/repair/replacement. This plan provides guidance for the munitions response actions necessary under an RA to address the past use of munitions and explosives of concern (MEC) for a munitions response site (MRS) WVIA at MCBH, Kaneohe, Oahu, Hawaii. It also briefly discusses land use controls (LUCs) that could be implemented to further protect public health and welfare. Together, these approaches will address the remedial action objective (RAO) for WVIA: "To prevent exposure to MEC through reduction of MEC hazards, and to support future agricultural, recreational, cultural, and forest reserve land use (unrestricted use/ unrestricted exposure)." An abbreviated work plan produced by Bering Sea Eccotech (BSE) in 2013 covered site preparation and restoration of existing fencing.

1.3 Background

The WVIA is a 187-acre area located about 10 miles northwest of MCBH. The project site is in the interior of the forested Waikane Valley, which supports lush vegetation with abundant rainfall. Waikane Valley was carved into the basalt of the Koolau Range through stream erosion. The project site extends along a steep gradient from 100 feet above mean sea level at the southern boundary to 1,400 feet above mean seal level along the northern boundary. Much of the project area has slopes exceeding 45 percent, with some steep vertical cliffs.

WVIA was part of a 2,000-acre lease used for military jungle training and field maneuvers; the remaining acres fall under the Defense Environmental Restoration Program for Formerly Used Defense Sites (Figure 1).

The site was used from 1943 to 1953 for jungle training; small arms, artillery, and mortar firing; field maneuvers; and a bombing range for air-to-ground ordnance delivery. Two significant accidents have been attributed to the encounters with MEC from the site. In 1944, four people were injured, two fatally, when a 60-millimeter (mm) mortar discovered accidentally detonated. In 1963, a "souvenir" rifle grenade discovered in WVIA exploded after it was thrown against the wall, injuring three children.

From 1953 until the mid-1960s, the United States Marine Corps (USMC) leased 1,061 acres of the training area and used it for firing small arms, 3.5-inch rockets, and possibly medium artillery. In 1976, the USMC conducted unexploded ordnance (UXO) operations in an attempt to remove

MEC hazards at the site, but due to ground cover and topography, 187 acres were not certified free of UXO. The land was returned to the original owners following the UXO clearance in 1976.

In 1989, the government acquired title to the 187-acre ordnance-contaminated area because of safety concerns about the ordnance assumed to remain on the site after the previous clearance efforts. A perimeter chain-link fence was installed in 1992, and the area remains government property. The area is currently controlled and maintained by MCBH. The project site is managed as an "other than operational range," with access controlled by fences and warning signs. Civilians may legally enter the property only if accompanied by explosive ordnance detachment personnel.

Waikane Stream is a perennial stream that traverses the project site along its southern border at roughly 150 feet elevation. Previous field investigations confirmed four culturally significant sites within 220 yards of Waikane Stream. One of these sites is listed on the National Register of Historic Places, and the other three sites are eligible for listing.

About 52 acres of the southern portion of the project site were leased for agriculture before land acquisition by the federal government; the State of Hawaii land use classification for this leased area was Agriculture. Roughly 17 acres of this leased area were farmed with edible crops, and five living units (now vacant) existed within the leased area. The remaining 135 acres are designated by the State of Hawaii as Conservation and were within the Waiahole Forest Reserve.

A site inspection (SI) in 2008 found 70 pieces of material potentially presenting an explosive hazard (MPPEH), concentrated in the area now identified as the Northern Target Area. Therefore, a remedial investigation (RI) was conducted in 2010. The RI divided WVIA into two general areas, the Northern Area (which consisted of the Northern Target Area and the Northern Non-Target Area) and the Southern Area. During the RI, 21 MEC and 92 MPPEH were identified on the surface of the Northern Target Area, and two MPPEH were found in the subsurface (both less than 1 foot below ground surface). No MEC, MPPEH, or munitions determined as safe were found within Northern Non-Target Area except for expended small arms projectiles near what was identified as a small arms target. No evidence of MEC was found in the Southern Area.

The Remedial Design specifies the remedy to be implemented during the RA (*Draft Final Remedial Design, Waikane Valley Impact Area, Kaneohe, Hawaii,* February 2013).

1.4 Description of Project

This RA will perform the munitions response actions necessary to address the past use of MEC at the WVIA at MCBH, Kaneohe, Oahu, Hawaii as described in the Final Decision Document (February 2013) for the WVIA MRS and in accordance with the *Final Remedial Design, Waikane Valley Impact Area* (Draft Final, February 2013). The 2010 RI identified four targets as areas of concern (AOCs) for MEC characterization (Figure 2). Table 1 lists AOC identifier, historical use, size, and MEC historically encountered within the AOCs.

TABLE 1
2010 REMEDIAL INVESTIGATION AREAS OF CONCERN

AOC Identifier	Historical Use	Size (Acreage)	Encountered MEC and MPPEH
AOC 1	Small arms	1.8	Small arms, 3.5-inch rocket
AOC 2	Rockets, rifle grenades	7.9	2.36-inch & 3.5-inch rockets, rifle grenades
AOC 3	Rockets, rifle grenades	8.4	2.36-inch & 3.5-inch rockets, rifle grenades
AOC 4	Rockets, rifle grenades	5.1	2.36-inch & 3.5-inch rockets, rifle grenades

The 2011 WVIA MRS RI Report recommended remedial actions in three areas based on investigation of the four target AOCs: the Southern Area (south of Waikane Stream), the Northern Target Area, and the Northern Non-Target Area. The RA will include clearance of 14.92 acres in the Northern Area, where access to the Waikane Spring and Kamaka Shrine is required, and 31.97 acres in the Southern Area (Table 2 and Figure 3). The RA includes plans to remove the existing southern fence and replace it with one between the Southern Area and the Northern Area, as shown in Figure 3.

TABLE 2
REMEDIAL ACTION WORK AREAS

Area of Concern Identifier	Historical Use	Size (Acreage)	Encountered MEC and MPPEH
Northern Area Waikane Stream access and Kamaka Shrine access	Rockets, rifle grenades	14.92	2.36- and 3.5-inch rockets, rifle grenades
Southern Area Fence buffer	Waikane Stream	31.97	None

The response actions described in the decision document include the following elements:

- Surface clearance of accessible areas in the Southern Area and the Northern Area
- Subsurface clearance to a depth of 2 feet of a 10-foot-wide buffer strip along the boundary separating the Southern and Northern Areas
- Removal of the existing fences from the Southern Area and installation of new fences along the north edge of the cleared buffer strip between the Southern and Northern Areas
- Subsurface clearance to a depth of 2 feet in the Southern Area in a 50-foot radius of any MEC found during the surface clearance
- Subsurface clearance to a depth of 2 feet along 50-foot-wide corridors to and around the Kamaka Shrine and Waikane Spring, and the installation of fences along and around these cleared areas, to allow free access to these sites from the Southern Area
- Additional LUCs applied to the entire 187 acres, including construction of a fence between the Southern and Northern Areas, notification letters to local landowners, and an educational program to inform the community of risks and mitigation measures

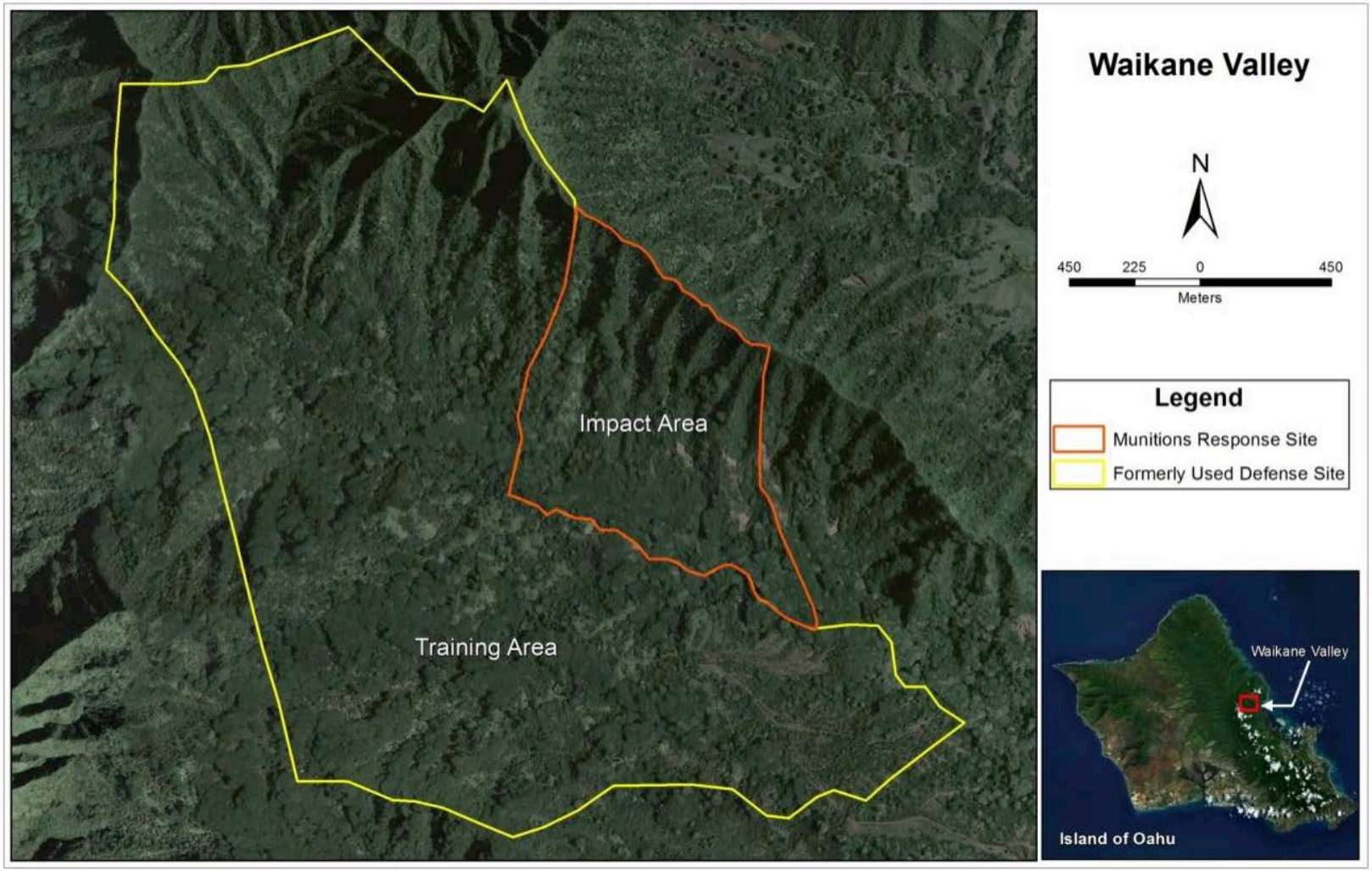


FIGURE 1
WAIKANE VALLEY IMPACT AREA

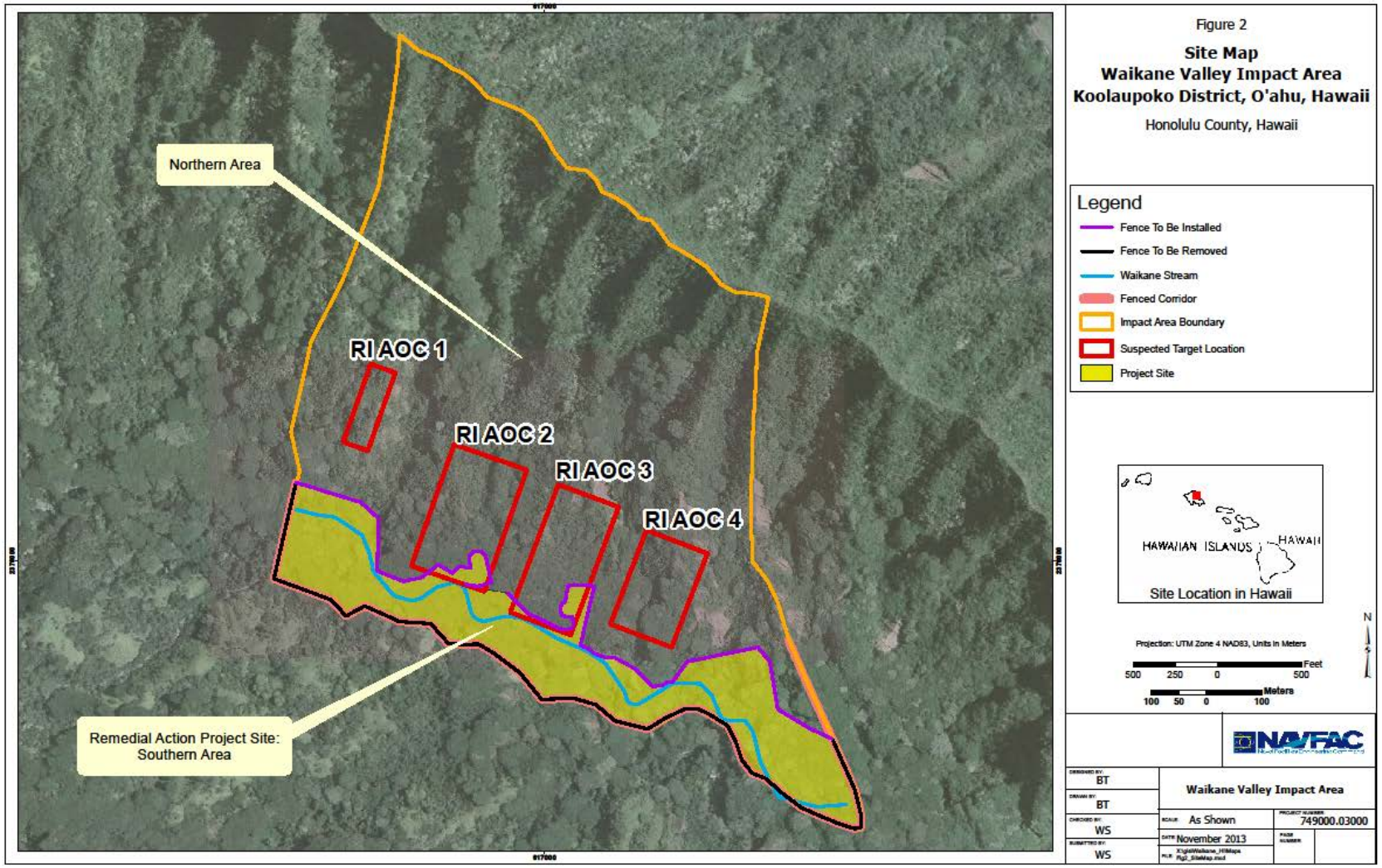


FIGURE 2
SITE MAP WITH REMEDIAL INVESTIGATION AREAS OF CONCERN

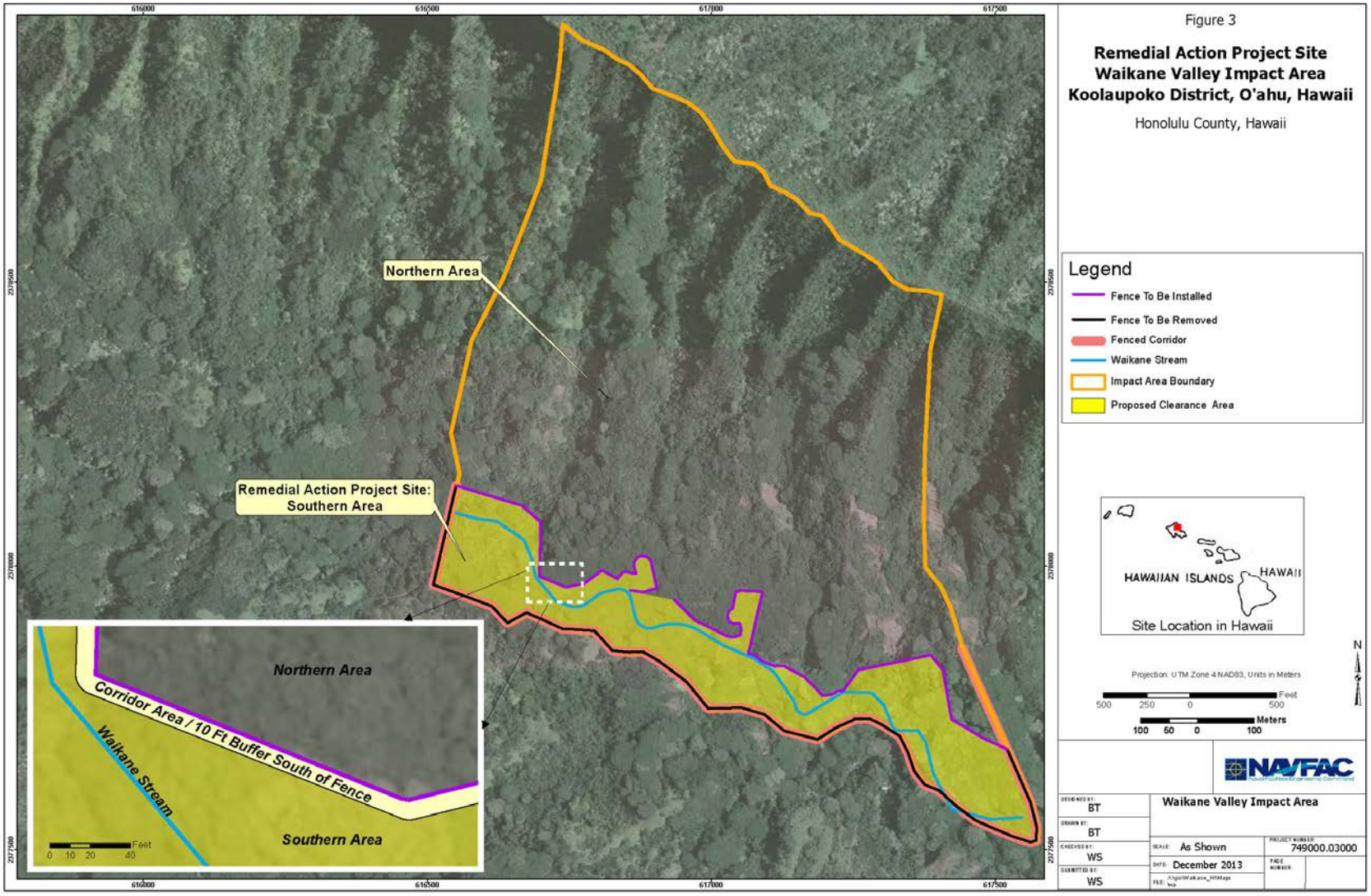


FIGURE 3
REMEDIAL ACTION PROJECT SITE

SECTION 2 TECHNICAL MANAGEMENT PLAN

2.1 Task Management Plan

This plan is based on information from the Performance Work Statement for contract N62470-12-D-7107, task order KB01. The operations covered in this plan are for surface clearance of accessible land with land use controls (LUCs) on 31.97 acres in the Southern Area and on 14.92 acres in the Northern Area. All work completed will be according to federal, state, and local laws.

Table 3 presents a general description of the tasks covered by this work plan, based on the performance work statement.

TABLE 3
REMEDIAL FIELD ACTIVITIES

Description
Site Preparation (Mobilization/Demobilization) The contractor shall perform necessary site preparation to adequately support the field sampling and remedial action (RA) method outlined in the performance work statement. Procedures and equipment requirements shall be approved by the remedial project manager before execution. **Vegetation Removal Requirements** To facilitate subsequent field activities such as civil surveys and surface/subsurface clearances (areas with <30 degree slopes only), vegetation will be removed to 6 inches above ground surface using mechanical equipment such as skid steers with deforesting or mulching attachments or manually with hand-held power tools such as weed eaters and chain saws. The contractor will implement measures to protect endangered, threatened, or endemic plant species under the applicable or relevant and appropriate requirements (ARARs) listed in Appendix A of the Draft Final Remedial Design (RD) and to control erosion as may be required by action-specific ARARs. **Natural Resources Monitoring** Since no threatened or endangered species have been observed or documented in the RA portions of the Waikane Valley Impact Area (WVIA), a natural resource monitor is not required. **Establishment of Instrument Verification Strip** The contractor will establish an instrument verification strip (IVS) at the range to ensure the detection equipment and operators are working properly, with location determined in the field during site setup. The IVS will be seeded with appropriate industry standard objects (pipe nipples of appropriate sizes representative of M9 rifle grenade, 2.36-inch rocket, and 3.5-inch rocket) at various depths, orientations, and inclinations. Three of each seed item type will be buried, one shallow (to confirm detection) and two deep (to establish maximum depth

Description
detection capability. The unexploded ordnance (UXO) teams conduct an instrument test of all detection instruments daily prior starting the munitions and explosives of concern (MEC) and material potentially presenting an explosive hazard (MPPEH) clearance.
Location Surveys and Mapping (Site Layout) The contractor shall perform location recording and mapping using techniques that allow easy conversion/submission of data in the required format (e.g., state plane coordinates). The contractor will identify and record the locations of recovered items using a hand-held Global Positioning System (GPS) set to the Universal Transverse Mercator coordinate system. Based on the RA design, the contractor will determine the range work area and will then use these coordinates and the Geographic Information System (GIS) to determine the grid/sector distribution for the work area. The GIS data sets will identify the following information: • Grid/sector identification number. • Grid/sector coordinates. • Full or partial grid. • Date of mag and dig. • Date of quality control inspection • Date of quality assurance inspection. • Grids/sectors containing MEC. • Grids/sectors containing munitions debris. • Number of digs in each grid/sector. • Pounds of munitions debris and range-related debris. The contractor may use established control monuments; should the contractor select to set any property boundaries or monuments, this work shall be performed by a licensed Hawaii State Professional Land Surveyor. Existing monument locations will be provided to the contractor. Contractor personnel who are knowledgeable and competent in land surveying and use of surveying equipment may perform grid and/or transect location and layout. The contractor shall prepare all location data and submit following completion of the work. Data must be provided using the appropriate Naval Installation Restoration Information Solution (NIRIS) Naval Electronic Data Deliverable (NEDD) via the web based data checker in accordance with the NEDD standard operating procedure. Survey data shall include, at a minimum, a drawing and spreadsheets of survey information. For each site, the drawing shall cover the entire site and will include the list of coordinates for corners, starting, ending, turning locations, reference monuments used in survey, and other pertinent features of grids or transects, to include but not limited to MEC location data, including grid number where found, item number assigned, type of item, location coordinates to nearest foot, and depth below ground surface.

Description
Detection Equipment for Remedial Action The contractor may propose to map grids or transects, or a combination of these. The contractor shall produce maps of the site that show the major geophysical features. The contractor shall update and manage the project GIS in NIRIS, or if needed, an export of the NIRIS data using a local machine running ArcGIS or ArcInfo. Any project-related spatial data such as maps, models, and associated collected or created data must then be submitted back to NIRIS according to the NIRIS Non-NEDD Deliverable Submittal Guidelines Standard Operating Procedure. This includes daily geophysical data, ordnance-related items found during the investigation, positively identified MEC, positively identified archeological sites, environmental sample locations, and inaccessible areas such as brush piles, fence lines, or areas of bare rock. The contractor will record the location of all MEC.
Intrusive Investigations and Clearance The contractor shall implement MEC removal in accordance with Department of Defense (DOD) and Department of the Navy (DON) requirements and the approved explosives safety submission (ESS) and remedial work plan. Previous clearance work during the remedial investigation has determined that analog "mag and dig" detection/clearance techniques are the most effective clearance method at the site due to the terrain and limited access. The contractor will reacquire target anomalies from the geophysical data and for performing the investigation and removal of each target site. The contractor will outline the details of the RA in the ESS for approval by Marine Corps Systems Command and ensure that all work descriptions in the remedial work plan are consistent with the Marine Corps Systems Command-approved ESS.
MEC Management The contractor shall manage all MEC, MPPEH, and MEC-related debris in accordance with DOD and DON requirements and the approved RA work plan. The contractor will account for all MEC items or components encountered from field discovery to point of disposal. This accounting shall include the amounts of MEC, identification and condition, location, orientation and depth, storage, and disposition. The accounting system shall also account for all demolition materials used to detonate MEC on site. The contractor shall take digital photographs of identifiable MEC found during the investigation, which shall be attached to the MEC locations displayed in the GIS. **MEC Treatment** The contractor shall be responsible for the destruction of all MEC in accordance with DOD and DON requirements as described in the approved ESS and RA work plan. For planning and estimating, the contractor shall be prepared to dispose of 40 items of MEC, including 2.36-inch high-explosive anti-tank (HEAT) rockets, 3.5-inch HEAT rockets, M28 HEAT rifle grenades, 60-millimeter mortars, and demolition explosives blocks.

Description
Material Potentially Posing and Explosives Hazard Management/Disposal The contractor shall be responsible for the disposition of all MPPEH in accordance with the approved Remedial Work Plan and should assume that 2 tons of MPPEH-related debris will require transportation and disposal or stockpiling until the completion of this contract if it poses no immediate threat.
Land Use Controls – Option LUCs shall apply to the entire 187 acres and shall include construction of the fence between Southern and Northern Areas and notification letters to the local landowners. All existing excess fencing not needed to separate the northern area from the southern area shall be removed after the southern area clearance complete and approval from Marine Corps/Navy, Marine Corps Systems Command, and Department of Defense Explosive Safety Board (DDESB) is obtained. After completing the RA activities, the RA contractor will install new fences along the proposed alignment that separates the northern and southern portions of the WVIA site. In addition, designated portions of existing fences will be removed around the southern portion of the WVIA site. A 10-foot buffer on both sides of the fence between Southern and Northern Areas will be cleared of vegetation to allow periodic maintenance of the fence.
Removal of Southern Area Perimeter Fencing – Option Pending regulatory, DDESB, and Marine Corps Base Hawaii approval of the RA, the perimeter fencing along the Southern area will be removed allowing access to the Southern area and the Waikane Stream. Assume that 5,924 linear feet of fencing will be removed. (Includes removal of all existing fabric, gates, rails, posts, hardware, and concrete footers).

2.2 Task Organization

Figure 4 is an organization chart for the Bering Sea Eccotech (BSE) project personnel.

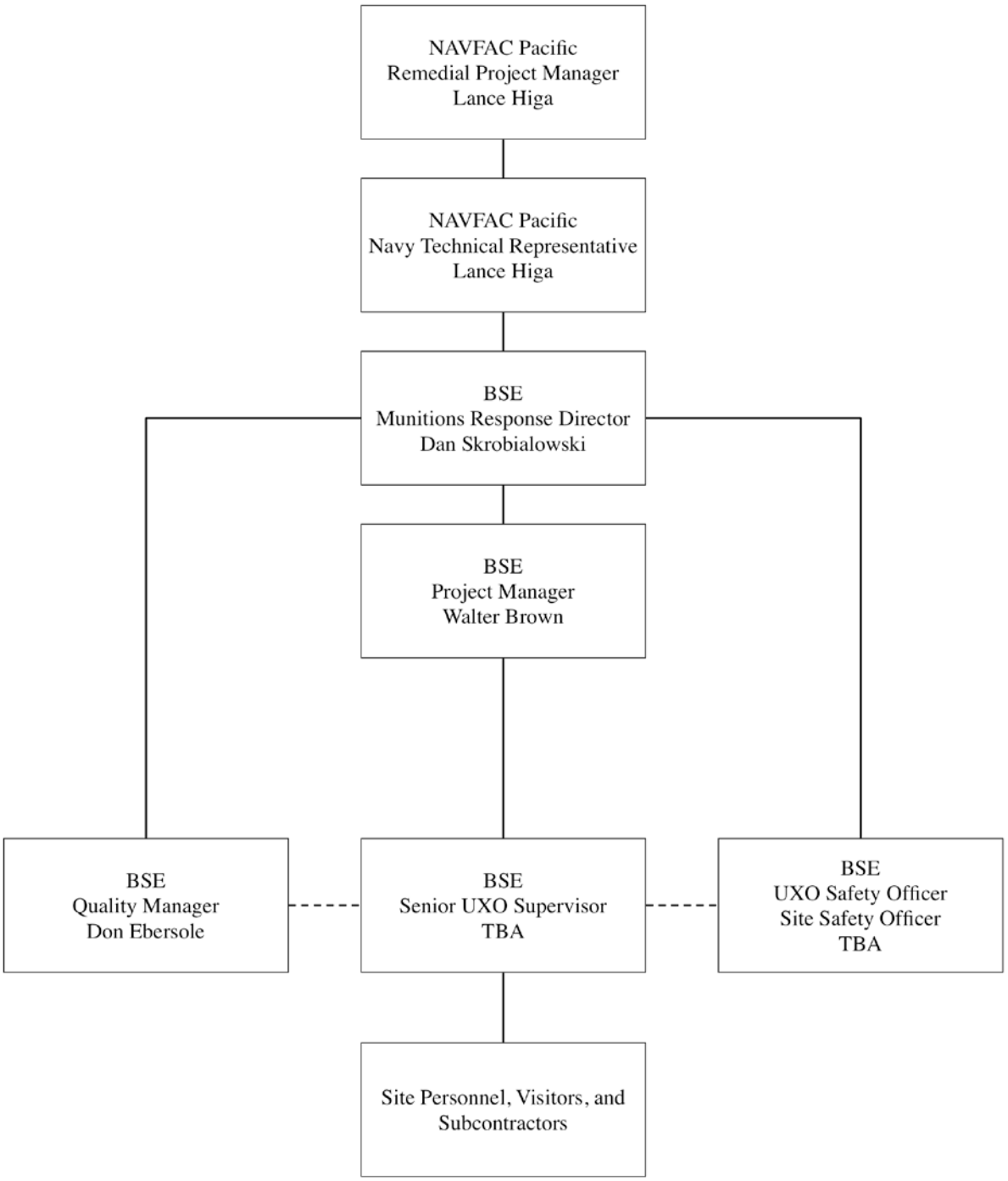


FIGURE 4
ORGANIZATION CHART

2.3 Task Points of Contact

Table 4 presents contact information for this project.

TABLE 4
TASK POINTS OF CONTACT

Title	Name	Number	E-mail
Naval Technical Representative	Dennis Makabe	808.474-3220 x 285	dennis.makabe@navy.mil
Remedial Project Manager	Lance Higa	808-472-1498	lance.higa@navy.mil
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BSE Munitions Response Director	Daniel Skrobialowski	757-288-4355	dskrobialowski@bseak.com
BSE Project Manager	Walter Brown	907-268-8428	wbrown@bseak.com
BSE Project Planning Manager	Jeff Bryant	850-736-1169	jbryant@bseak.com
Parsons Project Manager	William Stohler	808-748-7577	william.stohler@parsons.com

2.4 Mobilization/Site Set-up

Equipment will either be shipped to the site or transported to the site by the field team. Equipment needed during the remedial action includes analog magnetic, sampling supplies, documents, first aid kit, fire extinguisher, Global Positioning System (GPS) units, digital camera, survey stakes, engineer tape, and miscellaneous supplies. A Minelab F3L or equivalent magnetic locator is planned for use for anomaly detection and safety, and Trimble Geo GPS units or equivalent will be used for finding sample locations and recording qualitative reconnaissance (QR) tracks. Crew support vehicles will be rented and in most cases will be a four-wheel-drive sport utility vehicle (SUV) to accommodate all site personnel and equipment. The field crew will not establish a field office during this task. A portable sanitation unit will be placed at the site, and the location will be selected upon arrival.

2.5 Personnel

The field management team for the remedial action (RA) consists of a site manager, a senior unexploded ordnance supervisor (SUXOS), and one unexploded ordnance (UXO) quality control specialist (UXOQCS). The field teams consist of UXO technicians. All BSE UXO personnel will meet the requirements set forth in the Department of Defense Explosive Safety Board (DDESB) Technical Paper 18 (TP-18), *Minimum Qualifications for Unexploded Ordnance (UXO) Technicians and Personnel*, dated 20 December 2004.

For any fence work, BSE will mobilize a UXO technician for UXO escort services. The UXO technician will be fully certified for the position in accordance with the requirements of DDESB

TP-18. The site manager will also be responsible for ensuring that the field crew is enforcing all plans. Additionally, the site manager will ensure the performance measurements for the fence repair work are completed according to the quality control plan and the performance work statement requirements.

BSE field personnel on this project have completed the training requirements listed in Table 5 as required for their specific responsibilities. Additional site-specific training in accordance with Occupational Safety and Health Administration (OSHA) 29 Code of Federal Regulations 1910.120 for Hazardous Waste Operations and Emergency Response (HAZWOPER), as well as Engineer Manual 385-1-1, *Safety and Health Requirements*, will be provided to all personnel upon their initial mobilization. Additionally, all BSE field personnel will participate in a medical surveillance program, with the latest physical exam occurring within 12 months of field operations.

TABLE 5
PERSONNEL TRAINING

Training Course	Personnel Attending
40-Hour HAZWOPER Training	All personnel who have not previously received this training or who do not qualify for certification through documented experience or training equivalent to that in paragraphs (e)(1) through (e)(4) of 29 CFR 1910.120.
8-Hour Supervisor Course	All BSE management and supervisory personnel. This includes the SUXOS, UXOSO, UXOQCS, Site Manager, and UXO technician IIIs (UXO TIIIs).
8-Hour Refresher Course	All site personnel, except those who have completed their initial 40-Hour HAZWOPER training within the past year.
First Aid and Cardiopulmonary Resuscitation (CPR) Training	At least two site personnel will have current first aid and CPR training.
30-Hour OSHA Construction Safety Course	Training requirement for UXOSO in accordance with EM 385-1-1, Section 01.A.17

2.6 Task Sequence of Events

This RA involves the following tasks:

1. Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP) worksheets approval
2. Explosive Safety Submission approval
3. Work Plan/Health and Safety Plan approval
4. Mobilization of personnel

5. Personnel review work plan and safety plans
6. Site preparation
7. Geophysical system verification
8. Vegetation removal for surface clearance
9. Surface clearance
10. Location survey and mapping
11. Vegetation removal for subsurface clearance
12. Geophysical surveys/ subsurface clearance
13. Munitions and explosives of concern (MEC) management, treatment and disposal
14. Install new fencing, signage, and fence repairs (potential)
15. Demobilization
16. After action reporting
17. Establish administrative record

The following subsections discuss activities in the field.

2.6.1 Vegetation Clearance

Vegetation will be cleared under the guidance of UXO technicians within the established remedial action work area boundaries to a height between 3 and 6 inches above the ground surface using machetes, man-portable weed trimmers, and chain saws. Trees over 3 inches in diameter will not be cut except for *Ha'u* vines, up to 6 inches in diameter. Vegetation clearance will be limited to cutting of brush, vines, and tree limbs that would directly impede the movement of the detection equipment or as required for fence repair or installation. Removed vegetation will be cut into approximately 2-foot lengths to facilitate decomposition and minimize migration of cut vegetation to the Waikane Stream. Prior to commencing vegetation removal activities, preventative measures for biological resources will be established to avoid cutting or removal of endangered, threatened, or endemic plant species under the applicable or relevant and appropriate requirements (ARARs) listed in Appendix A of the Remedial Design. Reasonable attempts will be made to preserve native plants will be made. There is no restriction on cutting invasive plants. No natural resources monitoring is required.

2.6.2 Surface Clearance

MEC teams will perform all surface clearance efforts over an estimated 2-week period. Each team will be led by one UXO Technicians III (UXO TIII) team leader who will oversee the work procedures of a variable number of UXO Technicians II/I (UXO TII/I). Archaeological monitors will accompany each MEC team for the duration of the fieldwork to ensure protection of archaeological features. Archaeological monitors will be escorted by UXO technicians at all times while in the munitions response site (MRS).

The MEC teams will systematically traverse each work grid with analog detectors to detect, locate, and mark all MEC items encountered and to recover any munitions debris that is free of explosives. The UXO TIII organizes the team and directs the movement of the team back and forth across the grid in a manner that ensures 100% coverage of each grid. As the team moves forward, the UXO TII/Is will use the hand-held detector to assist them in locating metallic items that may be camouflaged by the soil or hidden in vegetation. Whenever a team encounters material suspected to be material presenting a potential explosive hazard (MPPEH), the UXO TII

will inspect the item. If the item is determined to be munitions debris or non-MEC related scrap, the UXO TIII will direct the UXO TII to recover the material, and it will be removed from the grid and stockpiled with other munitions debris or non-MEC related scrap. If the item is UXO or a MEC item containing explosives, the UXO TIII will mark and record the location of the item and notify the SUXOS. The SUXOS will coordinate for disposal of the item by detonation. MPPEH items will be processed in accordance the procedures presented in Section 6.3 of the explosives safety submission (ESS).

2.6.3 Location Surveys and Mapping

Grid corners, work area boundaries, and positions of MEC items will be surveyed using a hand-held GPS until such as the Trimble GeoXH with external antenna or equivalent. A 5-meter external antenna cable will be used to extend the antenna as high as possible in the jungle canopy where necessary. The accuracy of grid corners will be to the closest 3.0 cm (0.1 feet).

2.6.4 Intrusive Investigation

Subsurface investigations will be accomplished using MEC teams, each consisting of one UXO TIII and a variable number of UXO TII/I. Work areas will be subdivided into individual work grids, and these grids will be further subdivided into individual search lanes to facilitate control of the clearance and to ensure complete coverage of each grid. For MEC items discovered on the surface in the Southern Area, subsurface clearance to a maximum depth of 2 feet shall be conducted within a 50-foot radius from each MEC item. Subsurface clearance of a 10-foot-wide buffer strip will be completed along the boundary between the Northern Area and the Southern Area. In the Northern Area, 100% of 14.92 acres will be surface-cleared.

Before beginning intrusive operations, archaeological monitors will conduct a visual inspection of the grid to determine if there are any archaeological features to be avoided. Archaeological monitors will be called to the grid to inspect potential cultural material encountered during excavations and will inspect the excavation locations after completion of the subsurface investigation to ensure that such features have been undisturbed or properly protected.

Individual search lanes will be 5 feet wide, will completely transect the grid, and will be established in a pattern that ensures 100% coverage. A UXO TII/I assigned to each lane will systematically search the lane using an analog detector. The technician will move forward, sweeping the instrument back and forth across the lane in a manner that keeps the tip of the instrument within 4 to 6 inches of the ground surface and will form a series of arcs across the lane that are no greater than 3 to 4 inches between arcs. During this operation, the technician will monitor the aural indications produced by the detector and identify the location of any subsurface metallic anomaly encountered.

The UXO technicians will excavate and identify the source of each anomaly as it is encountered. They will use hand tools such as shovels, spades, trowels, and pry bars to excavate the anomalous features. Excavations will be initiated adjacent to the subsurface anomaly and will continue until the excavated area has reached a depth below the top of the anomaly, or 2 feet below grade, whichever is encountered first. Once the item is exposed for inspection, the UXO technicians will determine whether the item is MEC, MPPEH, or other debris. If the item is

MEC, a positive identification will be documented and confirmed by the UXO TIII and will be further processed as discussed in Section 6.4 of the ESS. If the item is MPPEH, the procedures presented in Sections 6.3 and 6.4 of the ESS will be followed. All other debris will be collected and segregated from MPPEH to prevent comingling. Following the removal of MEC items to be blown in place (BIP), the area will be rechecked with the analog detector to ensure that no additional items remain.

If the anomaly has not been resolved when the target depth is reached in the excavation, work on the excavation will be stopped and the reason for not resolving entered in the "Comments" section of the Surface/Subsurface Clearance Data and Munitions Accountability Log (e.g., "Investigation depth reached, anomaly not resolved.").

Throughout the survey, the UXO TIII will closely monitor the work of the UXO technicians, record location data for the subsurface anomalies, and record the results of any investigations performed. Separate records will be prepared and maintained for each individual work grid.

2.6.5 Geophysical Survey

The geophysical survey of each grid will be accomplished by sweeping in regularly spaced, overlapping parallel lanes. The heavy vegetation present in the AOCs will have been cleared before the subsurface investigation. The UXOQCS will perform random surveillance to maximize the consistency of the geophysical data collection. Attention will be paid to the consistent height of sensor above the ground and between operators. Inconsistencies observed by the team leader, operator, or UXOQCS will be noted and immediately corrected. To measure data collection quality, a blind seeding program will be implemented. Before the geophysical survey, the UXOQCS will distribute coverage seeds in the grids and transect at a rate of two per grid. The geophysical survey team will not know where these items are located. If any seed item is not located, a root cause analysis will be performed, and the grid will be subject to rework.

2.6.6 Fence Installation

Fence installation work will be performed by BSE. During work on fences, a UXO escort will ensure safety from potential MEC hazards; the UXO escort will be provided to the fence repair crew. The UXO escort will not perform RA tasks during fence activities, and duties will be limited only to UXO escort and anomaly avoidance. The Site Manager will act as the Site Manager. The UXOSO will act as site safety, conduct safety briefings daily, and ensure that the site safety and health plan and work plan are followed.

SECTION 3 MEC AND MPPEH MANAGEMENT

3.1 Introduction

Management of munitions and explosives of concern (MEC) and material potentially presenting an explosive hazard (MPPEH) is described in detail in Sections 6.3 and 6.4 of the project Explosives Safety Submittal (ESS). MEC and MPPEH management includes Hazard classification, movement, transportation and storage, as summarized below. MEC and MPPEH will be classified and stored per Naval Sea Systems Command (NAVSEA) OP 5, Volume 1; MEC will not be transported offsite.

3.2 MEC AND MPPEH Hazard Classification, Movement, Transportation and Storage

3.2.1 Hazard Classification

All MEC and MPPEH will be classified as Class/Division 1.1 unless classified otherwise as defined under Naval Ordnance Safety and Security Activity (N85). Classification will be performed by the UXO Safety Officer (UXOSO). A systematic approach will be used for collecting, inspecting, and segregating site debris. The approach is designed so that materials undergo a continual inspection/evaluation process from the time they are acquired until the items are removed from the site. Segregation procedures begin when the item is discovered by the UXO technician, who makes a preliminary determination as to the item's classification into one of three categories, and the UXO TIII confirms the item to be MEC, MPPEH, or other debris.

MEC will not be stored; MEC will be blown in place (BIP) or moved for demolition as discussed in Section 6.4. MPPEH will be collected at temporary MPPEH collection areas within each active grid. MEC and MPPEH will be treated as discussed in Section 6.4 below.

3.2.2 Movement

The SUXOS, with UXOSO concurrence, will determine whether MEC/UXO is safe/unsafe to move. If it is determined that an item is safe to move, the MEC item can then be moved to a different location on the munitions response site (MRS) and consolidated with other MEC items for detonation.

3.2.3 Transportation

MEC and MPPEH items will not be transported offsite. MEC determined to acceptable to move as discussed in Sections 6.3.2 may be moved a different location on the MRS and consolidated with other MEC items for detonation.

3.2.4 Storage

OP 5 requirements will be strictly adhered to by Bering Sea Eccotech (BSE) and explosive ordnance detachment (EOD) personnel during handling and storage of donor explosives. Recovered MEC and/or MPPEH items will be blown once sufficient quantities are accumulated. Just-in-time (on-demand) donor charges will be delivered to the site and will not be stored onsite.

3.3 MEC and MPPEH DISPOSITION PROCESSES

3.3.1 Munitions and Explosives of Concern Process

Due the low number of anticipated discoveries of MEC items, it is not anticipated that an open burn/open detonation area will be established for this project. The SUXOS, with UXOSO concurrence, will determine whether MEC/UXO is safe/unsafe to move. If it is determined that the MEC item is safe to move, it can then be moved to a different location on the MRS and consolidated with other MEC items for detonation. In-grid consolidation will be managed to ensure that explosive safety quantity-distance arcs do not extend beyond the MRS or create a hazard for other operations being conducted within the MRS.

All munitions items located within the AOCs are classified as MEC or as Munitions Documented as Safe (MDAS). Any other munitions are considered as MPPEH until they are re-inspected and certified as non-explosives contaminated. OP 5 requirements will be strictly adhered to during MEC and/or MPPEH disposition by BSE and EOD personnel.

All MEC and MPPEH items containing explosives that are encountered during this project will be disposed of or vented/demilitarized by countercharging the munitions with an explosive donor charge and detonating the donor charge.

Electrically initiated explosives will be used for treatment. No other type of disposal (e.g., burning) will be used for this project. The SUXOS will supervise all demolition operations. Minimum separation distances as prescribed in OP-5 Volume 1 Revision 7 Change 11. Paragraph 13-1.8 will be used. When UXO/MEC consolidation is performed, the fragmentation database distances listed in TP-16 will be used and increased by 33%.

The number of personnel conducting detonation operations shall be kept to a minimum, but under no circumstances shall an operator work alone. When detonation operations are underway, no personnel will be stationed at or near material awaiting treatment at the stockpile area. After detonation operations have been completed, the demolition crew will remain in the protective crew area at least five minutes after single shots and the last shot of a series, provided that the numbers of shots have been counted. Operations will be scheduled so that detonations will not occur less than 60 minutes prior to securing the range at the end of the workday.

Misfire procedures: For electric blasting caps, a 30-minute waiting period is required. Misfires will be handled under the direction of the SUXOS and firing wires shall be carefully traced and a search made for unexploded charges.

The local fire department will be notified of all detonation operations, the types of explosives material being disposed of, and the calculated fragmentation/blast hazard distances. At no time will firefighters be allowed to enter the fragmentation/blast hazard zone if the possibility exist that the explosive material itself is still burning. The range will not be secured if any probability of fire exists. Only authorized spark-resistant tools will be used while working within a radius of 15 feet from exposed energetic material. However, a clean sharp knife may be used for cutting time blasting fuze/detonating cord.

Treatment operations shall be performed during daylight hours only. Blasting caps will be primed only after all operators except those doing the actual ignition work have retreated to the protective crew shelter/area. Blasting caps will be carefully handled at all times. Ammunition

and explosives to be treated will not be handled roughly or carelessly. Extra care should be taken since, in most instances, the hazards of the ammunition or explosives to be treated are increased as a result of age, deterioration, or damage. Personnel should anticipate the possible presence of spark and flame discharges from the accumulation of electrostatic charges and take necessary precautions to minimize their potential hazard.

If the material being treated produces high fragmentation, the detonation shall take place at an area surrounded by an earth barrier at least 4 feet high or in a pit or trench at least 4 feet deep. If rockets or solid rocket motors are being disposed of, a sufficient charge will be used so as to assure in-place destruction of the motor and head. Disposal of hand grenades and rifle grenades will be limited to 20 hand grenades or fifty 40-millimeter (mm) rifle grenades in each pit. All items will be in close contact. If demolition is used to vent or expose hidden cavities, the minimum amount of explosives will be used to achieve the desired effect. Jet perforators may be used for this purpose.

All explosive disposal operations will be performed under the direct supervision of the SUXOS and the UXOSO. Before the initiation of any explosive charge, the SUXOS will ensure that all required coordination is made with local agencies and that the area is clear of nonessential personnel. BSE will hire a subcontractor to provide explosives delivery and blaster services. Explosives will be delivered for "daily use" and will not be stored on site.

MEC items discovered during the work week will be marked or consolidated as appropriate for demolition. Safety considerations require that MEC items that have been fired and are still fuzed must be BIP. Where necessary to protect archaeological features, engineering controls (sandbags) will be placed around the MEC items and/or the archaeological feature to mitigate blast and fragmentation from reaching archaeological features.

A subcontractor to BSE will make explosives delivery once an adequate number of UXO items have been accumulated and are awaiting destruction. Department of the Navy (DON) and Department of Transportation (DOT) requirements will be strictly observed for transportation of ammunition and explosives.

UXO qualified personnel will identify MEC items/components encountered during the project. The UXO personnel will record identification data of all MEC items/components, including condition, nomenclature, depth, location, and disposition for inclusion in the remedial investigation (RI) report.

BSE maintains a detailed accounting of all MEC/MPPEH encountered. Once the MEC has been destroyed or removed, the hole will be checked with a metal detector to ensure that the initial item was not masking additional anomalies.

3.3.2 MPPEH Process

During field operations, BSE will recover, inspect, and dispose of MDAS. Material will be stored as MPPEH until processed and categorized as MDAS. Once identified as MDAS, containers holding the MDAS will be labeled and secured (with controlled access) at all times, or the material will risk losing the MDAS designation and will require reinspection. Only personnel qualified as UXO TIII or above will be allowed to inspect and classify MDAS. Lockable boxes such as 20 cubic yard shipping boxes, lockable job boxes, or similar, will be used for storage of munitions debris. Total weight of MDAS will be documented during

certification and verified upon receipt by the recycle facility. Once a container is loaded with MDAS, it will be closed and sealed until it is received at the recycle facility. Upon shipment of the MDAS, the SUXOS will complete an Inert/Demilitarization manifest.

Certification documentation for MDAS will consist of a Disposal Turn-in Document DD Form 1348-1 (series). The MDAS certification documentation will identify the material type, such as ferrous scrap, aluminum or mixed metals. Documentation as MDAS requires dual signatures on the certification document. Resumes and sample signatures will be provided to NAVFAC Pacific Remedial Project Manager for all signatory personnel. The SUXOS will sign the manifest to certify inspection of the scrap, and the UXOQCS will sign as the verifier. Each of the two signatures will be directly above the typed or clearly stamped or legibly printed full name, title, complete organization name and address, and phone numbers of the respective inspector, as follows:

1. For material being visually inspected, the first signatory (i.e., certifier) must have performed a 100% inspection and the second signatory (i.e., verifier) must have performed an independent 100% re-inspection.
2. All MDAS documentation shall include the following statement: *The material listed on this form has been inspected or processed by DDESB-approved means, as required by DOD policy, and to the best of my knowledge and belief does not pose an explosive hazard*.

In accordance with OP 5, Ammunition and Explosives Ashore, the SUXOS and UXOQCS will be authorized in writing by the Naval Facilities Engineering Command, Pacific commander to certify and /or verify munitions debris shipped off the project site. Once the material is demilitarized, it will be considered scrap and will be disposed/recycled at a local recycling facility. BSE will track all documentation from cradle to grave and will include all documentation in the RI report.

SECTION 4 EXPLOSIVES SITING PLAN

Demolition explosives, detonators, blasting caps, and detonation cord will not be stored onsite. On-call explosives will be used. Since explosives will not be stored onsite, this section is not applicable.

SECTION 5 GEOPHYSICAL SYSTEM VERIFICATION AND INSTRUMENT VERIFICATION STRIP

5.1 Geophysical System Verification

Geophysical system verification is planned for the site, which includes the use of an instrument verification strip (IVS) and a blind seeding program. The purpose for the geophysical system verification is to confirm system performance and ensure that the data quality objectives can be met.

The contractor will:

- Verify that the geophysical system is performing correctly by testing the sensor's ability to detect well-characterized items. This will be accomplished through the use of IVS (see Section 5.2);
- Determine whether targets of interest can be detected reliably to their depth of interest under the existing site conditions; and
- Implement a blind seeding program to measure data quality.

5.2 Instrument Verification Strip

The purpose of an IVS is to demonstrate and document the site-specific capabilities of the proposed sensors, navigation equipment, data analysis, and data management along with the associated equipment and personnel. As a whole, the IVS demonstrates the ability of the site team to operate an integrated system capable of meeting data quality objectives for project performance goals.

The contractor will establish an IVS to ensure the detection equipment and operators are working properly, with location determined in the field during site setup. The IVS will be seeded with appropriate industry standard objects (pipe nipples of appropriate sizes representative of M9 rifle grenade, 2.36-inch rocket, and 3.5-inch rocket) at various depths, orientations, and inclinations. Three of each seed item type will be buried, one shallow (to confirm detection) and two deep (to establish maximum depth detection capability. The UXO teams will conduct an instrument daily tests of all detection instruments before starting the clearance of munitions and explosives of concern and material potentially presenting and explosive hazard.

During the clearance of munitions and explosives of concern and material potentially presenting and explosive hazard, a blind seeding program will be implemented. Before the geophysical survey, the unexploded ordnance quality control specialist will distribute coverage seeds in the grids and transect at a rate of two per grid. The geophysical survey team will not know where these items are located. If any seed item is not located, a root cause analysis will be performed, and the grid will be subject to rework.

SECTION 6 GEOPHYSICAL INVESTIGATION PLAN

6.1 Geophysical Investigation Plan

Analog detection surveys will be conducted using hand held instruments to identify anomalies for investigation by unexploded ordnance (UXO) personnel based on the audible output of the analog sensor. As these anomalies are identified by the instrument operator(s), they will be investigated as detected or noted for subsequent intrusive investigation. There are no digital data associated with the analog instruments; therefore, no geophysical electronic data management will be necessary for analog surveys. However, the contractor will take geo-referenced digital photographs of identifiable munitions and explosives of concern (MEC) found during the investigation, which will be displayed in the geographic systems information.

6.1.1 Equipment

Selection of detection equipment was based on ease of operator use, detectability, and reliability in the steep terrain, rainforest climate, and dense vegetation at Waikane Valley Impact Area (WVIA). Two instruments were selected, including the Minelab F3 L and the Schonstedt GA-52Cx, or similar. The Minelab F3 L instrument works well in areas with high iron content such as WVIA. The Schonstedt GA-52Cx instrument is lightweight and easy to use, can detect the target munitions to their expected penetration depths, and is reliable during rugged use.

The Schonstedt magnetometer is a hand-held unit that employs two fluxgate sensors aligned and mounted a fixed distance apart to detect changes in the earth's ambient magnetic field caused by ferrous metal. The Schonstedt magnetometer responds with an audio output and a meter deflection when either sensor is exposed to a disturbance of the earth's ambient field associated with a ferrous metal target or the presence of a permanent field, associated with a ferrous metal target. (In most cases, it will be a combination of both circumstances.) No digital data is collected by Schonstedt or Minelab instruments. Schonstedt, Minelab, or similar metal detectors will be used to conduct UXO avoidance, surface sweeps, and analog (mag and dig) intrusive surveys.

Utilizing hand held Global Positioning System (GPS) units the contractor shall perform location recording and mapping using techniques that allow easy conversion/submission of data in the required format (e.g., state plane coordinates). The contractor will identify and record the locations of recovered items using a hand-held GPS in Universal Transverse Mercator coordinates.

6.1.2 Key Personnel

UXO technicians utilizing analog instruments will perform analog detection surveys and recording location coordinates of any material potentially presenting an explosive hazard (MPPEH)/MEC encountered with a hand-held GPS. All UXO personnel will meet the requirements set forth in Section 2.5. To ensure quality, safety, and procedure compliance, each team will be led by one UXO Technician III (UXO TIII) team leader who will oversee the work procedures of a variable number of UXO Technicians II and I (UXO TII/I).

6.1.3 Data Collection Techniques

Analog detection surveys performed by UXO technicians will generally be conducted in individual search lanes 5 feet wide that completely transect the grid and will be established in a pattern that ensures 100% coverage. A UXO TII/I assigned to each lane will systematically search the lane using an analog detector. The technician will move forward, sweeping the instrument back and forth across the lane in a manner that keeps the tip of the instrument within 4 to 6 inches of the ground surface and will form a series of arcs across the lane that are no greater than 3 to 4 inches between arcs. During this operation, the technician will monitor the aural indications produced by the detector and identify the location of any subsurface metallic anomaly encountered.

The UXO technicians will excavate and identify the source of each anomaly as it is encountered. Excavations will be initiated adjacent to the subsurface anomaly and will continue until the excavated area has reached a depth below the top of the anomaly, or 2 feet below grade, whichever is encountered first. Once the item is exposed for inspection, the UXO technicians will determine whether the item is MEC, MPPEH, or other debris. If the item is MEC, a positive identification will be documented and confirmed by the UXO TIII and will be further processed as discussed in Section 6.4 of the explosives safety submission (ESS). If the item is MPPEH, the procedures presented in Sections 6.3 and 6.4 of the ESS will be followed. All other debris will be collected and segregated from MPPEH to prevent commingling.

6.1.4 Sensor / Platform

Schonstedt or similar analog sensors will be tested daily at the instrument verification strip. As long as the operator is able to detect the seed items buried industry standard objects as listed in Section 5.2 in the instrument verification strip, the equipment will be considered to be in working order.

6.1.5 Positioning

Positions of MEC items will be documented using a hand-held GPS until such as the Trimble GeoXH with external antenna or equivalent. A 5-meter external antenna cable will be used to extend the antenna as high as possible in the jungle canopy where necessary.

6.1.6 Data Analysis Methods

There are no digital data associated with the analog instruments; therefore, no geophysical electronic data analysis or management will be necessary for analog surveys.

To measure data collection quality, a blind seeding program will be implemented. Before the geophysical survey is conducted, the UXO quality control specialist will distribute coverage seeds in the grids and transect at a rate of two per grid. The geophysical survey team will not know where these items are located. If any seed item is not located, a root cause analysis will be performed, and the grid will be subject to rework.

SECTION 7 GEOSPATIAL DATA MANAGEMENT

7.1 Geospatial Data Management

Spatial data such as map and geographic systems information (GIS) drawings will be required in support of the project. All spatial data deliverables will be compliant with the current Navy and Department of Defense spatial data requirements (Naval Installation Restoration Information Solution (NIRIS) and Non-Naval Electronic Data Deliverable (NEDD) Deliverable Submittal Guidelines Standard Operating Procedure.

7.2 Geographic Information System Data

A web-based GIS will be established that will be used to facilitate decision making, to perform analysis and visualize results, and to ensure effective cleanup decisions are made in cooperation with the Navy, regulators, and other stakeholders. GIS data may include past and present land uses, site conditions, historical photographs, land use controls, geophysical data, and munitions and explosives of concern (MEC) data collected throughout the RA. NIRIS data will be used for the initial remedial action area mapping data and information.

The project GIS data will be updated and managed in NIRIS. Optionally, the data may be exported using a local machine running ArcGIS or ArcInfo. Project related spatial data including maps, models and associated collected or created data will then be submitted back to NIRIS according to the NIRIS Non-NEDD Deliverable Submittal Guidelines Standard Operating Procedure. This data will include daily geophysical data, MEC related items found during the investigation, MEC items, archeological sites, and documentation of the locations of inaccessible areas such as brush piles, fence lines, areas of bare rock, etc.

7.3 Electronic Data Deliverables

All tabular electronic data deliverables including geophysical anomaly and ordnance information will entered into the NIRIS Electronic Data Deliverable (NEDD) to the NEDD Standard Operating Procedure. Data will be checked for quality control purposes using the NIRIS web-based data checker.

SECTION 8 QUALITY CONTROL PLAN

8.1 General Quality Control Procedures

This section outlines the general quality control inspection, documentation, and testing activities required to ensure that all work performed complies with the specified scope, schedule, budget, and level of quality anticipated by the Navy as well as the requirements of performance work statement, and the munitions and explosives of concern (MEC) Uniform Federal Policy - Quality Assurance Project Plan (UFP-QAPP, Appendix B). The UFP-QAPP outlines the procedures the Quality Control (QC) personnel will use to conduct the audits and inspections of the definable features of work (DFWs) for the RA at the WVIA.

The Bering Sea Eccotech, Inc. (BSE) QC process starts with top management commitment and involvement. The process provides a permanent and workable system that allows each employee to understand his/her specific job performance requirements. The QC and improvement processes ensure that the actions, procedures, and tools support every employee and provide training necessary to perform a job according to the requirements.

Checklists (part of the three phases of QC discussed in Section 1.7) have been developed to ensure that the DFWs are addressed and that the QC audits are documented. The overall objective of the QC process is to ensure that work is performed consistently with the performance work statement, reduce specific cause variations, and continually improve all processes associated with the contract.

8.2 Quality Management Key Personnel

Project quality is the responsibility of the entire project team. The team's comprehension of this Quality Control Plan (QCP) is of primary significance for quality objectives to be accomplished; thus, the training and indoctrination of the key personnel in the quality objectives will be conducted. The project organization is headed by the Project Manager (PM); the single focal point for successful accomplishment of all phases of the project. The PM is given full authority and responsibility for project execution and is supported by direct line managers with functions and responsibilities outlined below.

The PM approves the QCP, implements procedures, and has direct responsibility for day-to-day operations of the project. The PM's responsibilities related to QC include, but are not limited to the following:

- Implementation of all applicable BSE policies and procedures
- Timely submission of all contract deliverables
- Analyzing QC failures with the QC Manager (QCM) and the appropriate QC staff and implementing corrective actions

The QCM communicates with the BSE PM on all project-related QC matters. The QCM, as a management representative, has the following authorities and responsibilities:

- Ensure that the QCP has been established, maintained, and implemented

- Establish guidelines to assist in the development of program, project, site, and task-specific QC policies and procedures
- Initiate, recommend, approve, and provide solutions to the quality problems identified in the QCP during system audits
- Conduct periodic audits/inspections of the project
- Report the adequacy, status, and effectiveness of ongoing projects to the BSE PM

The UXO QC Specialist (UXOQCS) reports to the QCM on quality matters and is the key QC person onsite. The UXOQCS has responsibility for overall quality of work performed on the site. The responsibilities include, but are not limited to the following:

- Developing QC procedures to implement the QCP
- Verifying implementation of corrective actions
- Initiating actions to identify and prevent the occurrence of nonconformance relating to the services and QCP
- Stopping nonconforming work
- Ensuring that QC procedures are being followed and are appropriate in demonstrating data validity sufficient to meet data quality objectives
- Recommending actions to be taken in the event of QC failures, both to the PM and the QCM
- Reporting noncompliance with QC criteria to the PM and QCM
- Suspending project activities when a condition adverse to quality is identified and notifying the PM and senior personnel responsible for clearance activities when such action is required
- Conducting daily QC audits and inspections
- Conducting weekly and monthly QC compliance inspections

8.3 Contract Submittal Quality Control Process

Documents required under this contract will be developed and maintained by a project team consisting of the PM, Geographical Information System (GIS) Manager, and the QCM. These team members will contribute their corporate knowledge and experience to the documents to ensure technical quality.

- The PM will take the lead in development of contract documents and will schedule a peer review and a QC review in sufficient time to meet project milestones for delivery of submittals.
- The PM will provide technical writing support to develop the documents and will review completed documents to ensure accuracy and completeness.

- The GIS Manager will develop a digital database and maps, overlays of grid patterns and exclusion zones, and other spatial data. The GIS Manager will prepare all drawings or maps needed for submittals, and will perform QC of civil survey data.
- The QCM will review all documents prior to submittal.
- After the project team has performed a peer review of documents, the QCM will perform a QC review to ensure overall quality and completeness.

Comments on submitted documents will be directed by the PM to the appropriate subject matter experts for resolution. The PM will provide a written response for each comment. In addition, the PM will provide a copy of the comments and responses to the QCM and, if necessary, the Corporate Quality Manager for an assessment of the need for corrective action or lessons learned.

Changes to the final WP will be submitted to the QCM and/or UXOQCS immediately upon approval. The QCM and/or UXOQCS will be responsible for ensuring that the changes are incorporated into the hard copy documents on file and that all field personnel are made aware of the changes.

8.4 Meetings

8.4.1 Daily Quality Control Meeting

After the start of site work, the UXOQCS will conduct daily QC meetings with the Site Manager (SM) responsible for the upcoming work and with supervisory personnel (Senior UXO Supervisor [SUXOS], team leaders, etc.). Meetings conducted will be recorded in the Weekly QC Report. The Navy's Remedial Project Manager or designated representative may attend any of these meetings. These meetings may be held with the daily production meeting. As a minimum, the following will be accomplished at each meeting:

- Review the schedule
- Review the status of submittals
- Schedule the three phases of QC and testing
  - Preparatory phase
  - Initial phase
  - Follow-up phase
- Resolve QC and production problems
- Evaluate field recommendations for inclusion in the lessons learned post-project report
- Address items that may require revision of the Project QCP

8.4.2 Weekly Onsite Quality Control Meeting

Following mobilization, the UXOQCS will conduct weekly QC meetings with the SM, SUXOS, any subcontractor representatives, and other necessary personnel. The meetings will be noted in the Weekly Status Report. Meeting minutes will be prepared and submitted to the PM within three business days of the meeting. An agenda format that will be developed with concurrence

between the UXOQCS and the PM will be used to conduct the meetings. At a minimum, topics of discussion will include the following:

- Weekly progress
- Upcoming work
- Schedule
- Status of submittals
  - Submittals reviewed and approved since last meeting
  - Submittals required in the near future
- Significant QC/Quality Assurance (QA) problems and corrective actions taken
  - Identify any outstanding Corrective Action Request with suspense dates
  - Identify any outstanding Deficiency Notice (DN) and response requirements
- Review the work to be accomplished during the next week and documentation required
  - Establish completion dates for rework items
  - Identify preparatory phases required
  - Identify initial phases required
  - Identify follow-up phases required

8.5 Field Quality Control Inspections, Audits, and Reports

The UXOQCS is responsible for ensuring that site personnel perform operational checks of instruments and equipment, and that they record the results in the daily field notes. In addition to the implementation of the three phases of the QC process, inspections will be performed at random, with unscheduled checks of the site to ensure personnel accomplish all work as specified in the Work Plan. The UXOQCS will use the process outlined in Figure 5 to ensure that all field tasks meet quality standards prior to submittal for the QA process. The UXOQCS will submit a report to the QCM detailing the results of these checks. Any audits will be performed by the UXOQCS.

The UXOQCS will prepare a weekly QC Report and submit it to the PM for distribution to the appropriate personnel. The QC Report will include the following:

- The periodic assessment of work performed
- Significant QC/QA problems and corrective actions taken
- Work progress
- Lessons learned
- Change recommendations

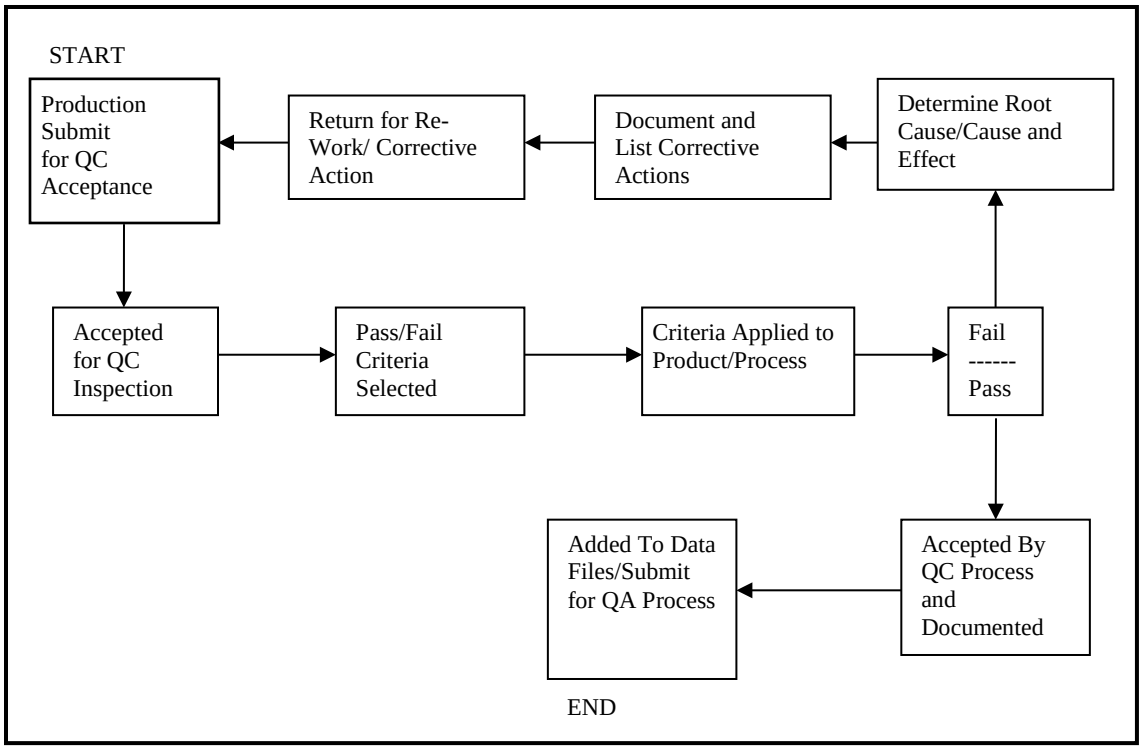

FIGURE 5: QUALITY CONTROL PROCESS

8.6 Logs and Records

Activity logs will be maintained daily, as applicable, and all entries will be made in ink. Logbooks will be bound and pages consecutively numbered. Logbooks and records will be supplemented by the use of preprinted forms (e.g., safety inspection forms, tailgate safety briefings). These forms help to ensure uniformity of activities being conducted, inspected, and reviewed. The following logbooks and records will be maintained onsite and are subject to inspection.

8.6.1 Daily Operations Summary

The Daily Operations Summary, maintained by the SM, will summarize all operations conducted on site, including the following:

- Date and recorder of information
- Start and end time of work activities, including down time
- Work stoppage
- Visitors and escorts
- Weather conditions
- Field change request to the WP, Site Health and Safety Plan, policies, or procedures
- Injuries and /or illnesses

- Safety briefings
- Munitions debris (MD), MEC, and/or material presenting potential explosive hazard (MPPEH) encountered
- Relevant events and training
- Date and team location
- Personnel and work performed
- Equipment and instrument checks
- Injuries and/or illnesses
- Changes to work instructions
- Work stoppage
- Other relevant events
- Signature of the SM

8.6.2 Field Logbooks

The field logbooks are maintained each field day by the SUXOS and the team leaders. These logbooks are used to record site activities and field data. Logbooks are maintained in a neat and legible manner and provide a historical record of site activities, including the following:

- Date and team location
- Weather conditions
- Personnel and work performed
- Equipment and instrument checks
- Injuries and/or illnesses
- Verification that each anomaly dig site was inspected prior to backfilling
- Changes to work instructions
- Work stoppage
- Visitors
- Positively identified archaeological sites
- Inaccessible areas due to brush piles, fence lines, areas of bare rock, etc.
- Other relevant events
- Signatures of the SUXOS and team leaders

8.6.3 Quality Control Logbook

The QC logbook will be maintained by the UXOQCS. This logbook is used to record all QC matters associated with the project site, including:

- Date and recorder of log
- Equipment testing and results
- QC inspections and audits performed
- Work stoppage due to QC issues
- Equipment monitoring results
- Nonconformance reporting
- Ordnance accountability
- Other relevant events
- Date and teams checked
- Recommendations or observations that may be included as lessons learned
- Signature of UXOQCS

8.6.4 Training Records

Training records will be maintained by the SM. These records contain any licenses, certificates, or other qualifying data, including the following:

- Date and recorder of log
- Nature of training (personnel will complete the Site-Specific Training Form)
- Personnel attending and instructor(s)
- Visitor training and briefings
- Signature of the instructor and SM

8.6.5 Munitions and Explosives of Concern, Material Potentially Presenting an Explosive Hazard and Anomaly Records

The MEC, MPPEH and anomaly records are individually prepared records. These records are prepared by the SM and are used to record data on anomalies and MEC and/or MPPEH encountered. The Technical Manual 43-Series will be used as the nomenclature protocol for recording items in the log.

8.6.6 Explosives Usage Record

The Explosives Usage Record will be maintained by the SUXOS. These records will be used to record and track the donor explosives used at the site, including the following:

- Date
- Assigned explosives identification or lot number;
- Type, condition, and location
- Explosives issued, expended, and returned

- Signature of the SM or SUXOS indicating concurrence.

8.6.7 Photographic Logbook

The photographic logbook will be maintained by the SM. This logbook is used to record all photographs taken on the project site. These photographs are used to document MEC and MPPEH encountered, representative samples of MD, range related debris, or cultural debris, positively identified archeological sites, as well as site conditions before, during, and after operations. Photographs will include the following information:

- Date and time taken
- Unique identifying number(s) relating to the photographic logbook
- Location photograph was taken from and direction looking
- Global positioning system (GPS) location of all archeological sites
- GPS location of all MEC, MPPEH, and MD encountered
- Brief description of the subject matter

8.6.8 Field Change Request and Field Change Request Log

Throughout the project, the SM will maintain the field change request log, which will be used to track all field change requests for significant deviations from the Work Plan or its sub-plans. The log tracks those deviations that require approval from the Navy throughout the entire approval process. See Section 8.9 for details of the field change request process.

8.6.9 Daily Review of Field Data

During daily field activities the UXOQCS will review portions of the field data on a daily basis to ensure accurate classification and documentation of recovered MD-, MEC-, and MPPEH-related items. This review will be conducted in accordance with the three phases of QC process included in the MEC UFP-QAPP.

8.7 Equipment Tests, Functional Checks, Calibration, and Maintenance

Instruments and equipment used to gather and generate data, such as geophysical/navigational and data analysis/transfer systems, will be tested with sufficient frequency and in such a manner as to ensure that accuracy and reproducibility of results are consistent with the manufacturer's specifications. Instruments or equipment failing to meet the standard will be repaired, recalibrated, or replaced. Replaced instruments or equipment must meet the same specifications for accuracy and precision as the item removed from service. Testing, repair, or replacement records will be filed and maintained by the SM and are subject to audit by the UXOQCS and QCM. Testing records of the field instrumentation will be filed with the BSE PM after the fieldwork is completed.

Items such as telephones and radios will be tested for serviceability at the start of each workday. Results of these tests will be recorded in the field logbook. Items failing these tests will be repaired or replaced prior to operations commencing.

8.7.1 Geophysical Equipment

The geophysical instruments listed below (or similar) will be used on this project. The QC staff will verify that the instrument verification strip procedures described in Section 5 of the work plan are being followed to verify that the equipment meets the required system performance for the project.

8.7.1.1 Minelab F3 L

The hand-held Minelab F3 L is an all-metals detector that detects both ferrous and nonferrous objects with excellent spatial resolution. The QC staff will verify that the operating procedures outlined in the manufacturer's user guide are followed throughout the execution of this project. The Minelab F3 L will be tested against the known site anomalies at the established instrument verification strip (IVS) each workday prior to field activities. The known anomalies within the IVS will be seed items that meet the size and depth requirements necessary to determine the serviceability of the instrument in accordance with the UFP-QAPP and the ESS.

8.7.1.2 Schonstedt GA-72Cd

The hand-held Schonstedt GA-72Cd magnetometer will be tested against the known site anomalies at the established IVS each workday prior to field activities. The known anomalies within the IVS will be seed items that meet the size and depth requirements necessary to determine the serviceability of the instrument in accordance with the UFP-QAPP and the ESS.

8.7.2 Geophysical Instrument Performance

The UXOQCS will track the performance of each instrument used onsite. Daily records will be monitored and aggregated into the RA Report that details instrument performance during IVS certification and field operations throughout the project.

8.7.3 Maintenance

The UXOQCS will audit field logbooks on a weekly basis to ensure that maintenance of vehicles and equipment is performed on a regular schedule and in accordance with the manufacturer's recommendation or owner's manual for equipment requiring regular upkeep.

The UXOQCS will coordinate scheduled maintenance of the following equipment in accordance with the manufacturer's recommendations or the owner's manual.

- Vehicles
- Communications equipment
- Navigational
- Hand-held magnetometers and all-metals locators
- Emergency equipment

Replacement equipment will meet the same specifications for accuracy and sensitivity as the equipment removed from service. Geophysical instruments will be checked on the IVS daily and after any repairs. They will be required to demonstrate a consistent detection rate for all seed items and any identified background anomalies. Repair or replacement of parts will meet the

manufacturer's specifications and recommendations. The UXOQCS will document and maintain records pertaining to the testing, repair, and/or replacement of instruments and equipment on site. Spare instruments of each type will also be mobilized to the site.

8.7.4 Accuracy

Control monument locations, boundaries of areas scheduled for clearance, and boundaries of cleared areas will be verified and certified by the UXOQCS. The UXOQCS will additionally perform daily reviews of the MD/MEC data to ensure accurate categorization of munitions-related items encountered and to ensure that all MD/MEC items are accounted for.

Land survey coordinates will be evaluated by the UXOQCS to determine if the geographic features are correct. Errors found will be corrected and noted in the quality control logbook. The accuracy of grid corners will be to the closest 3.0 cm (0.1 feet). A detected error will result in the data being examined and the correct location and place points will then be determined in the project GIS data set to represent identifiable elements of the feature (e.g., corners or intersections).

8.8 Inspection Process

The UXOQCS will be responsible for verifying compliance with this section of the plan through the implementation of the three phase QC process described in this section and in the MEC UFP-QAPP. This process will ensure that all project activities comply with the approved plans and procedures.

The UXOQCS will ensure that the three phase QC process is implemented for each of the DFWs listed in the MEC UFP-QAPP. Each QC phase is important for obtaining a quality product. Production work will not be performed on a DFW until the preparatory and initial phase inspections have been successfully completed.

8.8.1 Three Phases of Quality Control

Each element of the RA will be identified as a discrete DFW and controlled by three distinct QC phases: preparatory, initial, and follow-up.

8.8.2 Definable Features of Work

A DFW is a task that is separate and distinct from other tasks and has separate control requirements. The DFWs that relate to this project are listed in the MEC UFP-QAPP; they include vegetation clearance, surface removal, detector validation (IVS), geophysical investigation, subsurface removal, and verification sampling (blind seeding).

8.8.2.1 Preparatory Phase Inspection

A preparatory phase inspection will be performed prior to the beginning of each DFW to review the work scope and applicable specifications and verify that the necessary resources, conditions, and controls are in place and compliant before the start of work activities.

8.8.2.2 Initial Phase Inspection

An initial phase inspection will be performed for each DFW after a representative sample of the work has been completed. The purpose of the inspection will be to check the preliminary work for compliance with procedures and contract specifications, verify inspection and testing, establish the acceptable level of workmanship, review the preparatory phase checklist, and check for omissions and resolve differences of interpretation.

8.8.2.3 Follow-up Phase Inspection

A follow-up phase inspection is performed each day that work on a DFW is performed to ensure continuous compliance and level of workmanship. The UXOQCS will observe the same activities as under the initial inspection and ensure that discrepancies between site practices and approved specifications are identified and resolved. Corrective actions for unsatisfactory conditions or practices will be verified by the UXOQCS prior to continuing work on the affected feature.

8.9 Field Change Request

Changes to plans or procedures will be documented via a field change request. A field change request is used to request and document changes identified as a result of unanticipated field conditions or errors in the WP documents. See Figure 6 for issues to consider when submitting a request for change to approved documents or procedures. Field change request forms are signed by the Remedial Project Manager to acknowledge the changed condition.

Field personnel are responsible for forwarding any request for change/revision to an existing document to the UXOQCS. Under no circumstance (with the sole exception of immediate safety concerns) should a change/revision be incorporated until it has been reviewed and approved by the Remedial Project Manager and the appropriate Contracting Officer or his/her representative as needed.

The UXOQCS is responsible for determining the validity of the change/revision recommendation and, if deemed valid, forwarding the recommendation expeditiously within the project management chain to those personnel responsible for review and approvals.

The PM is responsible for ensuring that procedures specified by the performance work statement, Work Plan, and accepted standard operating procedures and supporting documents are strictly adhered to throughout the project. However, projects are always dynamic processes and thus changes and/or revisions can and will be identified throughout its duration. It is the responsibility of the PM to ensure that any change/revision to an already agreed upon procedure is processed and authorized prior to implementation.

The QCM is responsible for the continuous improvement of all processes within his/her program to include the management of specific projects. To accomplish this, the QCM will be responsible for the following:

- Becoming thoroughly familiar with the procedures of all projects under his/her jurisdiction
- Periodically observing project management onsite (if specifically requested by the Navy Remedial Project Manager)

- Reviewing procedural change recommendations from field crews and/or PMs
- Recommending authorization for specific changes/improvements to field operations to the PM

The PM will be the final arbiter of the validity for the recommendation within the organizational chain. If deemed valid, the PM will contact the Contracting Officer or his/her representative and request that the change be incorporated into field procedures. Documents will be drafted, reviewed, finalized, and approved for use by the appropriate sections, to include Safety, QC, and Operations.

Personnel identifying a need for change or revision to an existing document will complete a field change request form and submit it to management for processing. The following guidance is designed to assist in properly addressing the change/revision being sought.

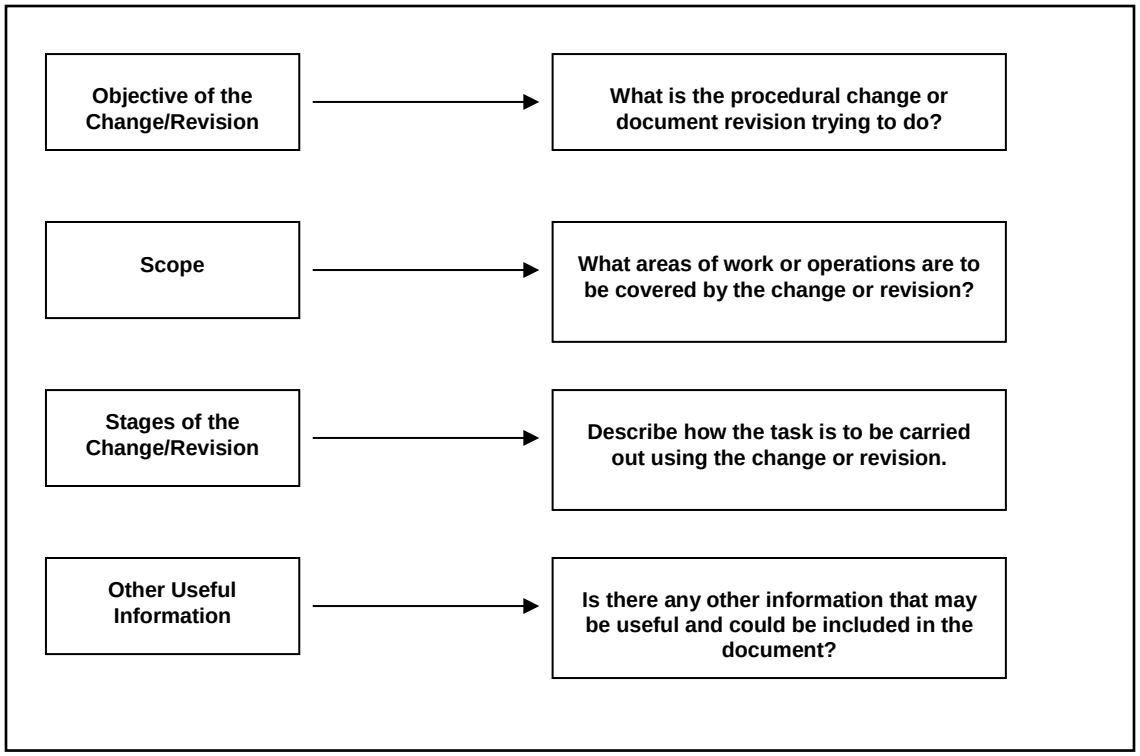

FIGURE 6: CONSIDERATIONS WHEN SUBMITTING A REQUEST FOR CHANGE

A request for a change or revision to an existing document must be accompanied by a draft of the change or revision being sought. This draft must include the original text, the proposed text, references for the proposed change or revision (e.g., regulatory update, contract change, variation of equipment) to include page, paragraph, bullet, drawing, figure, section, or subsection of the reference material.

A request for a change or revisions to an existing document will follow a review and approval process that incorporates the various sections or departments as needed to determine the validity of the request and ensure that authorized, appropriate personnel have agreed to and signed the

approval form for a change or revision to be completed. Personnel assigned to review the request will determine answers to the following questions.

- Has the request been submitted for an existing document?
- Does the request document the change or revision needed?
- Has a draft, with reference material, been submitted?
- Have the various sections or departments affected by the request been notified?

After the request has been entered into the review and approval process, personnel assigned to process the request will determine answers to the following questions?

- Is the change or revision required by a regulatory or contractual document?
- Is the change or revision necessary due to variations in equipment, training, or personnel?
- Will the change or revision affect other document(s), and have the other document(s) been identified?
- Will the change or revision impact safety, quality, or production in a positive or negative manner?
- Does the proposed change or revision meet the needs of the requirement?

After a change or revision has been accepted and implemented, outdated or obsolete documents will be removed from use and the change or revision disseminated and briefed to affected personnel, sections, or departments. Those changes or revisions that affect other documents will be identified to ensure continuity between the various documents.

If training is required by a change or revision, site management will address it and have the necessary training scheduled, as appropriate.

8.9.1 Deficiency Management

All deficiencies or nonconforming conditions discovered during inspections or other QC functions will be noted on a DN. The DN will identify, at a minimum, any corrective action required, the individuals reviewing and approving the actions, and the actions taken to prevent recurrence. A DN log will be maintained to document and track corrective actions to closure and be included in the RA Report. The UXOQCS will be responsible for tracking deficiencies to closure and reporting their status on daily reports and log forms.

8.9.2 Corrective Action

Once a process displays a characteristic out of specification with those required for the project or quality objectives, corrective action must be conducted to identify the cause of the deficiency or nonconformance. When the cause of the problem is identified, appropriate corrective action can be instituted and then monitored for effectiveness.

8.10 Root Cause Analysis

The UXOQCS will conduct a root cause analysis to determine if the failure is the result of the process, procedures, equipment, and/or personnel. The UXOQCS will provide the findings to the

SM, QCM, and PM with suggested corrective actions. After the corrective actions are approved by management, the field teams will implement them. The root cause analysis and corrective actions will be attached to the weekly report.

8.10.1 Implementation of Corrective Action

Following the root cause analysis, the project personnel will undertake the most effective remedy to correct the problem. Potential remedies to be considered may include the following:

- Supplemental training of personnel
- Changes of equipment or modification of equipment currently in use
- Acquisition of supplemental equipment
- Implementation of new procedures or modification of existing procedures
- Changes in QC procedures

Successful implementation of corrective action will be documented on the DN. Through follow-up phase surveillance, the UXOQCS will verify that the corrective action implemented has rectified the deficient condition and is sufficient to prevent recurrence.

Figure 7 illustrates the flow of the root cause and effect process the QCM, PM, and UXOQCS will use to determine failure causes.

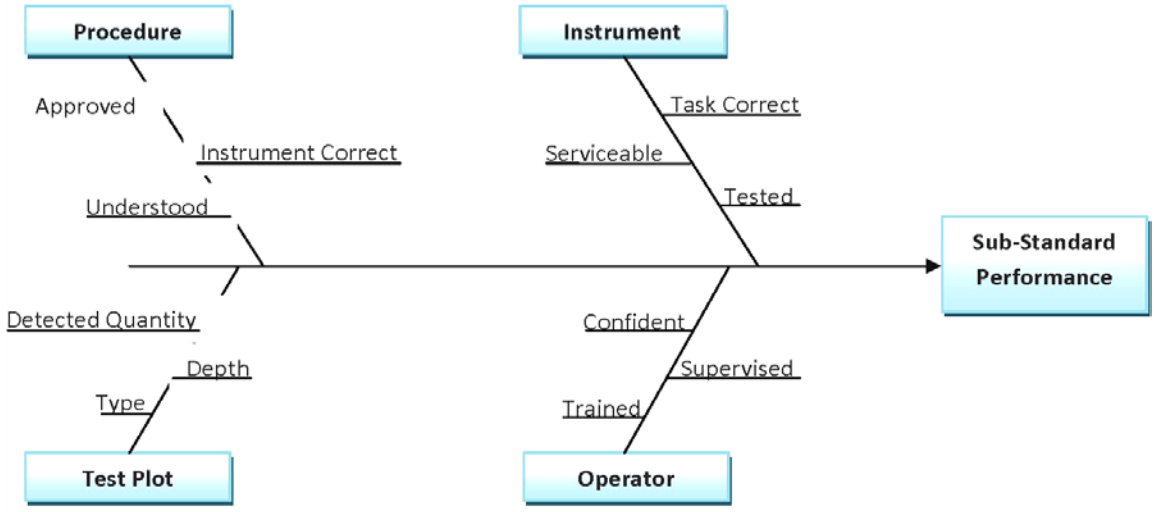

FIGURE 7: CAUSE AND EFFECT PROCESS

8.11 Specific Quality Control Procedures

BSE will employ the specific quality control procedures, audits, and inspections detailed in the MEC UFP-QAPP to ensure the quality standards required to achieve the data quality objectives.

The UXOQCS will be responsible for verifying compliance through the implementation of the three phase QC process described in the MEC UFP-QAPP. This process will ensure that all project activities comply with the approved plans and procedures.

8.12 Continuous Improvement Program

A continuous improvement program will be maintained onsite. It will include the following actions:

- The UXOQCS will solicit, on a weekly basis, lessons learned from onsite personnel.
- The SM, UXOQCS, and SUXOS will review lessons learned for appropriateness.
- Recommendations for improvements to the work process will be forwarded to the QCM, who will review and forward to the PM.
- Upon review and approval by the PM, recommendations for improvement will be forwarded to the Contracting Officer's Representative for consideration.

8.13 Lessons Learned

The objective of capturing lessons learned is to share experiences or recognized potential problems, and then identify best practices to achieve the following:

- Prevent the recurrence of repetitive design/execution deficiency
- Clarify interpretation of regulations or standards
- Reduce the potential for mistakes in high risk/probability areas of concern
- Pass on information specific to an installation or project
- Promote a good work practice that should be ingrained for repeat application
- Promote efficient and cost-effective business practices

The project team will be responsible for identifying and submitting lessons learned for review and approval. Throughout this RA, the project team members will consider how their experiences might be appropriate for the lessons learned program.

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SECTION 9 ENVIRONMENTAL MANAGEMENT PLAN

9.1 Environmental Management Plan

This Environmental Management Plan describes the approach, methods, and operational procedures to minimize pollution, protect and conserve natural resources, or restore damage during the Remedial Action (RA) to be conducted at the Waikane Valley Impact Area (WVIA). In general, RA activities include fence repair, removal, and replacement; geophysical investigations; surface and subsurface clearance of material presenting a potential explosive hazard (MPPEH), which includes munitions and explosives of concern (MEC). Surface activities will include the restoration of existing perimeter fencing along the Southern Area, vegetation removal to 6 inches above ground surface, vegetation clearance to gain access to the fence; and a clearance of MEC. Intrusive activities at WVIA will include a subsurface clearance to a maximum depth of two feet within a 50-foot radius of any discovered surface MEC item. Additionally, intrusive activities will include a subsurface clearance of a 10-foot buffer strip along the southern side of the boundary between the Southern Area and the Northern Area; a minimum 50-foot wide corridor (2.0 acres total) leading from Waikane Stream to Kamaka Shrine and Waikane Spring; and around Kamaka Shrine and Waikane Spring to the limits of the fencing. All detectable metallic anomalies will be excavated to determine their nature. Excavation activities will be limited to two feet below ground surface.

RA activities will be recorded in field notebooks, and photographs will be taken as necessary to document observations of species or suitable habitats. If protected species are identified, Bering Sea Eccotech, Inc. (BSE) will halt work in the area until the endangered species relocates. Because no federally listed, threatened or endangered species and no plants proposed for listing have been identified within the RA work area, a natural resource monitor will be required during RA activities.

9.1.1 To Be Considered Standards

In addition to ARARs, non-promulgated criteria, advisories, guidance or policies referred to as "To Be Determined" (TBC) standards may also apply to the conditions found at a site. Unlike applicable or relevant and appropriate requirements (ARARs), identification of and compliance with TBCs are not mandatory or legally binding. However, where a TBC is used as a cleanup level, its use for this purpose should be explained and justified. As described above, the RA at WVIA does not include testing for chemical contaminants, so the use of a TBC as a cleanup level is not applicable.

9.1.2 Identification of Site-Specific ARARs

In determining whether a requirement was pertinent to future munitions response actions, potential ARARs were initially screened for applicability. If determined not to be applicable, the requirement was then reviewed for both relevance and appropriateness. Requirements that are considered relevant and appropriate command the same importance as applicable requirements. Potential Federal and state ARARs and TBCs determined to be specific and applicable to the RA at WVIA are identified in Table 6. Common standards that have been screened out as not

ARARs or TBCs are not included in the table. A complete list of ARARs and TBCs that were considered for the RA at WVIA are presented in Appendix A of the Remedial Design Report for the WVIA.

TABLE 6
POTENTIAL APPLICABLE, RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) AND TO BE CONSIDERED (TBC) STANDARDS

Requirement	Citation	Description and Analysis	ARARs	Comments
Federal – Chemical Specific				
A risk evaluation conducted during the Remedial Investigation (RI) indicated that no chemical risks exist at Waikane Valley Impact Area (WVIA).				
State – Chemical Specific				
Water Quality	Hawaii Administrative Rules (HAR) Title 11, Chapter 54: Water Quality Standard	Establishes a series of classifications and water quality standards for surface water and groundwater used to protect the public health or welfare and enhance water quality. *Surface water bodies are present and the underlying aquifer is considered a potential drinking water source*	Yes	Site activities will be conducted in a manner that is protective of surface water and groundwater.
Federal – Location Specific				
Clean Water Act (CWA)	33 United States Code (USC) 1251 et seq. 40 Code of Federal Regulations (CFR) 100-149	Establishes standards governing all untreated waters including marine, coastal, estuarine, fresh surface water and groundwater. Establishes the program, framework, and federal water quality standards. Additional substantive and potentially more stringent requirements/criteria will be established via state statutes and regulations. *Waters are present within the site.*	Yes	

TABLE 6 (continued)
POTENTIAL APPLICABLE, RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) AND TO BE CONSIDERED (TBC) STANDARDS

Requirement	Citation	Description and Analysis	ARARs	Comments
Floodplain Management	Executive Order 11988	Restricts activities within the 100-year floodplain. *Floodplains associated with Waikane Stream area present at the site.*	Yes	Munitions and explosives of concern (MEC) clearance activities do not involve alteration of Waikane Stream, but fence construction activities may come within the 100-year floodplain.
Native American Graves Protection and Repatriation Regulations	43 CFR 10.4 (c) and (d)	Requires consultation with the Native Hawaiian organization to determine disposition of objects discovered. *Applicable if human remains are found during the Remedial Action (RA).*	Yes	If human remains are found, proper disposition will be coordinated or remains will be left in place where feasible.
National Historic Preservation Act	16 USC 470	Provides for the recovery and preservation of historically and archaeologically significant artifacts. *Various culturally significant sites exist at the site, including a site listed on the National Register of Historic Places.*	Yes	Archaeological monitoring will be conducted during the RA to prevent disturbance and possible discovery of significant artifacts.

TABLE 6 (continued)
POTENTIAL APPLICABLE, RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) AND TO BE CONSIDERED (TBC) STANDARDS

Requirement	Citation	Description and Analysis	ARARs	Comments
Protection of Archaeological Resources	43 CFR 7.4 (a), 7.5 (b)(1)	Requires protection of archaeological resources if discovered. *Applicable if RA activities uncover or disturb cultural resources. Various culturally significant sites are known to exist within the site.*	Yes	Archaeological resources will not be excavated, removed, damaged, or otherwise altered or defaced unless by permit or exception. See Archaeological Monitoring Plan
Endangered Species Act	16 USC 1531-1543	Prohibits actions that jeopardize the continued existence of any listed species, results in the destruction or adverse modification of designated critical habitat of such species, or results in a "taking" of any listed species. *Applicable if listed species or critical habitat is identified. No federally listed threatened or endangered plant or animal species are known to exist on site. Though typical nesting habitat for the threatened Newell's shearwater was found on a portion of the site, there are no known nesting colonies of this species on Oahu.*	Yes	If listed species are identified, appropriate mitigation measures will be implemented.

TABLE 6 (continued)
POTENTIAL APPLICABLE, RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) AND TO BE CONSIDERED (TBC) STANDARDS

Requirement	Citation	Description and Analysis	ARARs	Comments
Migratory Bird Treaty Act	16 USC 703-712	Prohibits the taking, possessing, buying, selling, or bartering of any migratory bird, including feathers or other parts, nest eggs, or products, except as allowed by regulations. *Migratory birds are known to pass over the area, although no nesting habitats are known or believed to exist on site.*	Yes	
Magnuson-Stevens Fishery Conservation and Management Act	16 USC 1851 et seq.	Requires project activities to minimize adverse effects on fish habitat.	Yes	Activities will be managed to minimize adverse effects to fish habitat, and water quality.
State – Location Specific				
Burial Sites and Human Remains	HAR Title 13, Chapter 300: Rules of Practice and Procedure Relating to Burial Sites and Human Remains	Governs practice and procedure relating to the proper care and protection of burial sites/human skeletal remains fifty years of older. *Applicable if human remains are found during the RA.*	Yes	
Historic Preservation	Hawaii Revised Statutes (HRS), Title 13, Chapter 6E	Requires action to be taken to locate, identify, evaluate, and protect cultural resources. *Several culturally significant sites were found within the site during previous investigations.*	Yes	Statute suspended until 30 June 2016 by Governor's Proclamation dated 14 June 2011.

TABLE 6 (continued)
POTENTIAL APPLICABLE, RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) AND TO BE CONSIDERED (TBC) STANDARDS

Requirement	Citation	Description and Analysis	ARARs	Comments
Protection of Caves	HRS 0006D	Protects caves and contents. *Applicable if cave(s) discovered during site clearing activities. Caves are not expected within the areas where RA activities will be conducted.*	TBC	Statute suspended until 30 June 2016 by Governor's Proclamation dated 14 June 2011
Endangered Species	HRS Title 12, Chapter 195D-4 HAR title 13, Chapter 124	Prohibits any taking, transport, or commerce in designated species. Further outlines conservation programs that mandate continued research on listed species. *Applicable if listed species or critical habitat is identified. No federally listed threatened or endangered plant or animal species are known to exist on site. Though typical nesting habitat for the threatened Newell's shearwater was found on a portion of the site, there are no known nesting colonies of this species on Oahu.*	TBC	Statute suspended until 30 June 2016 by Governor's Proclamation dated 14 June 2011
Federal – Action Specific				
Resource Conservation and Recovery Act (RCRA) Subpart M (Military Munitions Rule)	62 Federal Register 662 40 CFR 266 Subpart M	Identifies when military munitions become a solid waste, and, if these wastes are hazardous, the management standards that apply. *This is a procedural requirement and does not provide site-specific criteria.*	TBC	Substantive requirements for managing recovered munitions will be implemented during the RA.

TABLE 6 (continued)
POTENTIAL APPLICABLE, RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) AND TO BE CONSIDERED (TBC) STANDARDS

Requirement	Citation	Description and Analysis	ARARs	Comments
Open Burning/Open Detonation (Treatment) of Waste Explosives	40 CFR 265.370 and 265.382 (Subpart X)	Requirements for treatment of explosives through burning. *Applies to the treatment of explosives through burning or detonation. Open burning/open detonation is considered "treatment in miscellaneous units." This is a procedural requirement and does not provide site-specific criteria.*	TBC	Substantive requirements such as those pertaining to required separation distances will be implemented during the RA.
Explosives Storage	27 CFR 555 Subpart K 40 CFR 264 Subpart EE	Provides standards for the storage of explosive materials. *Provides specific requirements for storing explosive materials that may be pertinent to MEC response actions. This is a procedural requirement and does not provide site-specific criteria.*	TBC	Substantive requirements for storage of explosives (as appropriate) will be implemented during the RA.
Oil Pollution Prevention	40 CFR 112	Governs storage of oil or fuels in amounts greater than 1,320 gallons, if stored in containers 55 gallons or larger. *Includes substantive requirements pertaining to containers storing fuels in amounts greater than 1,320 gallons. The regulation includes nonsubstantive requirements (e.g. preparation of plans) that are not required to be met.*	TBC	Oil and fuels are not anticipated to be used in the cited quantity during the RA; therefore, the design and management requirements of this rule will not apply.

TABLE 6 (continued)
POTENTIAL APPLICABLE, RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) AND TO BE CONSIDERED (TBC) STANDARDS

Requirement	Citation	Description and Analysis	ARARs	Comments
Ammunition and Explosives Safety Standards	Department of the Navy OP5 "Ammunition and Explosives Ashore"; Naval Ordnance Safety and Security Activity Instruction (NOSSAINST) 8020.15C "Explosives Safety Review, Oversight, and Verification of Munitions Responses".	Set explosives safety standards to protect human health and the environment. *Not promulgated; provides specific requirements for managing munitions and explosives that pertain to MEC response actions.*	TBC	Specific requirements for safe removal and management of MEC must be adhered to.
Detonation-in-Place	HNC-ED-CS-98-7 "Use of Sandbags for Mitigation of Fragmentation and Blast Effects Due to Intentional Detonation of Munitions".	Identifies specific criteria for the use of sandbag mitigation during intentional detonations of MEC. *Provides specific technical requirements that may be pertinent to MEC disposal.*	TBC	If sandbag mitigation is deemed appropriate during MEC disposal, the specific requirements contained herein must be adhered to.
Explosives Storage	Bureau of Alcohol, Tobacco, and Firearms Publication 5400.7 "Federal Explosives Laws and Regulations" 40 CFR 2654 Subpart EE	Provides standards for the storage of explosive materials. *Provides specific requirements for storing explosives materials that may be pertinent to MEC response actions.*	TBC	If explosives and/or MEC are stored on site during the RA, the specific requirements contained herein will be adhered to.

TABLE 6 (continued)
POTENTIAL APPLICABLE, RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) AND TO BE CONSIDERED (TBC) STANDARDS

Requirement	Citation	Description and Analysis	ARARs	Comments
Material Potentially Presenting an Explosive Hazard (MPPEH)	Department of Defense (DoD) Instruction 4140.62 "Management and Disposition of Material Potentially Presenting an Explosive Hazard".	Identifies procedures for inspecting and certifying the safety status of MPPEH. *Provides specific technical requirements pertinent to managing MPPEH during MEC response actions.*	TBC	MPPEH discovered during the RA will be managed in accordance with the procedures identified herein.
	DoD Manual 6055.09-M "DoD Ammunition and Explosives Safety Standards" February 29, 2008. Administratively Reissued August 4, 2010.	Provides protection criteria to minimize serious injury, loss of live, and damage to property from military munitions and MEC (e.g. explosives safety quantity distances). *Applies to the selection of remedial alternatives for the site.*	TBC	RA activities will be implemented in accordance with the explosives safety measures contained herein.
Construction Support	United States Army Corps of Engineers (USACE) Engineer Pamphlet (EP) 75-1-2 "Munitions and Explosives of Concern Support During Hazardous, Toxic, and Radioactive waste and Construction Activities".	Outlines requirements for support of future construction activities on the site. *Applies to remedial alternatives in which land transfer is accomplished.*	TBC	RA will be conducted under a DDESB-approved ESS.
Navy Environmental Guidance	Office of the Chief of Naval Operations Instruction (OPNAVINST) 5090.1C "Navy Environmental and Natural Resources Program Manual".	Navy guidance manual on environmental and natural resources operations. *TBC for operations that may affect the environment or natural resources*	TBC	

TABLE 6 (continued)
POTENTIAL APPLICABLE, RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) AND TO BE CONSIDERED (TBC) STANDARDS

Requirement	Citation	Description and Analysis	ARARs	Comments
State – Action Specific				
Fugitive Dust	HR Title 19, Chapter 342B-11 and -34 HAR Title 11, Chapter 60.1-33: Air Pollution control	Requires mitigation of fugitive dust visible beyond the property line through implementation of best practical operation and treatment. *Applies to dust produced during vegetation and munitions clearing activities.*	Yes	
Waters of the State	HAR Title 12, Chapter 174C HRS 342D-50	Provides for the protection and improvement of the quality of waters of the state and to provide that no substance be discharged into such waters without first receiving the necessary treatment or other corrective action. Designates both surface and groundwater. *Applicable to any actions taken during the RA that may result in discharges to surface water or groundwater.*	Yes	
Storm Water	HAR Title 11, Chapter 55	Defines effluent limitations and other requirements for construction activities that would normally require National Pollutant Discharge Elimination System (NPDES) permitting by virtue of disturbing more than 1 acre of land. *Storm water discharge requirements may be applicable due to the potential size of the area to be disturbed.*	Yes	

TABLE 6 (continued)
POTENTIAL APPLICABLE, RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) AND TO BE CONSIDERED (TBC) STANDARDS

Requirement	Citation	Description and Analysis	ARARs	Comments
Storm Water	HAR Title 11, Chapter 55, Appendix C: NPDES General Permit Authorizing Discharges of Storm Water Associated with Construction Activity.	Specifies development of erosion and sediment control plan, plans for minimizing discharge and erosion during and after construction, and other general provisions including best management practices, storm water controls, and monitoring. *An NPDES permit is not required for site activities; however, the requirement and best management practices associated with this general permit are relevant and appropriate for the proposed activities and should be adhered to. The requirements for state waters with total maximum daily loads (TMDLs) do not apply because TMDLs have not been established for Waikane Stream.*	Yes	
Grading, Excavation, Clearing, and Grubbing	HRS Title 12, Chapter 180C, Soil Erosion and Sediment Control Revised Ordinances of Honolulu (ROH), Chapter 14, Sections 13-16.	Regulates grading, excavation, clearing, and grubbing activities for management of soil erosion and sediment control. *All grading, excavation, clearing, and grubbing activities need to be conducted in accordance with these requirements. One aspect of this is the erosion control plan. HRS Title 12, Chapter 180C exempts federal lands from applicability under this statute, but the Honolulu regulation is nevertheless considered relevant and appropriate.*	Yes	

TABLE 6 (continued)
POTENTIAL APPLICABLE, RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) AND TO BE CONSIDERED (TBC) STANDARDS

Requirement	Citation	Description and Analysis	ARARs	Comments
Hazardous Waste Management	HRS Title 19, Chapter 342J: Hazardous Waste HAR Title 11, Chapters 260-266, 268, 270, 271, 280	Regulates waste management in Hawaii. *Applicable to characterization of solid waste and management of hazardous waste generated during the RA.*	Yes	Any waste produced during the RA must be characterized. Other requirements are applicable if hazardous wastes are produced during the RA.
Transportation of Hazardous Materials	HRS Title 17, Chapter 286, Part XII: Transportation of Hazardous Materials	Regulates transport of hazardous substances in Hawaii. *Applicable to any hazardous materials transported on site during the RA.*	Yes	Transport of hazardous materials will be conducted in compliance with applicable regulations.
Litter Control	HAR Title 11, Chapter 68: Litter Control	Regulates handling of litter in Hawaii. *Applicable to solid waste/litter generated during the RA.*	Yes	Any refuse produced during the RA must be properly disposed of in litter bags or receptacles.
Noise	HRS Title 19, Chapter 342F-30 HAR Title 11, Chapter 46: Noise Pollution Control	Defines maximum permissible sound levels to provide for the prevention, control, and abatement of noise pollution from stationary noise sources and equipment related to agricultural, construction, and industrial activities. *Applicable to noise produced by detonation-in-place of MEC detected during any surface and/or subsurface clearing activities.*	Yes	

9.2 Endangered/Threatened Species Protection

The Endangered Species Act requires that this action not jeopardize the continued existence of threatened and endangered species, or their habitats. Surveys of the site conducted by Char and Associates (1989) and AECOS Consultants (2003) found no federally listed threatened or endangered plant species and no plants proposed for listing. The Migratory Bird Treaty Act prohibits the taking, possessing, buying, selling, or bartering of any migratory bird, including feathers or other parts, nest eggs, or products.

The endemic Hawaiian sub-species of the short-eared owl was not detected during surveys but may use resources present within the site, especially in the higher elevations of the valley wall. Typical nesting habitat for the threatened Newell's shearwater is also found on the upper slopes, but there are no known colonies of this species on Oahu. The RA fieldwork will be conducted below the higher, steeper slopes and will not intrude on these areas.

9.3 Wetlands Protection

The Wetlands Protection Act requires that this action be taken in such a manner as to minimize loss or degradation of wetlands. A field survey conducted at the project site (AECOS Consultants 2003) revealed no distinct wetlands.

9.4 Mitigation Procedures for Munitions and Explosives of Concern

The United States Environmental Protection Agency's Military Munitions Rule amended Resource Conservation and Recovery (RCRA) to regulate the disposal of all types of conventional and chemical ammunition products and their components. Under the Military Munitions Rule, used or fired military munitions are solid wastes when they are removed from their landing spot and then either:

- Managed off range (i.e., when transported off range and stored, reclaimed, treated, or disposed of)
- Disposed of (i.e., buried or landfilled) on range
- Located off range due to off-range landing and not promptly rendered safe and/or retrieved (statutory solid waste)

Under current RCRA and Department of Defense (DOD) regulations, MEC management procedures depend upon the location of the items. MEC located on range will not be considered solid waste, while MEC located or transported off range for disposal will be considered solid waste under RCRA.

A *military range* is defined under RCRA as "designated land and water areas set aside, managed, and used to conduct research on, develop, test, and evaluate military munitions and explosives, other ordnance, or weapon systems, or to train military personnel in their use and handling. Ranges include firing lines and positions, maneuver areas, firing lanes, test pads, detonation pads, impact areas, and buffer zones with restricted access and exclusionary areas." WVIA is managed as an "other than operational range", with access controlled by Marine Corps Base Hawaii such that civilians may only enter the property when accompanied by Explosive Ordnance Disposal personnel.

During the RA work, all MEC found will be disposed of within the site boundaries using the open detonation treatment process in accordance with the MEC Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP)]. Donor explosives will be transported as necessary on public roads, by air, or by vessel in accordance with all federal and state requirements.

Other project wastes may be generated during the RA activities and will require offsite disposal or treatment, including transportation of munitions debris (MD) at the end of the field work. These project wastes will not be hazardous, and the RCRA requirements and U.S. Department of Transportation (DOT) Hazardous Material Regulations will not apply.

MPPEH will be inspected, sealed in drums or similar containers, and certified in accordance with the MEC UFP-QAPP. At the end of the fieldwork, the drums will be shipped to a local recycler for disposal or recycling.

Exclusion zones are established for protection of the public in accordance with the MEC UFP-QAPP and the ESS.

9.5 Other Project Wastes

This section includes requirements for the proper characterization of all project wastes, and general waste transport and disposal requirements. Table 7 summarizes the anticipated waste streams and quantities. They are described in further detail in the sections immediately following; however, quantities and waste stream characteristics may vary. Waste streams will be further established onsite through investigation and/or generator knowledge, or through sampling and analysis (the waste characterization process) to ensure project wastes are properly disposed of at the end of the project or field season (as required). It should be noted that it is not anticipated that hazardous waste will be generated during the RA; however, all project wastes must be characterized properly at the time of generation to determine what regulatory requirements apply. All project waste will be disposed of offsite with the exception of green waste and MEC as outlined in the following sections.

Because this project is a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) action, project wastes containing CERCLA hazardous substances, including hazardous wastes being disposed of offsite, must be disposed of at a facility approved under the CERCLA Off-site Rule requirements in Section 121(d)(3) of CERCLA. The purpose of the Off-site Rule is to avoid having CERCLA wastes or CERCLA hazardous substances from response actions contribute to present or future environmental problems by directing these wastes to management units determined to be environmentally sound.

TABLE 7
SUMMARY OF ANTICIPATED WASTE STREAMS AND QUANTITIES

Potential Waste Stream	Estimated Quantity
Munitions debris or material potentially presenting an explosive hazard.	2 tons
Non-munitions metal debris, including fencing	TBD
Ordinary trash[1/]	50 gallons
Nonhazardous subtitle D debris (vegetation, wood, plastic, etc.)[2/]	50 gallons
Donor explosives	None
Oily rags and sorbents	5 gallons
Excess hazardous materials brought on site by contractor or subcontractor that are not consumed on project	TBD
Unanticipated or unknown wastes	TBD

[1/] The composition of ordinary trash is further defined in Section 12.6.4 below.

[2/] RCRA subtitle D, nonhazardous solid waste and debris (no free liquids) – excludes green waste left onsite.

TBD – To be determined

The following sections are a general guideline for the management of the anticipated waste streams. The contractor will ensure the project is in compliance with applicable regulations throughout the duration of the project.

9.5.1 Munitions Debris

BSE will transport MD offsite to a certified scrap metal recycler following certification in accordance with the MEC UFP-QAPP. MPPEH that has been inspected, certified, verified, and demilitarized will be properly disposed, per the work plan.

9.5.2 Non-Munitions Metal Debris

Non-munitions metal debris discovered during the RA will be removed from the site and delivered to a scrap dealer off site. This debris will include fencing material.

9.5.3 Ordinary Trash

Ordinary trash consists of paper materials, plastic cups and bags, trash bags, uncontaminated materials, and food waste. Ordinary trash generated by work crews will be removed from the site. Pre-existing ordinary trash will be left on site. Waste from RA activities will not be mixed with ordinary trash.

9.5.4 Subtitle D Debris

Subtitle D waste debris includes debris that is not characterized as a hazardous waste under RCRA. A subtitle D permitted landfill accepts nonhazardous solid wastes and debris and nonhazardous industrial wastes. The waste profile sheet must contain a list of all waste materials that make up this waste stream to ensure that all of the items are acceptable at the intended facility. This category is anticipated to consist of empty containers (non-aerosol) and non-

munitions-related debris. Vegetation removed during RA activities will be cut or mulched and left on site.

If subtitle D waste materials are characterized at the point of generation as nonhazardous wastes, this waste stream may also contain other waste materials suitable for a subtitle D landfill. These other wastes may include oily waste solids (liners, sorbent materials with no free liquids contaminated with diesel, motor oil, or hydraulic fluid from vehicle maintenance or spill cleanup [not gasoline]) or other nonhazardous debris that has been properly characterized by the contractor and is approved on the waste profile sheet for this waste stream.

Items that can be recycled will be to the extent practicable; however, it is anticipated that the amount of materials will not be substantial enough to warrant segregation for recycling, with the exception of non-munitions metal debris. Open head drums or bulk containers may be used to accumulate this waste stream.

9.5.5 Oily Rags and Sorbent Materials

Oily rags and sorbent materials (pads, rags, booms, or kitty litter) may be generated in a spill or leak of fuel or oily water, or during routine vehicle maintenance.

Oily sorbent materials will be placed into open-top drums (or equivalent) for disposal offsite or can be bagged (so they do not cause further contamination by leaching) and placed into the subtitle D waste stream if approved on the waste profile after proper waste characterization.

Free liquids may not be present in the sorbent materials that are sent to landfills. Also, free liquids must not be allowed to leach back out of the materials or out of containers in which they are stored. Free liquids will be allowed to drain out of the sorbent materials into a separate container, or additional sorbent materials, such as kitty litter, will be placed onto the materials so that free liquids are entrained within the sorbent materials and cannot drip. This will be performed in a manner that does not cause spillage into the environment. Because contact with rainwater can cause oil to leach out of oily waste, any containers of oily waste will be kept closed, secured, or otherwise have no holes (i.e., bags placed into subtitle D waste container) and the weight of the contents shall not cause the container to breach and leak.

If any gasoline rags and absorbents are generated (i.e., from a gasoline spill from a gas can or fuel tank), they will be segregated from the diesel- or oil-stained materials and sorbents. Gasoline contains benzene and these absorbents will be managed as hazardous waste or will be sampled to determine if they exhibit a characteristic for benzene or ignitability causing them to require management as hazardous waste. The Navy will be notified if gasoline-soaked sorbent materials are generated. These materials will be accumulated in an open-top (non-bung top) steel drum that is sufficiently sized for the waste so as to not have a high volume of head space in the container.

9.5.6 Contractor Hazardous Materials Brought on Site

Hazardous materials brought on site or used on site to support project activities (i.e., spray paint, lubricants, grease, etc.) will be properly disposed of or reused at the end of the project.

The shipment of hazardous materials (even if not waste) offsite must be performed in accordance with applicable DOT hazardous material requirements of either air carrier or vessel shipment.

To the extent possible, the materials will be shipped in their original containers with their original markings and labeling (and additional markings if required).

If the materials have no further use or become spent during the project, they will be characterized for proper disposal and shipped offsite as a waste, whether hazardous or nonhazardous. This is in part why it is critical to control the inventory of hazardous materials brought on site in the first place and especially what is imported by subcontractors. Inventory control and review of hazardous materials and Material Safety Data Sheets will be performed for all products brought on site to support project activities.

Empty containers will be disposed of with the subtitle D waste materials. The containers will be deemed empty according to RCRA regulations. The container is considered to be empty if it has been emptied by normal means and contains less than 1 inch of material, or 3 percent of the capacity of the container (by weight).

9.5.7 Donor Explosives

A subcontractor will transport donor explosives and initiating materials to the project site for demolition operations. These items will be DOD Hazard Class/Division 1.1. Specific procedures for the purchase, receipt, transport, storage, and accountability for explosives are contained the MEC UFP-QAPP. The subcontractor is responsible for explosives receipt, transport, storage, and accountability, as well as planning, directing, and executing all explosive disposal operations and ensuring the safety of all personnel. Explosives remaining after the RA field activities are complete will be detonated on site.

9.5.8 Unanticipated or Unknown Wastes Encountered During the Project

During the course of an excavation or other work activity, unanticipated or sometimes unknown materials or indicators of unknown contamination may be encountered (i.e., strong odors or buried drums and cylinders). Some of these wastes potentially could be immediately harmful, and as such it is important for personnel to relocate to the extent necessary to allow a proper evaluation of the potential hazards. Additionally, wastes that may have been left behind by other personnel should be approached with reasonable caution and left alone until materials are evaluated and proper disposal is determined.

The safety procedures and/or emergency procedures and notification protocols identified in the Accident Prevention Plan / Site Health and Safety Plan should be followed when unknown wastes or odors are encountered or are otherwise not identified in this plan or scope of work. The Navy and BSE will develop a plan to deal with the waste materials before proceeding, and will implement the RCRA generator standards and determine suitable accumulation areas, should the waste be hazardous.

9.5.9 Hazardous Material (Including Waste) Transportation

Hazardous materials must be shipped in accordance with DOT requirements. Hazardous material transported through the United States by land, by air shipment, or by vessel must be properly classed, described, packaged, marked, and labeled for shipment as required by the DOT Hazardous Materials Regulations 49 Code of Federal Regulations (CFR) 172.

All waste characterization information, including generator name/ number (whether hazardous or nonhazardous), user knowledge used to perform the waste characterization, copies of waste profile sheets, waste permits, manifests, and other pertinent paperwork, will be retained in project files and will be turned over to the generator (Navy). Similarly, MD that has undergone treatment (if required) and has been certified and verified to be safe will be packaged (to prevent commingling with noncertified MPPEH), sealed, and shipped offsite for recycling. Nonhazardous manifests will accompany the shipment of the MD.

9.6 Release Prevention

9.6.1 Establishment of Best Management Practices

Best management practices (BMPs) will be implemented during fueling of equipment and for the storage and handling of recovered fuel product, contaminated soils, solid or hazardous waste materials, and/or other hazardous materials that are stored or used on site in support of project operations.

This plan also includes general BMPs that will be implemented during project activities to protect adjacent land or surface waters from stormwater runoff that could cause sediments or contamination to migrate during project activities.

Throughout the duration of project activities, spill prevention will be addressed by familiarizing the crew with this Environmental Management Plan. Each task will be evaluated carefully to determine the potential for causing a spill before beginning the task. When spills are likely possible (such as during refueling, transferring of liquids to and from treatment system, or excavating contaminated soils from trenches), appropriate precautions will be taken to minimize potential spills as described below.

9.6.2 General BMPs and Protective Measures to be Implemented Onsite

Good housekeeping practices, as well as other preventive measures and BMPs on the project site and material/waste storage areas, will help maintain a clean and orderly work environment. Inspection and maintenance activities and good housekeeping practices will minimize the possibility of accidental spills and releases. Good housekeeping practices will allow easier observation of potential releases including damage or wear and tear on equipment and storage containers. Regular inspections and maintenance of equipment and site facilities provide additional opportunities for detecting potential releases and addressing problems before a release occurs. A clean work environment will also reduce safety hazards to personnel. Table 8 summarizes the general hazardous materials and petroleum storage and handling BMPs to be employed at the site, as well as outlining protective measures. Table 9 provides a summary of general stormwater BMPs, and Table 10 provides the inspection requirements and frequency.

TABLE 8
SUMMARY OF GENERAL HAZARDOUS MATERIALS AND PETROLEUM STORAGE AND HANDLING BMPS

Best Management Practices	Description of Activities
Good housekeeping	Drip pans or equivalent will be used under vehicles or other fuel-driven equipment (i.e., generators) to collect leaking fluids during fueling or fuel transferring activities.
	Garbage and waste materials or debris will be regularly picked up and disposed of properly.
	Spill kits containing the proper type and quantity of sorbent materials, booms, and tools will be staged in each work area where there is a potential for a spill or release.
Inspections and maintenance	Equipment will be operated and maintained in accordance with manufacturer's recommendations.
	Hazardous material storage areas will be inspected at least weekly.
	Vehicles or other equipment found to be leaking will be repaired immediately or removed from the site.
	Monthly inspections of spill-response and fire-prevention equipment will be performed.
	Regular housekeeping inspections will be conducted daily, and the site will be maintained in an orderly fashion.
Container management	Hazardous materials will be placed in suitable containers and storage areas that are in good condition. Hazardous wastes (if generated) will be stored in accordance with regulatory requirements. A flammable storage locker will be used for small containers of flammable materials or they will be stored offsite.
	Containers will be kept closed except when being filled/used and will be in good condition.
Training	Personnel will be trained in hazard communication (hazcom), spill prevention, response, and reporting requirements outlined in this Environmental Management Plan, stormwater pollution prevention requirements, and hazardous material storage and handling requirements.

TABLE 9
SUMMARY OF GENERAL STORMWATER BMPS

Best Management Practices	Description of Activities
Good housekeeping	Soil- or mud-contaminated equipment (anticipated to be "clean" soil or mud) will be decontaminated (wiped or scraped clean of mud, soil, or debris) before moving to another location or storage between shifts.
Material storage	Hazardous materials and contaminated debris will be stored in a manner that does not contribute contaminants to stormwater (i.e., from rain or wind dispersal).
Soil stockpile management	Soil stockpiles (if they will remain longer than a single shift) will be maintained to prevent erosion from rain.
Good housekeeping	Fugitive dusts will be controlled as needed by using water spray to wet down soils being excavated or roadways used on the site.

TABLE 10
INSPECTION REQUIREMENTS AND FREQUENCY

Inspection	Minimum Frequency	Checklist Form from Appendix A
Stormwater BMPs	Weekly during site activities and after major storm events	Stormwater BMP Checklist
Spill prevention, response, and emergency equipment	Monthly for the project	Spill Prevention, Response, and Emergency Equipment Checklist

9.6.2.1 Preventive Maintenance

Preventive maintenance involves the routine inspection and testing of equipment and is essential to keep vehicles and earthmoving equipment in good working condition. Operators of vehicles and machinery will inspect them at the beginning of each work day. Any deficiencies will be brought to the attention of the Site Superintendent, who will ensure required repairs are made before it can be dispatched again. The Site Superintendent (or designee) will maintain records of inspections and maintenance.

9.6.2.2 Visual Inspections

The Site Superintendent or authorized designee will conduct visual housekeeping inspections of work or storage areas on a daily basis. The Site Superintendent will verify daily equipment inspections were completed and ensure that deficiencies are corrected.

9.6.2.3 Hazardous Material Management

Project vehicles will refuel at local gas stations. Small amounts of hazardous materials stored on the work site for operations (small gas cans, oils, lubricants, etc.) will be stored in a flammable

materials locker or in vehicles when not in use. Hazardous material inventory control will be maintained for all hazardous materials brought to and stored at the site. Material Safety Data Sheets for each hazardous material will be maintained at the project site.

9.6.2.4 Excavations

Drainage of the target areas is generally towards Waikane Stream. Slope of the terrain is up to 30 percent at some points, resulting in a moderate to severe erosion hazard. Waikane Stream will be protected from the effects of sedimentation and contamination from stormwater runoff during the RA. Excavations will be backfilled as soon as possible to prevent water and soil runoff from occurring. If an excavation must be left open, engineering controls such as sandbags, plastic sheeting, and hay may be used to help divert water through the use of berms and coverings to keep soil from migrating offsite. A Bobcat-type mini or compact track loader or excavator will be used during the RA. This type of equipment minimizes damage to ground surface due to reduced ground pressure.

9.6.2.5 Vegetation Clearance

Vegetation removal is in accordance with the RA work plan.

9.7 Environmental Management Plan References

The following are references applicable to this project, but are not all-inclusive. BSE will comply with applicable federal, state, and local requirements. Following all applicable requirements and regulations listed in the following publications will ensure the safety and health of onsite personnel and the local community.

9.7.1 Federal Regulations

- Code of Federal Regulations
  - 33 CFR 320 Wetlands Protection Act
  - 40 CFR Part 261.23 Resource Conservation and Recovery Act
  - 43 CFR Part 7.4, 7.5 Protection of Archaeological Resources
  - 43 CFR Part 10.4 Native American Graves Protection and Repatriation
  - 49 CFR Parts 100-199 Transportation
  - 62 Federal Register 6622, 1997 Military Munitions Rule
  - Fish and Wildlife Coordination Act 16 United States Code (U.S.C.) 661 et seq.
- Endangered Species Act 16 U.S.C. 1531-154
- Migratory Bird Treaty Act 16 U.S.C. 703-712
- National Historic Preservation Act 16 U.S.C. 1470
- Clean Water Act 33 U.S.C. 1151 et seq., 1251 et seq., 40 U.S.C. 3906 et seq.

9.7.2 Occupational Safety and Health Administration

- Occupational Safety and Health Administration (OSHA) 1994 *General Industry Standards*, 29 CFR 1910 and *Construction Industry Standards*, 29 CFR 1926; especially 1910.120/29 CFR 1926.65-*Hazardous Waste Site Operations and Emergency Response*

9.7.3 Navy Regulations and Instructions

- NAVSEA OP 5, Volume 1, with Change 7, dated 1 July 2008. *Ammunition and Explosives Ashore*
- *Environmental Restoration Program Manual*, 2006

9.7.4 State of Hawaii Guidance and Requirements

- HAR 11-451-15 *Hawaii State Contingency Plan*

9.7.5 Department of Defense Publications

- DOD 6055.9-STD, *Ammunition and Explosive Safety Standards*
- DDESB TP-18, *Minimum Qualifications for Unexploded Ordnance (UXO) Technicians and Personnel*

9.7.6 Other

- Department of the Navy, 2013. *Draft Final Remedial Design, Waikane Impact Area*, February 2013.

SECTION 10 PHYSICAL SECURITY PLAN

10.1 Physical Security

Chemical warfare materiel is not anticipated at the site. However, if during site operations, personnel encounter a suspected toxic chemical munition or chemical warfare materiel, they will immediately withdraw upwind, outside of the minimum separation distance of the ordnance, and notify the RPM to initiate an EOD response.

Access to the WVIA is via a gated, unpaved road. The southern boundary of the site is protected with a chain link fence. The gate at the entrance to the site will be locked at all times except when attended by BSE staff and during times of active ingress or egress.

SECTION 11 APPENDICES

Appendix A Contract N62470-12-D-7107 Performance Work Statement

Appendix B MEC UFP-QAPP

Appendix C Site Safety and Health Plan

Appendix D Archaeological Resources Monitoring Plan

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APPENDIX A

Contract N62470-12-D-7107 Performance Work Statement

APPENDIX B

MEC UFP-QAPP

APPENDIX C

Site Safety and Health Plan

Appendix D

Archaeological Resources Monitoring Plan

Appendix D
Archaeological Resources Monitoring Plan

Pacific Consulting Services Inc. (PCSI) archaeological monitors will accompany Bering Sea's inspection teams to provide archaeological monitors during Phase 1 removal action activities at the WVIA. These activities include vegetation clearing, surface and subsurface clearing of munitions of explosive concern (MEC) and unexploded ordnance (UXO), and installation of a chain link fence along the northern border of the cleared area. The work will focus in the southern areas of the WVIA.

Prior to beginning fieldwork, a briefing will be conducted on site by PCSI that will include PCSI archaeological monitors, UXO technicians, and inspection team members to explain monitoring procedures and alert the removal action teams to the types of sites or finds expected during the project.

Should any archaeological sites, features, deposits, or objects be found during the monitoring work that have not been previously recorded, the archaeological monitors will record their location with Global Positioning System (GPS) equipment. In addition, if any historic sites or cultural materials are exposed due to blow-in-place (BIP) operations, the archaeological monitors will document the exposed sites and collect the cultural materials.

PCSI's Archaeological Monitoring Plan (AMP) will detail vegetation clearing procedures and precautions, site protection strategies during MEC removal and BIP operations, and site inspection procedures that will be implemented should BIP operations occur near archaeological sites.

If previously undiscovered historic properties are found in the immediate vicinity of any MEC that must be blown in place, the monitoring archaeologist will perform standard site recordation, including detailed mapping and photography before proceeding with site protection measures and BIP activities

The archaeologist will monitor all BIP activities that are outside of defined archaeological site boundaries. This will entail examining the crater caused by the BIP to determine if subsurface cultural materials or features are present. If cultural materials and features are present, the monitoring archaeologist will follow the procedures for documenting unrecorded sites, including standard site recordation, detailed mapping, and photography.

To the extent possible, any historic burials that are inadvertently discovered during the undertaking will be secured and preserved in place. If such burials are determined to be Native Hawaiian, the procedures outlined in §10.4 (Inadvertent Discoveries) of Subpart B of the implementing regulations for the NAGPRA (43 CFR Part 10) will be followed.

An archaeological monitoring report will be completed at the conclusion of the field work. GPS coordinates of UXO/MEC discoveries will be overlaid onto a map detailing locations of the known archaeological sites. The explosives safety-quantity distance arc for each BIP location will be shown with the surveyed location to demonstrate that the precautions taken during the BIP adequately protected known archaeological resources.

Draft

QUALITY ASSURANCE PROJECT PLAN

Remedial Actions
Munitions Response Program

Waikane Valley Impact Area
Kaneohe, Hawaii

Prepared for:
Department of the Navy
Naval Facilities Engineering Command Pacific
258 Makalapa Drive, Suite 100
Pearl Harbor, HI 96860-3134

Prepared by:
Bering Sea Eccotech, Inc.
615 E. 82nd Avenue, Suite 200
Anchorage, AK 99518-3159

January 2014

EXECUTIVE SUMMARY

This Munitions and Explosives of Concern (MEC) Quality Assurance Project Plan (QAPP) has been prepared to support the Remedial Actions (RA) at the Waikane Valley Impact Area (WVIA) located near Kaneohe, Hawaii. Bering Sea Eccotech, Inc. (BSE) prepared this QAPP for Naval Facilities Engineering Command Pacific (NAVFAC PAC) under Contract N62470-12-D-7017.

The RA consists of a surface and subsurface remedial actions to remove the hazards associated with MEC, and Materials Potentially Presenting an Explosive Hazard (MPPEH). Actions will be taken to reduce any identified explosive hazards to a non-hazardous state and final disposal as Materials Documented as Safe (MDAS).

This QAPP was developed under guidance from NAVFAC PAC provided in the Performance Work Statement (PWS) for Contract N62470-12-D-7017.

This UFP-QAPP was developed using IDQTF UFP-QAPP Manual, Version 1; March 2005

ACRONYMS/ABBREVIATIONS

AAR	After Actions Report
AK	Alaska
AOC	Area of Concern
BIP	Blow in Place
BSE	Bering Sea Eccotech
C/D	Classification/Division
Comp B	Explosive Composition B
DD Form	Department of Defense Form
DDESB	Department of Defense Explosive Safety Board
DGM	Digital Geographic Mapping
DOD	Department of Defense
DON	Department of the Navy
DOT	Department of Transportation
E.	East
ESQD	Explosive Safety Quantity Distance
EZ	Exclusion Zone
FTP	Fast Transfer Protocol
GPS	Global Positioning System
HE	High Explosive
HEAT	High Explosive Anti-tank
HFD	Hazardous Fragmentation Distance
HI	Hawaii
IDQTF	Intergovernmental Data Quality Task Force
Inc.	Incorporated
LUC	Land Use Controls
M	Model
MD	Munitions Debris
MDAS	Materials Documented as Safe
MEC	Munitions and Explosives of Concern
MGFD	Munition with the Greatest Fragmentation Distance
Mk	Mark
Mm	Millimeter
MPPEH	Materials Potentially Presenting an Explosive Hazard

MRS	Munitions Response Site
MTG	Meeting
NAVFAC PAC	Navy Facilities Engineering Command Pacific
NEW	Net Explosive Weight
OP 5	NAVSEA OP-5 Ammunition and Explosive Safety Ashore
Org.	Organization
ORM	Operational Risk Management
OSHA	Occupational Safety and Health Administration
PAL	Project Action Limit
PM	Project Manager
PPE	Personal Protective Equipment
PWS	Performance Work Statement
QAPP	Quality Assurance Project Plan
QC	Quality Control
RA	Remedial Actions
RAC	Risk Assessment Code
RI	Remedial Investigation
SSHP	Site Safety and Health Plan
SUXOS	Senior Unexploded Ordnance Supervisor
TNT	Trinitrotoluene
TP-16	Department of Defense Explosive Safety Board Technical Paper 16
UFP-QAPP	Uniform Federal Policy-Quality Assurance Project Plan
UXO	Unexploded Ordnance
UXO TI	Unexploded Ordnance Technician Level I
UXO TII	Unexploded Ordnance Technician Level II
UXO TIII	Unexploded Ordnance Technician Level III
UXOQA	Unexploded Ordnance 3rd Party Quality Assurance
UXOQCS	Unexploded Ordnance Quality Control Specialist
UXOSO	Unexploded Ordnance Safety Officer
WVIA	Waikane Valley Impact Area

UFP-QAPP WORKSHEETS

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QAPP Worksheet #1/2 Title and Approval Page

(UFP-QAPP Manual Section 2.1)

Waikane Valley Impact Area

Remedial Actions

Quality Assurance Project Plan

January 2014

Waikane Valley Impact Area

Prepared for: Naval Facilities Engineering Command Pacific

258 Makalapa Drive, Suite 100

Pearl Harbor, HI 96860-3134

Prepared by:

Bering Sea Eccotech, Inc.

615 E. 82nd Avenue, Suite 200

Anchorage, AK 99518

Prepared under:

CONTRACT NO. N63470-12-D-7017

Reviewed by:	_____	_____
	Lance Higa NAVFAC PAC, Remedial Project Manager	Date
Reviewed by:	_____	_____
	Jeffrey Bryant BSE Munitions Response Services Project Manager	Date

1. This QAPP was prepared in accordance with the requirements of Uniform *Federal Policy for Quality Assurance Plans* (UFP-QAPP) (U.S. EPA 2012)

2. Identify regulatory program: CERCLA

3. This QAPP is a project specific QAPP.

4. List dates of scoping session: August 2013-January 2014

5. List organizational partners (stakeholders) and connection with lead organization:

- NAVFAC PAC, lead organization
- Bering Sea Eccotech, Inc.

6. List data users:

- NAVFAC PAC
- Bering Sea Eccotech, Inc.

7. The QAPP worksheets that are not applicable to MEC projects are as follows: 9, 15, 19, 30, 20, 23, 24, 25, 26, 27, and 28. Since the UFP QAPP is a chemical quality plan for sampling and analysis, these sections were identified as N/A for MEC processes.

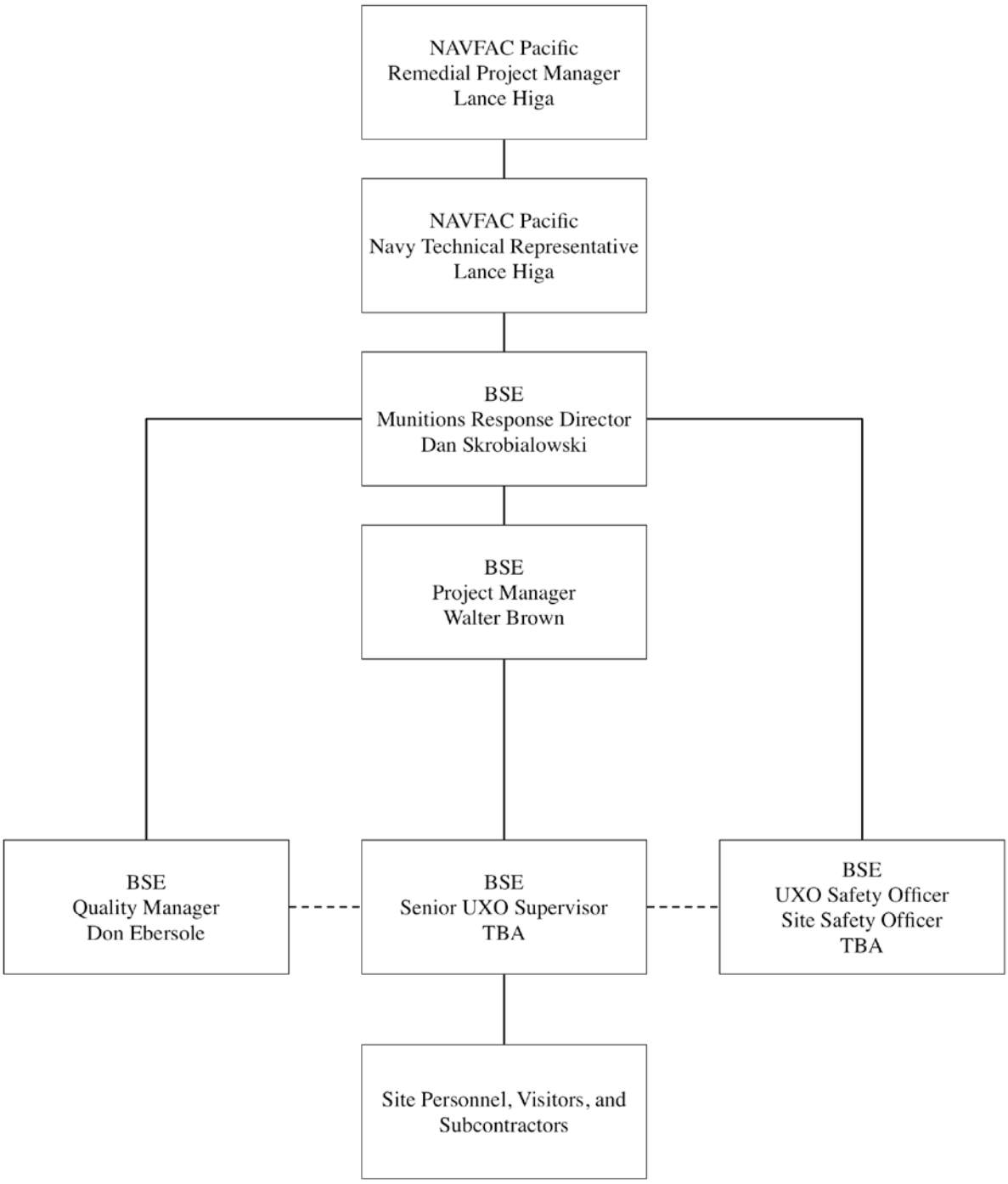
UFP-QAPP Worksheet #	Required Information	Included or Excluded
A. Project Management		
Documentation		
1/2	Title and Approval Page	Included
3/5	Project Organization and Distribution List	Included
4/7/8	Personnel Qualifications and Sign-off	Included
Project Planning /Problem Definition		
9	Project Scoping Session Participants Sheet	Excluded

10	Conceptual Site Model	Included
11	Project/Data Quality Objectives	Included
12	Measurement Performance Criteria	Included
13	Secondary Data Uses and Limitations	Included
14/16	Projects Task and Schedule	Included
15	Project Action Limits and Laboratory-Specific Detection/Quantitation Limits	Excluded
B. Measurement Data Acquisition		
Sampling Tasks		
17	Sampling Design and Rationale	Included
18	Sampling Locations and Methods	Included
19/30	Sample Containers, Preservation, and Hold Times	Excluded
20	Field QC Summary	Excluded
21	Field SOPs	Included
22	Field Equipment Calibration, Maintenance and Testing	Included
23	Analytical SOPs	Excluded

24	Analytical Instrument Calibration	Excluded
25	Analytical Instrument and Equip. Maintenance.	Excluded
Sample Collection		
26/27	Sample Handling, Custody, and Disposal	Excluded
Quality Control Samples		
28	Analytical Quality Control and Corrective Action	Excluded
Data Management Tasks		
29	Project Documents and Records	Included
C. Assessment Oversight		
31/32/33	Planned Project Assessment	Included
D. Data Review		
34	Data Verification and Validation Inputs	Included
35	Data Verification Procedures	Included
36	Data Validation Procedures	Included
37	Data Usability Assessment	Included

QAPP Worksheet #3/5-Project Organization and Distribution List

(UFP-QAPP Manual Section 2.3 and 2.4)



QAPP Recipients	Title/Role	Organization	Telephone Number	Email Address
Lance Higa	Remedial Project Manager	NAVFAC PAC	(908)-472-1498	lance.higa@navy.mil
Dennis Makabe	Naval Technical Representative	NAVFAC PAC	(808)-474-3220 x 285	dennis.makabe@navy.mil
NAVFAC PAC Contracting Officer	Cris Caraang	NAVFAC PAC	(808)-471-0130	crisalden.caraang@navy.mil
MCBH Program Manager	Randall Hu	MCBH	(808)-257-7142	randall.hu@usmc.mil
BSE Munitions Response Program Director	Dan Skrobialowski	Bering Sea Eccotech	(757)-288-4355	dskrobialowski@bseak.com
BSE Munitions Response Project Manager	Walter Brown	Bering Sea Eccotech	(907)-268-8428	wbrown@bseak.com
BSE Project Planning Manger	Jeffrey Bryant	Bering Sea Eccotech	(850)-736-1169	jbryant@bseak.com
Parsons Project Manager	William Stohler	Parsons	(808)-748-7577	William.stohler@parsons.com

Worksheet #4/7/8-Project Qualifications and Sign-off

(UFP-QAPP Manual Section 2.3.2-2.3.4)

Name	Title/Role	Education/Experience	Specialized Training/Certifications	Signature/Date
Walter Brown	Project Manager	N/A	N/A	
Donald Ebersole	Quality Manager	N/A	HAZWOPER	
TBA	UXOQCS	IAW DDESB TP-18	HAZWOPER	
TBA	UXOSO	IAW DDESB TP-18	HAZWOPER	
TBA	SUXOS	IAW DDESB TP-18	HAZWOPER/HAZWOPER SUP/30-hr OSHA	
TBA	3rd Party QA	IAW DDESB TP-18	HAZWOPER	

QAPP Worksheet# 9 Project Planning Session Summary

(UFP-QAPP Manual Section 2.5.1)

Project Name: WVIA Remedial Actions

Session Purpose: Discuss QAPP Development (BSE internal)

Site Location: Kaneohe, Hawaii

Session Date: July 16, 2013

Session Number: WVIA QAPP MTG 001

Name	Title	Org.	Phone #	Email Address	Project Role
Dan Skrobialowski	Munitions Response Director	BSE	(757) 288-4355	dskrobialowski@bseak.com	BSE Internal Advisor
Donald Ebersole	Munitions Response QC Manager	BSE	(757) 849-9453	debersole@bseak.com	BSE Internal Advisor
Bonnie Morris	Munitions Response Program Manager	BSEn	(907) 330-9344	bmorris@bsenv.com	BSEn Internal Advisor
Walter Brown	Munitions Response Project Manager	BSE	(907) 268-8428	wbrown@bseak.com	BSE Project Manager
Jeff Bryant	Munitions Response Project Manager	BSE	(850) 736-1169	jbryant@bseak.com	SUXOS

Comments/Decisions: Walt Brown and Jeff Bryant will develop the QAPP for this project. The members will meet again in August to discuss the QAPP development progress.
Action Items: Jeff Bryant will develop draft QAPP for discussion in August.
Consensus Decisions: All parties agree with purposed plan forward.

QAPP Worksheet# 9 Project Planning Session Summary

(UFP-QAPP Manual Section 2.5.1)

Project Name: WVIA Remedial Actions

Session Purpose: Discuss QAPP Development (BSE internal)

Site Location: Kaneohe, Hawaii

Session Date: August 26, 2013

Session Number: WVIA QAPP MTG 002

Name	Title	Org.	Phone #	Email Address	Project Role
Dan Skrobialowski	Munitions Response Director	BSE	(757) 288-4355	dskrobialowski@bseak.com	BSE Internal Advisor
Donald Ebersole	Munitions Response QC Manager	BSE	(757) 849-9453	debersole@bseak.com	BSE Internal Advisor
Bonnie Morris	Munitions Response Program Manager	BSEn	(907) 330-9344	bmorris@bsenv.com	BSEn Internal Advisor
Walter Brown	Munitions Response Project Manager	BSE	(907) 268-8428	wbrown@bseak.com	BSE Project Manager
Jeff Bryant	Munitions Response Project Manager	BSE	(850) 736-1169	jbryant@bseak.com	SUXOS

Comments/Decisions: Reviewed draft of QAPP. Team wants to know more about QAPP for this project and expectations.
Action Items: Walter Brown will request additional information from NAVFAC PAC. Jeff Bryant will continue to work on the QAPP.
Consensus Decisions: All parties agree with purposed plan forward.

QAPP Worksheet# 9 Project Planning Session Summary

(UFP-QAPP Manual Section 2.5.1)

Project Name: WVIA Remedial Actions

Session Purpose: Discuss QAPP Development (BSE internal)

Site Location: Kaneohe, Hawaii

Session Date: October 13, 2013

Session Number: WVIA QAPP MTG 003

Name	Title	Org.	Phone #	Email Address	Project Role
Dan Skrobialowski	Munitions Response Director	BSE	(757) 288-4355	dskrobialowski@bseak.com	BSE Internal Advisor
Donald Ebersole	Munitions Response QC Manager	BSE	(757) 849-9453	debersole@bseak.com	BSE Internal Advisor
Bonnie Morris	Munitions Response Program Manager	BSEn	(907) 330-9344	bmorris@bsenv.com	BSEn Internal Advisor
Walter Brown	Munitions Response Project Manager	BSE	(907) 268-8428	wbrown@bseak.com	BSE Project Manager
Jeff Bryant	Munitions Response Project Manager	BSE	(850) 736-1169	jbryant@bseak.com	SUXOS

Comments/Decisions: Walt Brown contacted NAVFAC PAC for additional information regarding the QAPP. The QAPP naturally falls into place following ESS approval so the QAPP has prioritized and once the ESS seems close to complete will be readdressed.
Action Items: None.
Consensus Decisions: All parties agree with purposed plan forward.

QAPP Worksheet# 9 Project Planning Session Summary

(UFP-QAPP Manual Section 2.5.1)

Project Name: WVIA Remedial Actions

Session Purpose: Discuss QAPP Development (BSE internal)

Site Location: Kaneohe, Hawaii

Session Date: November 15, 2013

Session Number: WVIA QAPP MTG 004

Name	Title	Org.	Phone #	Email Address	Project Role
Walter Brown	Munitions Response Project Manager	BSE	(907) 268-8428	wbrown@bseak.com	BSE Project Manager
Jeff Bryant	Munitions Response Project Manager	BSE	(850) 736-1169	jbryant@bseak.com	SUXOS

Comments/Decisions: QAPP has been assessed to a higher priority and work will continue.
Action Items: Walter Brown will schedule a conference call with Lance Higa for November 18-20.
Consensus Decisions: All parties agree with purposed plan forward.

QAPP Worksheet# 9 Project Planning Session Summary

(UFP-QAPP Manual Section 2.5.1)

Project Name: WVIA Remedial Actions

Session Purpose: Discuss QAPP Development (BSE internal)

Site Location: Kaneohe, Hawaii

Session Date: November 18, 2013

Session Number: WVIA QAPP MTG 005

Name	Title	Org.	Phone #	Email Address	Project Role
Lance Higa	Remedial Project Manager	DON	(808) 472-1498	lance.higa@navy.mil	Navy Remedial Project Manager
Walter Brown	Munitions Response Project Manager	BSE	(907) 268-8428	wbrown@bseak.com	BSE Project Manager
Jeff Bryant	Munitions Response Project Manager	BSE	(850) 736-1169	jbryant@bseak.com	SUXOS

Comments/Decisions: QAPP development discussion and path forward. Various questions answered by Mr. Higa regarding QAPP. QAPP will be outsourced for review so the review process time may increase.
Action Items: Jeff Bryant will submit draft QAPP to Walter Brown for review on November 20, 2013.
Consensus Decisions: All parties agree with purposed plan forward.

QAPP Worksheet #10-Conceptual Site Model

(UFP-QAPP Manual Section 2.5.2)

Step 1: Problem Statement:

The Waikane Valley Impact Area (WVIA) is a 187-acre area located on the eastern shore of the Island of Oahu, Hawaii. Approximately 1,132 acres of Waikane Valley was used for training and also as an artillery impact area. Numerous munition types were used in the area from 1942 to 1976 including 37mm, 75mm, 60mm HE, 81mm HE, 2.36" rockets, 3.5" rockets, hand grenades, rifle grenades, M28 High Explosive Anti-Tank (HEAT) grenades, trip flares, and small arms ammunition. Currently, access to this area is restricted due to the hazards associated with its use as an impact area.

Several attempts have been made in the past to remove the hazards posed by munitions and explosives of concern (MEC) however, due to the extreme terrain sloping and dense vegetation, past efforts have failed to yield the desired result of removing all hazards. It is assumed that due to the types of training conducted a WVIA i.e. troop maneuvers, small arms training, and projected munitions, the hazards are both surface and subsurface.

A Remedial Investigation (RI) published by the US Army Corps of Engineers in March 2012 indicates medium to high probability of encountering MEC contamination at WVIA particularly in the areas of concern (AOC) 1,2,3, &4 depicted in Figure 10-1. The RI also indicates 5,341 anomalies were discovered while conducting the investigation using analog-and dig transect sampling. It is important to note that while no MEC was discovered during the RI, numerous pieces of munition debris (MD) were found. Characterization of the MD confirms the known munitions usage in WVIA. Following the RI, and Remedial Design (RD) was presented outlining Remedial Action Objectives (RAOs) and these were adopted in the Final Decision Document (DD) The selected remedy was selected in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

The response actions described in the QAPP include the following elements:

- Surface clearance of accessible areas in the Southern Area and the Northern Area
- Subsurface clearance to a depth of 2 feet of a 10-foot-wide buffer strip along the boundary separating the Southern and Northern Areas
- Removal of the existing fences from the Southern Area and installation of new fences along the north edge of the cleared buffer strip between the Southern and Northern Areas
- Subsurface clearance to a depth of 2 feet in the Southern Area in a 50-foot radius of any MEC found during the surface clearance

- Subsurface clearance to a depth of 2 feet along 50-foot-wide corridors to and around the Kamaka Shrine and Waikane Spring, and the installation of fences along and around these cleared areas, to allow free access to these sites from the Southern Area

Additional LUCs applied to the entire 187 acres, including construction of a fence between the Southern and Northern Areas, notification letters to local landowners, and an educational program to inform the community of risks and mitigation measures

In effort to reduce the risk of MEC to personnel a surface and subsurface MEC clearance will be conducted. Due to current technology limitations and site conditions, it is not possible to remove all MEC and/or MPPEH from the site with 100% certainty. Therefore, this site will pose some degree of residual risk after the munitions response actions are complete

Step 2: Problem Decisions:

Conduct a surface and subsurface MEC clearance in the Southern Portion of the WVIA. Use technology most suitable for terrain and site conditions. Provide a Quality Assurance Plan sufficient to instill customer confidence in the quality of work by providing quality control measures for the analog-and-dig MEC clearance operations.

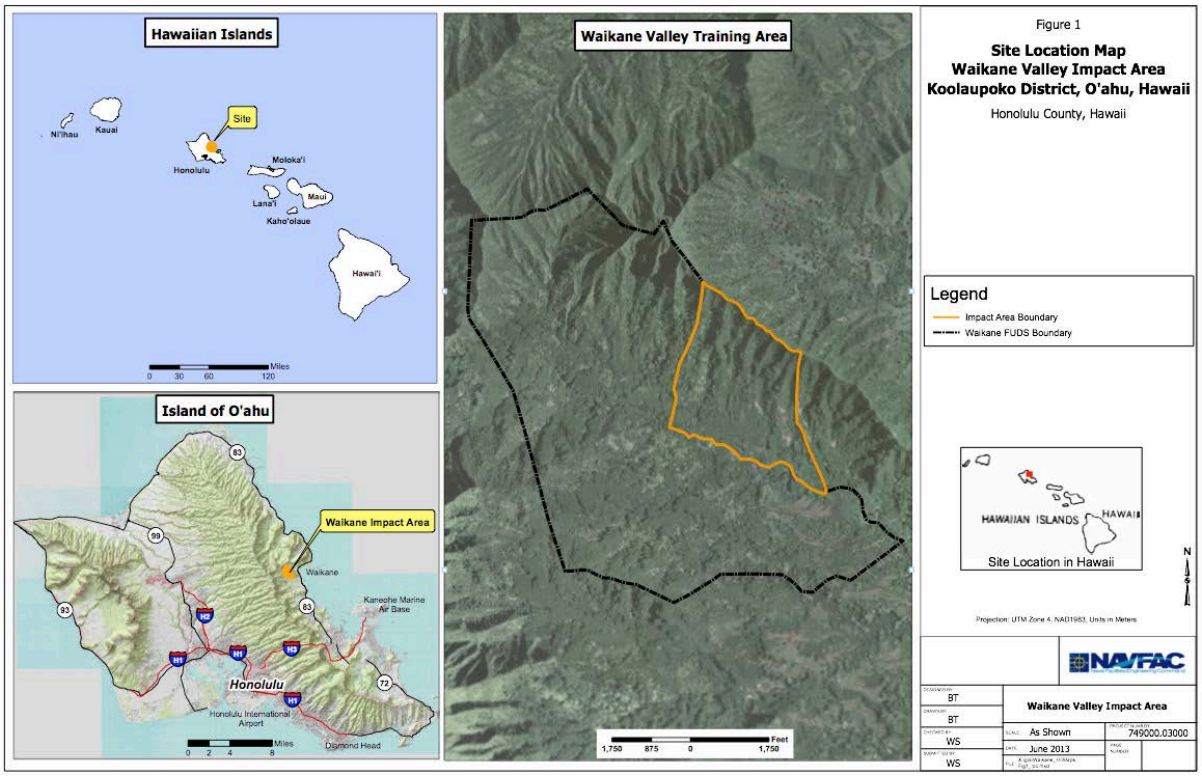


Figure 10-1 Site Map

Step 3: Problem Analysis:

Analog detection instruments are the most flexible for the topography and vegetation density at WVIA. DGM equipment (EM-61) is not feasible due to the site conditions.

A Quality Assurance Plan following the Three-Tier Quality Planning Process to provide measurable goals.

Step 4: Performance Criteria:

100% of the contract scoped area will be surveyed by UXO-qualified teams with progress verified by a UXO Quality Control Specialist (UXOQCS) or UXO-qualified 3rd Party Quality Assurance (UXOQA). Performance will be verified by UXOQCS/UXOQCA using spot inspections within each grid for both surface and subsurface MEC clearance. Failure to detect or discover MEC or MPPEH greater than 4" initiates a resurvey of the surveyed grid.

100% of surface and subsurface MEC will be investigated following the following procedures:

1. Discovery of MEC triggers a subsurface clearance to 2ft. within a 50' radius of the MEC.
2. SUXOS will determine if the MEC is safe to handle. If safe to handle, the MEC will be consolidated for future disposal. If the MEC is unsafe to handle, the MEC item will be clearly marked, recorded with GPS, and remain in place for on-the-spot disposal using demolition materials.

UXOQCS/UXOQCA will verify compliance with the aforementioned procedures. Failure to perform MEC investigations will initiate a resurvey of the surveyed grid.

QAPP Worksheet #11-Project Quality Objectives/Systematic Planning Process Statements

(UFP-QAPP Manual Section 2.6.1)

Who will use the data?

Remedial Project Manager, Munitions Response Project Manager and Personnel Making Land Use Consideration Decisions.

What will the data be used for?

During Response Actions: The data will be used to verify performance of the UXO contractor against the contracted obligations.

After Response Actions: (1) The data will be used in the risk-based decision process to determine the applicable Land Use Controls. (2) The information will be used to record the Remedial Actions and levels of MEC contamination in WVIA.

What types of data are needed?

After Actions Report (AAR) IAW NOSSAINST 8020.15C, *Explosives Safety Review, Oversight, and Verification of Munitions Response, Feb. 2011* and NAVSEA OP-5 Volume 1, Seventh Revision, Change 11 *Ammunition and Explosives Safety Ashore, Mar. 2013*

Munitions Response Quality Control/Assurance Verification Documents

Handheld Detector Checkout Documents

Logbooks: UXO Discovery log, SUXOS log, UXOSO log, UXOQCS/QA log.

GPS log with MEC locations, disposal locations, and subsurface areas cleared.

How "good" does the data need to be in order to support the environmental decision?

N/A

What are the Quality Objectives?

1. Perform surface clearance with slopes <30 degrees
2. Perform surface clearance with slopes >30 degrees
3. Perform subsurface clearance with slopes <30 degrees
4. Perform subsurface clearance with slopes >30 degrees
5. Perform vegetation removal operations for all clearance areas
6. Establish an Instrument Verification Strip
7. Perform location recording and mapping

8. Conduct intrusive investigations and clearance
9. Perform MEC Management
10. Perform MEC Treatment
11. Dispose of Material Potentially Presenting an Explosive Hazard (MPPEH)
12. Complete After Actions Report

How much data is needed?

All project documents will be provided to NAVFAC with AAR.

Where, when, and how should the data be collected or generated?

The Munitions Response Project Manager will collect data each production day and stored electronically on digital hardware and temporarily on a restricted access Fast Transfer Protocol (FTP) site for up to date viewing by the Remedial Project Manager and the Project Management Team. Following the approval of the final draft of the AAR report, the Munitions Response Project Manager will consolidate information and provide the data to the Remedial Project Manager. The information will remain on the FTP site for 90 days following approval of AAR.

Who will collect and generate the data?

The BSE Munitions Response Project Manager will collect all data from the BSE personnel and be responsible for maintaining the information. The BSE Munitions Response Project Manager will also manage the FTP site and provide access to personnel and control access to the site.

How will the data be reported?

The data will be reported in an AAR and also in electronic format following Final Draft of AAR. The FTP site will be available to the Remedial Project Manager for up-to-data status of the project.

How will the data be archived?

Data will be provided electronically to NAVFAC PAC following the final draft RACR and AAR for archive.

QAPP Worksheet #12-Measurement Performance Criteria

(UFP-QAPP Manual Section 2.6.2)

Measurement Activity/Data Type	Type of Measurement	QC Sample and Performance Measurement	Measurement Performance Criteria
Anomaly Avoidance/Magnetometers	Response	Function Checks: Check out instrument daily with metallic object	Responds to metallic check source 100% of the time during function test.
Anomaly Avoidance/Subsurface Magnetometers	Response	Function Check: Check out equipment and verify operational condition utilizing Instrument Verification Strip (IVS)	Responds and accurately detects objects in the IVS within equipment manufacturer specifications.
Global Positioning Equipment	Accuracy	GPS fix within 3cm of target.	Fix within 3cm of known surveyed point.

QAPP Worksheet #13-Secondary Data Uses and Limitations Table

(UFP-QAPP Manual Section 2.7)

Secondary Data	Data Source (Originating Organization, Report Title, and Date	Data Generator (Originating Org., Data Types, Data Generation/Collection Dates)	How Data Will Be Used	Limitations on Data Use
Quality Control Reports	BSE, *BSE Daily Quality Report*	BSE UXOQCS	Determine Effectiveness of MEC Clearance	No Limitations
Quality Assurance Reports	NAVFAC, *NAVFAC Quality Assurance Report*	3rd Party Quality Assurance	Determine Effectiveness of Quality Control Measures of BSE	No Limitations
WVIA Work Plan	BSE, *Work Plan*	BSE	Performance of MEC Clearance	No Limitations
WVIA Site Safety and Health Plan	BSE, *WVIA Site Safety and Health Plan*	BSE	Performance of MEC Clearance	No Limitations

QAPP Worksheet #14/16-Project Tasks & Schedule

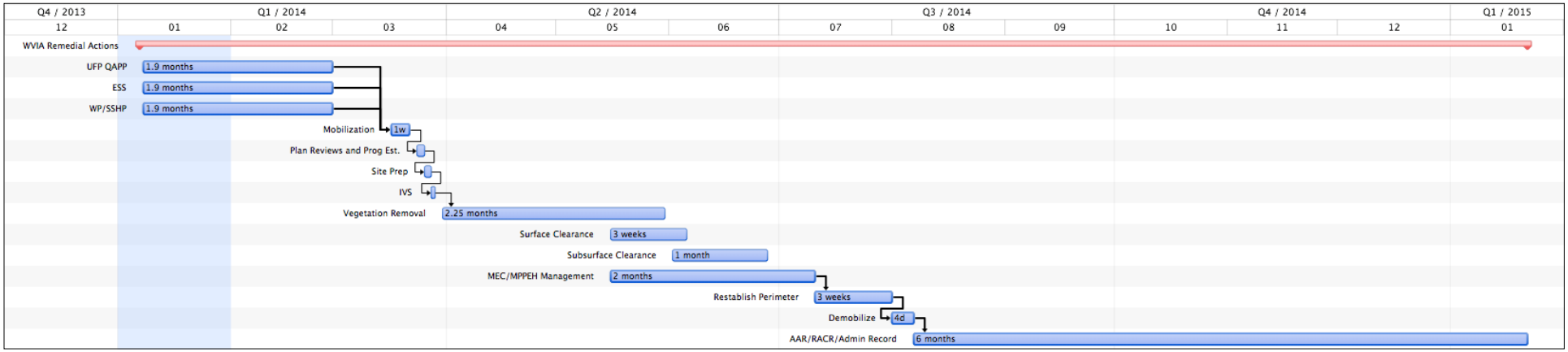
(UFP-QAPP Manual Section 2.8.2)

Definable Features of Work		
Feature	Performance Measurement	Assessment Method
Site Safety	All site work is performed with no safety non-compliance notices or stop work orders issued; scores of 80% or better on all submitted contractor safety self-evaluation checklists; no findings identified during OSHA compliance inspections.	1. Contractor Self-Safety Checklists. 2. BSE Weekly Safety Inspection Checklist. 3. 3rd Party Quality Assurance Spot Checks
Key Personnel Qualifications	All site personnel must meet the minimum requirements for held positions in accordance with DDESB TP-18	Project Manager and UXOSO will screen all personnel to assure they meet performance requirements. Resumes will be presented to NAVFAC PAC for review.
Project Plans and Explosive Safety Submission	All plans will be 100% complete to the satisfaction of the Navy, Regulatory Agencies, and MARCORSYSCOM.	Final approval will be issued in writing from NAVFAC PAC.
Vegetation Clearance	1. Vegetation less than 3-inches in diameter will be cut excluding Ha'u vines that will be cut less than 6-inches in diameter. 2. The maximum height of cut vegetation will not exceed 6-inches tall. 3. Vegetation will be cut into 2-foot sections.	UXOQCS/QA will verify vegetation clearance is being completed in accordance with work plan guidance. Non-compliance will be addressed with the SUXOS/ BSE Project Manager.

Detector Validation	100% of handheld detection instruments used daily will be function checked using manufacture instructions and IVS. Users will document findings and equipment will be serviceable or tagged out. Logbooks for each piece of equipment will be maintained.	UXOQCS/UXOQA/SUXOS will verify compliance.
Instrument Verification Strip (IVS)	Construct an IVS in accordance with MCO 8020.13	UXOQCS/QA will verify seed selection and IVS construction is in accordance with MCO 8020.13
Blind Seeding	Utilize "Blind Seeding" techniques to ensure 100% coverage of 100% of grids.	UXOQA/3rd Party will verify compliance by observing daily operations.
Surface Clearance	100% visual coverage aided by hand-held metal detectors. MEC or MPPEH will be managed in accordance with approved work plan.	UXOQCS/QA will verify 100% of the grids for 100% completeness utilizing blind seed techniques. If a blind seed is not discovered a root cause analysis will be conducted and changes implemented by the SUXOS.
Subsurface Clearance	100% of anomalies investigated according to approved ESS/WP.	UXOQCS/SUXOS/UXOQA will verify performance using spot checks in each grid. Failure to identify or investigate anomaly constitutes non-compliance and the grid will be resurveyed.
MEC Management	1. All MEC be marked, recorded, and mapped using GPS technology. 2. MEC hazards will be neutralized explosively on-site in accordance with approved ESS.	1. UXOQCS/QA will verify MEC is being documented using the BSE UXO Discovery Log and inspecting daily UXO maps. 2. SUXOS/UXOQCS/QA will verify all MEC is reduced to MDAS by visual

		inspections.
MPPEH Management	Process MPPEH to MDAS for recycling/disposal in accordance with NAVSEA OP-5 Chapter 13.	UXOQCS/QA will inspect 100% of MPPEH visually to ensure MPPEH meets MDAS requirements.
Final Report	Report sections 100% complete including all attachments, maps, Grid/RAA Certification, waste disposal documents and concurrence with NAVFAC PAC, MARCORSYSCOM, and regulatory agencies.	BSE Project Manager will verify final AAR report completion and coordinate revisions to all drafts and present final for RACR.

Project Schedule
WVIA Remedial Actions



QAPP Worksheet #15: Project Action Limits and Detection/Quantitation Limits

(UFP-QAPP Manual Section 2.6.2.3 and Figure 15)

Type of Instrument	Manufacturer	Model	Detection Capabilities
Ferrous Metal Detector	Schonstedt	GA-71Cd	Approx. 36"[1]
All Metals Detector	Minelab	F3L	Approx. 36" [2]

[1] Based on geological conditions and anomaly size.
[2] Based on geological conditions and anomaly size.

QAPP Worksheet #17: Sample Design and Rationale

(UFP-QAPP Manual Section 3.1.1)

This section describes the project definable features of work and tasks that will be performed to met the requirements of the objectives.

17.1 Scope of Munitions Response

The RA includes the following MEC activities:

In the Southern Area, surface clearance of accessible land with land use controls (LUCs) will be conducted for 31.97 acres**.** If MEC items are discovered on the ground surface during the surface clearance, subsurface clearance to a maximum depth of 2 feet will be conducted within a 50-foot radius from the MEC items. A 10-foot buffer strip will be subsurface cleared along the boundary between the Southern Area and the Northern Area. Fencing and signage will be installed along the north side of the buffer strip. Clearance of the buffer strip is intended to detect MEC that may have migrated toward Waikane Stream from the target areas through soil erosion. Upon completion of the Southern Area remedial actions, the existing chain-link fence along the current boundaries of the Southern Area will be removed.

In the Northern Area, surface clearance of accessible land with LUCs will be conducted for 14.92 acres, including two 50-foot wide corridors (at least 50 feet wide, and totaling 2.0 acres) leading from Waikane Stream to the Kamaka Shrine and the Waikane Spring. A fence will be installed to separate the corridors from the Northern Area. Subsurface clearance will be conducted inside the corridors and around the two sites to the limits of the fencing. All detectable metallic anomalies within the corridors will be excavated, to a maximum depth of 2 feet below ground surface. The cleared corridors shall be freely accessed through the Southern Area and are anticipated to be suitable for cultural and recreational use after completion of the RA. The Waikane Spring corridor shall center on the spring's route to Waikane Stream and shall not interrupt the flow of the stream.

17.1.1 Response Techniques

There will be several work elements for remedial actions at WVIA. All operations will be conducted under supervision of SUXOS and observation of a UXOSO. The following describes the work elements required WVIA remedial actions:

17.1.1.1 Vegetation Clearance

Vegetation will be cleared under the guidance of UXO technicians within the established AOC boundaries to a height between 3 and 6 inches above the ground surface using machetes, man-portable weed trimmers, and chain saws, or similar equipment. Trees over three inches in diameter will not be cut except for *Ha'u* vines up to six inches in diameter. Vegetation clearance will be limited to cutting of brush, vines, and tree limbs that would directly impede the movement of the detection equipment or as required for fence repair or installation. Cut

vegetation will be cut into approximately 2-foot lengths to minimize migration of cut vegetation to the Waikane Stream.

17.1.1.2 Surface Clearance

MEC teams will perform all surface clearance efforts over an estimated 10-week period. Team composition will be determined by the SUXOS. The SUXOS will supervise all UXO personnel and any personnel entering the EZ. UXO team leaders will work under the supervision of the SUXOS. Team leaders will be UXO TIII with a variable number of UXO TII/I assigned. Archaeological monitors will accompany each MEC Team for the duration of the fieldwork to ensure protection of archaeological features. UXO Technicians will escort archaeological monitors at all times while in the MRS.

The MEC teams will systematically traverse each work grid with analog detectors to detect, locate, and mark all MEC items encountered and to recover any munitions debris that is free of explosives. The UXO TIII organizes the team and directs the movement of the team back and forth across the grid in a manner that ensures 100% coverage of each grid. As the team moves forward, the UXO TII/Is use the hand-held detector to assist them in locating metallic items that may be camouflaged by the soil or hidden in vegetation. Whenever the team encounters material suspected to be MPPEH, the UXO TII inspects the item. If the item is determined to be munitions debris or non-MEC related scrap, the UXO TIII directs the UXO TII to recover the material, and it is removed from the grid and stockpiled with other munitions debris or non-MEC related scrap. If the item is UXO or a MEC item containing explosives, the UXO TIII marks and records the location of the item and notifies the SUXOS. The SUXOS coordinates for disposal of the item by detonation. MPPEH items will be processed in accordance the procedures presented in Section 17.3.

17.1.1.3 Intrusive Investigations

Subsurface investigations will be accomplished using MEC teams, each consisting of one UXO TIII and a variable number of UXO TII/I. Work areas will be subdivided into individual work grids, and these grids will be further subdivided into individual search lanes to facilitate control of the clearance and to ensure coverage of each grid. For MEC items discovered on the surface in the Southern Area, subsurface clearance to a maximum depth of 2 feet shall be conducted within a 50-foot radius from each MEC item. Subsurface clearance of a 10-foot wide buffer strip will be completed along the boundary between the Northern Area and the Southern Area. In the Northern Area, 100% of 14.92 acres will be surface-cleared.

Before beginning intrusive operations, archaeological monitors will conduct a visual inspection of the grid to determine if there are any archaeological features to be avoided. Archaeological monitors will be called to the grid to inspect potential cultural material encountered during

excavations and will inspect the excavation locations after completion of the subsurface investigation to ensure that such features have been undisturbed or properly protected.
Individual search lanes are 5 feet wide, completely transect the grid, and are established in a pattern that ensures 100% coverage. A UXO TII/I assigned to each lane will systematically search the lane using an analog detector. The technician moves forward, sweeping the instrument back and forth across the lane in a manner that keeps the tip of the instrument within four to 6 inches of the ground surface and forming a series of arcs across the lane that are no greater than 3 to 4 inches between arcs. During this operation, the technician monitors the aural indications produced by the detector and identifies the location of any subsurface metallic anomaly encountered.

The UXO technicians excavate and identify the source of each anomaly as it is encountered. They will use hand tools such as shovels, spades and trowels, and pry bars to excavate the anomalous features. Excavations will be initiated adjacent to the subsurface anomaly and continue until the excavated area has reached a depth below the top of the anomaly, or 2 feet below grade, whichever is encountered first. Once the item is exposed for inspection, the UXO technicians will determine whether the item is MEC, MPPEH, or other debris. If the item is MEC, a positive identification will be documented and confirmed by the UXO TIII and will be further processed as discussed in Section 6.4. If the item is MPPEH, the procedures presented in Sections 17.3 and 17.4 will be followed. All other debris will be collected and segregated from MPPEH to prevent comingling. Following the removal of MEC items to be blown in place (BIP), the area will be rechecked with the analog detector to ensure that no additional items remain.

If the anomaly has not been resolved when the target depth is reached in the excavation, work on the excavation will be stopped and the reason for not resolving entered in the "Comments" section of the Surface/Subsurface Clearance Data & Munitions Accountability Log: e.g., "Investigation depth reached, anomaly not resolved.").

Throughout the survey, the UXOTIII will closely monitor the work of the UXO technicians, records location data for the subsurface anomalies, and records the results of any investigations performed. Separate records will be prepared and maintained for each individual work grid.

17.2 Exclusion Zone

Exclusion zones (EZs) will be established at the AOCs while intrusive or disposal operations are conducted. An EZ is a controlled area where only essential or authorized personnel are allowed while qualifying activities are taking place. Essential personnel are personnel whose duties require them to remain within the EZ to ensure that munitions operations are conducted in a safe and efficient manner. Authorized personnel include agency personnel and others conducting project-related functions that require them to be present in the EZ for a specific purpose for a limited time.

The size of the EZ is based on the greater of the K328 blast overpressure distance or the hazardous (versus the maximum) fragment distance of the MGFD; it defines the explosives safety quantity distance (ESQD) arc for the site. Differing ESQD arcs may be required for the same AOC, depending on site conditions and the presence of inhabited buildings, public transportation routes, explosive storage magazines, etc. Formulas that take into account the Net Explosive Weight (NEW) of the MGFD and the site relationships (i.e., distance from exposed site to MGFD) are used to determine the ESQD for each site. The types of munitions present, or potentially present, at the target AOCs are listed in Table 17.1.

Table 17.1 Exclusion Zones MRS 0022

MGFDs		Exclusion Zones (ft)[3]					
Description	NEW (lbs)	Fragmentation Effects		Blast Overpressure Effects			
		HFD	MFD	K328	K40	K24	K18
Primary: 3.5" HEAT rocket, M28A2	1.88	157	772	425	52	31	23
Contingency: 75mm HE projectile, Mk 1	1.64	239	1,873	387	47	28	21

17.2.1 Control of Exclusion Zones

Planned operations and controlling exclusion zones are shown in Table 17.2 In accordance with OP-5, for multiple rounds, the following conditions will be met when detonation involves multiple rounds:

1) Munitions shall be placed in a single layer with their sides touching such that their axis is horizontal.
2) The munitions shall be placed so that the nose of each munition is pointing the same direction.
3) Munitions shall be oriented so that lugs and/or strongbacks and nose and/or tail plate sections (rogue fragments) are facing away from areas to be protected.
4) The consolidated shot shall be initiated in such a manner that detonation of all munitions is simultaneous.

Table 17.2 Controlling Exclusion Zones for MRS 0022

Operation	Sited As	ES	Basis[4]	Primary ESQD (ft)[5]	Contingency ESQD (ft)[6]
Manual Operations[7]	Unintentional detonation	UXO teams	K40 of the MGFD/contingency MGFD	52[8]	52[9]

[3] From Department of Defense Explosive Safety Board Fragmentation Database, updated 16 April 2013.
[4] Based on NEW of a single MGFD without donor charge.
[5] Primary MGFD is the 3.5-inch HEAT rocket, M28A2 with 1.88 pounds NEW of Comp B.
[6] Contingency MGFD is the 75-mm HE projectile, Mk 1 with 1.64 pounds of NEW TNT.
[7] Manual operations involve excavating anomalies with hand tools.
[8] This distance can be reduced by employing engineering controls authorized by DDESB TP-16
[9] The K40 distance for the contingency MGFD is 47 feet, which was less than the primary MGFD K40; the larger number was utilized.

Manual Operations	Unintentional detonation	Public and nonessential personnel	HFD of the MGFD/contingency MGFD	157	239
MEC treatment up to 56.4 pounds NEW[10]	Intentional detonation	Public and all personnel	MFD-H of the MGD/contingency MGFD	772	1873

The EZ will be controlled using the WVIA gate (a single locked gate at the western end of the site that provides the only access), which will be kept locked except when ingress or egress is actively in progress. Security guards will not be used because a chain-link fence along the eastern, southern, and western boundaries prevents public access to the site. The only road in the area is a single dirt track outside the fence along the southern boundary.

17.2.2 Exclusion Zone Access

Access to EZs will be limited to personnel essential to the operation. Under specific conditions and on a case by-case basis, authorized visitors may be granted access to the EZ when operations are being conducted. Access to an EZ during munitions response operations is limited to essential personnel and authorized visitors. The UXOSO is responsible for conducting an operational risk management (ORM) assessment in accordance with Office of the Chief of Naval Operations Instruction (OPNAVINST) 3500.39C before initiating response actions involving MEC. In addition, the UXOSO must determine the maximum number of personnel (essential personnel and authorized visitors) that can be in the EZ at one time. The ratio of UXO-qualified escorts to visitors will be determined by the UXOSO based on this site-specific operational risk analysis.

Based on the risk posed by the munitions response operation underway, the UXOSO may determine that access to the EZ is unsafe for visitors. However, every effort will be made to accommodate the authorized visitor's needs. With concurrence of the Navy PM, the UXOSO will grant EZ access to authorized visitors, based on the operational risk analysis of the scheduled MEC operations and availability of escorts, as well as a demonstrated visitor need and subsequent completion of visitor safety briefings.

Personnel requiring access to the EZ must demonstrate a legitimate need for access and obtain authorization from the Navy PM and UXOSO. The request for authorization will include names of the individual requesting access, the identification of emergency contacts for these individuals, purpose of visit; task(s) to be performed; and rationale to support EZ access. Personnel requesting access must submit their request to the Navy PM and UXOSO before the proposed date of the site visit. This advance notice will allow time for the UXOSO to support the visit request by assigning a qualified escort, conducting an operational risk analysis on the operations planned for the date of the site visit, and preparing a visitor site-specific safety briefing for the planned operations. Before entry, all authorized visitors must receive a site-specific safety briefing describing the specific hazards and safety procedures to be followed within the EZ for operations underway that workday. Each authorized visitor must acknowledge receipt of this briefing in writing. Authorized visitors to the EZ must be escorted at all times by a UXO-qualified person assigned to the project. All authorized visitors that violate the

[10] The maximum NEW for which blast overpressure (K328) does not exceed the MFD of the MGFD (based on Comp B explosive).

established safety procedures will be immediately escorted out of the EZ and/or site for their own protection and to protect essential personnel working at the site. Other requirements, such as those of the Occupational Safety and Health Administration (OSHA), may also apply.

17.3 Munitions and Explosives of Concern and/or Material Potentially Presenting and Explosive Hazard Classification, Transportation, and Storage

MEC and MPPEH will be classified and stored per Naval Sea Command (NAVSEA) OP 5 Volume 1; MEC will not be transported off-site.

17.3.1 Hazard Classification

All MEC and MPPEH will be classified as Class/Division (C/D) 1.1 unless classified otherwise as defined under NOSSA (N85). Classification will be performed by the UXOSO. A systematic approach will be used for collecting, inspecting, and segregating site debris. The approach is designed so that materials undergo a continual inspection/evaluation process from the time they are acquired until the items are removed from the site. Segregation procedures begin when the item is discovered by the UXO technician, who makes a preliminary determination as to the item's classification into one of three categories, and the UXO TIII confirms the item to be MEC, MPPEH, or other debris.

MEC will not be stored; MEC will be BIP or moved for demolition as discussed in Section 17.4. MPPEH will be collected at temporary MPPEH collection areas within each active grid. MEC and MPPEH will be treated as discussed in Section 17.4 below.

17.3.2 Movement

Where the SUXOS and the UXOSO can determine that a MEC item is not fuzed or is otherwise not configured to detonate, they may make the decision that it is acceptable to move. The MEC item can then be moved to a different location on the MRS and consolidated with other MEC items for detonation.

17.3.3 Transportation

MEC and MPPEH items will not be transported offsite. MEC determined to be acceptable to move as discussed in Sections 17.3.2 may be moved to a different location on the MRS and consolidate with other MEC items for detonation.

17.3.4 Storage

Bering Sea Eccotech and EOD personnel will strictly adhere to OP 5 requirements during handling and storage of donor explosives. Recovered MEC and/or MPPEH items will be blown once sufficient quantities are accumulated. Just-in-time (on-demand) donor charges will be delivered to the site and will not be stored onsite.

17.4 Munitions and Explosives of Concern and/or Material Potentially Presenting an Explosive Hazard Disposition Processes

17.4.1 Munitions and Explosives of Concern Process

Due the low number of anticipated discoveries of MEC items, it is not anticipated that an open burn/open detonation area will be established for this project. Where the SUXOS and the UXOSO can determine that a MEC item is not fuzed or is otherwise not configured to detonate, they may make the decision that it is acceptable to move. The MEC item can then be moved to a different location on the MRS and consolidated with other MEC items for detonation. In-grid consolidation will be managed to ensure that ESQD arcs do not extend beyond the MRS or create a hazard for other operations being conducted within the MRS.

All munitions items located within the AOCs are classified as MEC or as Munitions Documented as Safe (MDAS). Any other munitions are considered as MPPEH until they are re-inspected and certified as non-explosives contaminated. BSE and EOD personnel will strictly adhere to OP 5 requirements during MEC and/or MPPEH disposition.

All MEC and MPPEH items containing explosives that are encountered during this project will be disposed of or vented/demilitarized by countercharging the munitions with an explosive donor charge and detonating the donor charge.

Electrically initiated explosives will be used for treatment. No other type of disposal (e.g., burning) will be used for this project. The SUXOS will supervise all demolition operations. Minimum separation distances as prescribed in OP-5 Volume 1 Revision 7 Change 11. Paragraph 13-1.8 will be utilized. When UXO/MEC consolidation is performed, the fragmentation database distances listed in TP-16 will be used and increased by 33%.

The number of personnel conducting detonation operations shall be kept to a minimum, but under no circumstances shall an operator work alone. When detonation operations are underway, no personnel will be stationed at or near material awaiting treatment at the stockpile area. After detonation operations have been completed, the demolition crew will remain in the protective crew area at least five minutes after single shots and the last shot of a series, provided that the numbers of shots have been counted. Operations will be scheduled so that detonations will not occur less than 60 minutes prior to securing the range at the end of the workday.

Misfire procedures: For electric blasting caps, a 30-minute waiting period is required. Misfires will be handled under the direction of the SUXOS and firing wires shall be carefully traced and a search made for unexploded charges.

The local fire department will be notified of all detonation operations, the types of explosives material being disposed of, and the calculated fragmentation/blast hazard distances. At no time will firefighters be allowed to enter the fragmentation/blast hazard zone if the possibility exist that the explosive material itself is still burning. The range will not be secured if any probability of fire exists. Only authorized spark-resistant tools will be used while working within a radius of 15 feet from exposed energetic material. However, a clean sharp knife may be used for cutting time blasting fuze/detonating cord.

Treatment operations shall be performed during daylight hours only. Blasting caps will be primed only after all operators except those doing the actual ignition work have retreated to the protective crew shelter/area. Blasting caps will be carefully handled at all times. Ammunition and explosives to be treated will not be handled roughly or carelessly. Extra care should be taken

since, in most instances, the hazards of the ammunition or explosives to be treated are increased as a result of age, deterioration, or damage. Personnel should anticipate the possible presence of spark and flame discharges from the accumulation of electrostatic charges and take necessary precautions to minimize their potential hazard.

If the material being treated produces high fragmentation, the detonation shall take place at an area surrounded by an earth barrier at least 4 feet high or in a pit or trench at least 4 feet deep. If rockets or solid rocket motors are being disposed of, a sufficient charge will be used so as to assure in-place destruction of the motor and head. Disposal of hand grenades and rifle grenades will be limited to 20 hand grenades or 50 40mm rifle grenades in each pit. All items will be in close contact. If demolition is used to vent or expose hidden cavities, the minimum amount of explosives will be used to achieve the desired effect. Jet perforators may be used for this purpose.

All explosive disposal operations will be performed under the direct supervision of the SUXOS and the UXOSO. Before the initiation of any explosive charge, the SUXOS will ensure that all required coordination is made with local agencies and that the area is clear of nonessential personnel. BSE will provide explosives delivery and blaster services because they have personnel with the necessary Hawaii Blaster's Permit.

MEC items discovered during the workweek will be marked or consolidated as appropriate for demolition. Safety considerations require that MEC items that have been fired and are still fuzed must be blown in place (BIP). Where necessary to protect archaeological features, engineering controls (sandbags) will be placed around the MEC items and/or the archaeological feature to mitigate blast and fragmentation from reaching archaeological features.

BSE will make an explosive delivery once an adequate number of UXO items have been accumulated and are awaiting destruction. Department of the Navy (DON) and Department of Transportation (DOT) requirements will be strictly observed for transportation of ammunition and explosives.

Two UXO qualified personnel will identify MEC items/components encountered during the project. The UXO personnel will record identification data of all MEC items/components, including condition, nomenclature, depth, location, and disposition for inclusion in the RA report.

BSE maintains a detailed accounting of all MEC/MPPEH encountered. Once the MEC has been destroyed or removed, the hole will be checked with a metal detector to ensure that the initial item was not masking additional anomalies.

17.4.2 Material Potentially Presenting an Explosive Hazard Process

During field operations, BSE will recover, inspect, and dispose of MDAS. Material will be stored as MPPEH until processed and categorized as MDAS. Once identified as MDAS, containers holding the MDA will be labeled and secured (with controlled access) at all times, or the material will risk losing the MDAS designation and will require an additional inspection. Only personnel qualified as UXO TIII or above will be allowed to inspect and classify MDAS. Lockable boxes such as 20 cubic yard shipping boxes, lockable job boxes, or similar, will be used for storage of munitions debris. Total weight of MDAS will be documented during

certification and verified upon receipt by the recycle facility. Once a container is loaded with MDAS, it will be closed and sealed until it is received at the recycle facility. Upon shipment of the MDAS, the SUXOS will complete an Inert/Demilitarization manifest.

Certification documentation for MDAS will consist of a Disposal Turn-in Document DD Form 1348-1 (series). The MDAS certification documentation will identify the material type. For example, expended 9mm brass, mixed metal range gleanings, or expended Mk 76 practice bombs. Documentation as MDAS requires dual signatures on the certification document. Resumes and sample signatures will be provided to NAVFAC Pacific Remedial Project Manager for all signatory personnel. The SUXOS will sign the manifest to certify inspection of the scrap, and the UXOQCS will sign as the verifier. Each of the two signatures will be directly above the typed or clearly stamped or legibly printed full name, title, complete organization name and address, and phone numbers of the respective inspector, as follows:

a. For material being visually inspected, the first signatory (i.e., certifier) must have performed a 100% inspection and a second signatory (i.e., verifier) must have performed an independent 100% re-inspection.
b. All MDAS documentation shall include the following statement: *The material listed on this form has been inspected or processed by DDESB-approved means, as required by DOD policy, and to the best of my knowledge and belief does not pose an explosive hazard.*

In accordance with OP 5, Ammunition and Explosives Ashore, the SUXOS and UXOQCS will be authorized in writing by the NAVFAC PAC Commander to certify and /or verify munitions debris shipped off the project site. Once the material is demilitarized, it will be considered scrap and will be disposed/recycled at a local recycling facility. BSE will track all documentation from cradle to grave and will include all documentation in the RA report.

17.5 Operational Risk Management

As required by OPNAVINST 3500.39C, all operations undertaken by or for the DON must incorporate ORM principles into all phases of planning, operations, and training. Because munitions response actions involve inherent risks, the PM and UXOSO will evaluate those risks using facts, prudence, experience, judgment, and situational awareness.

Under certain conditions, and on a case-by-case basis, authorized visitors will be granted access to the EZ when operations are being conducted, provided that the following requirements are fulfilled:

- Access is limited to essential personnel and authorized personnel.
- The UXOSO has completed the operational risk assessment.
- The maximum number of persons allowed in the EZ at one time will be determined by the UXOSO. The ratio of UXO-qualified escorts to visitors will be determined by the UXOSO at the time of the visit.
- Persons requesting access to the EZ must demonstrate a legitimate need for access and obtain authorization from the Navy, Contractor PM, and UXOSO; they must also submit their access request well enough in advance for the UXOSO to schedule an escort.

- Visitors must receive a site-specific briefing explaining the hazards and safety procedures associated with the EZ and must acknowledge the receipt of the briefing in writing.
- UXO-qualified personnel must escort authorized visitors at all times.

Any authorized visitor who violates established safety procedures will be immediately escorted out of the EZ for the visitor's own protection and to protect essential personnel in the EZ.

QAPP Worksheet #18-Sampling Locations and Methods

(UFP-QAPP Manual Section 3.1.1)

N/A

Note: This worksheet pertains to chemical analysis and therefore is not applicable to this project.

Sampling Location/ID Number	Matrix	Depth (Units)	Analytical Group	Number of Samples (Identify field duplicates)	Sampling SOP Reference[11]

[11] Standard operating procedure (SOP) or worksheet that describes the sample collection procedures

QAPP Worksheet #19/30 Sample Containers, Preservation, and Hold Times

(UFP-QAPP Manual Section 3.1.2.2)

N/A

Note: This worksheet pertains to chemical analysis and therefore is not applicable to this project.

Matrix	Analytical Group	Analytical and Preparation Method/SOP Reference	Containers (Number, size, and type)[12]	Preservation Requirements (Chemical, temperature, light protected)[13]	Maximum Holding Time (Preparation/Analysis)

[12] Specify the appropriate reference letter or number from the Analytical SOP References table (Worksheet #23).
[13] Sample volume is equal to container size.

QAPP Worksheet #20-Field QC Summary

(UFP-QAPP Manual Section 3.1.1 and 3.1.2)

N/A

Note: This worksheet pertains to chemical analysis and therefore is not applicable to this project.

Matrix	Analytical Group	Concentration Level	Analytical and Preparation SOP Reference[14]	No. of Sampling Locations[15]	No. of Field Duplicate Pairs	Inorganic No. of MS	No. of Field Blanks	No. of Equip. Blanks	No. of PT Samples[16]	Total No. of Samples to Lab

[14] Specify the appropriate reference letter or number from the Analytical SOP References table (Worksheet #23).
[15] If samples will be collected at different depths at the same location, count each discrete sampling depth as a separate sampling location or station.
[16] The number of Batch or Project-specific proficiency training (PT) samples is optional.

QAPP Worksheet #21-Field SOPs

(UFP-QAPP Manual Section 3.1.2)

N/A
Note: This worksheet pertains to chemical analysis and therefore is not applicable to this project.

Reference Number	Title, Revision Date and/or Number	Originating Organization of Sampling SOP	Equipment Type	Modified for Project Work? (Y/N)	Comments

QAPP Worksheet #22-Field Equipment Calibration, Maintenance, Testing, and Inspection

(UFP-QAPP Manual Section 3.1.2.4)

Field Equipment	Activity	Frequency	Acceptance Criteria	Corrective Action	Responsible Person	SOP Reference	Comments
Schonstedt GA-72cd	Battery Check	3 times/day	2/4 LED indicators shaded	Replace Batteries	Operator	Manufacture Guidance	
	Function Check	Initially each day and 3 times/day	Audio and visual response	Troubleshoot IAW Manufacturer Guidance	Operator	Manufacturer Guidance	Replace instrument if corrective actions fail.
Minelab F3	Battery Check	Continuously	Absence of low battery alarm and visual indicator	Replace Batteries	Operator	Manufacturer Guidance	
	Function Check	Initially and 3 times/day	Audio and visual response	Troubleshoot IAW Manufacturer Guidance	Operator	Manufacturer Guidance	Replace instrument if corrective actions fail.
Trimble	Battery Check	Initially and 2 times/day	Battery within recommended levels	Replace Batteries	Operator	Manufacturer Guidance	
	Function Check	Continuously	Within acceptable limits per Manufacturer	Troubleshoot IAW Manufacturer Guidance	Operator	Manufacturer Guidance	

QAPP Worksheet #23-Analytical SOPs

(UFP-QAPP Manual Section 3.2.1)

N/A
Note: This worksheet pertains to chemical analysis and therefore is not applicable to this project.

Reference Number	Title, Revision Date, and/or Number	Definitive or Screening Data	Matrix and Analytical Group	Instrument	Organization Performing Analysis	Modified for Project Work?[17] (Y/N)

[17] If yes, then specify the modification that has been made. Note that any analytical SOP modification made relative to project specific needs must be reviewed and approved by Quality Assurance.

QAPP Worksheet #24-Analytical Instrument Calibration

(UFP-QAPP Manual Section 3.2.2)

N/A

Note: This worksheet pertains to chemical analysis and therefore is not applicable to this project.

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference[18]

[18] Specify the appropriate reference letter or number from the Analytical SOP Reference table (Worksheet #23)

QAPP Worksheet #25-Analytical Instrument and Equipment, Testing, and Inspection

(UFP-QAP Manual Section 3.2.3)

N/A

Instrument	Maintenance Activity	Testing Activity	Inspection Activity	Frequency	Acceptance Criteria	Corrective Action	Responsible Person	SOP Reference[19]

[19] Specify the appropriate reference letter or number from the Analytical SOP References table (Worksheet #23).

QAPP Worksheet #26/27-Sampling Handling, Custody, and Disposal

(UFP-QAPP Manual Section 3.3)

N/A **Sample Handling System**

SAMPLE COLLECTION, PACKAGING, AND SHIPMENT
Sample Collection (Personnel/Organization):
Sample Packaging (Personnel/Organization):
Coordination of Shipment (Personnel/Organization):
Type of Shipment/Carrier:
SAMPLE RECEIPT AND ANALYSIS
Sample Receipt (Personnel/Organization):
Sample Custody and Storage (Personnel/Organization):
Sample Preparation (Personnel/Organization):
Sample Determinative Analysis (Personnel/Organization):
SAMPLE ARCHIVING
Field Sample Storage (No. of days from sample collection):
Sample Extract/Digestate Storage
Biological Sample Storage (No. of days from sample collection)
SAMPLE DISPOSAL
Personnel/Organization:
Number of Days from Analysis

QAPP Worksheet #28-Analytical Quality Control and Corrective Action

(UFP-QAPP Manual Section 3.4 and Tables 4, 5 and 6)

N/A

QC Samples Table

Matrix	
Analytical Group	
Concentration Level	
Sampling SOP	
Analytical Method/SOP Reference	
Sampler's Name	
Field Sampling Organization	
Analytical Organization	
No. of Sample Locations	

QC Sample	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective action	Data Quality Indicator (DQI)	Measurement Performance Criteria

QAPP Worksheet #29-Project Documents and Records

(UFP-QAPP Manual Section 3.5.1)

Project Documents and Records Table

Report/Form	Responsible Person	Work Element	Frequency	Location
UXO Tailgate Safety Form	UXOSO	All Field	Daily	Work Plan
UXO Discovery Form	SUXOS	All Field	When Encountered	Work Plan
Safety Inspection Log	UXOSO	All Field	Daily	Work Plan
Equipment Checklist	SUXOS	All Field	Weekly	Work Plan
Safety Logbook	UXOSO	All Field	Daily	Safety Logbook
SUXOS Logbook	SUXOS	All Field	Daily	SUXOS Logbook
UXO Detector Checklist	Detector Operator	Anomaly Avoidance	Daily	UXO Detector Checklist Folder
Photo Log	UXOSO	All Field Activity	As Required	Photo Folder
Site Orientation Brief	UXOSO	Mobilization	As Required	Safety Logbook
Explosive Safety Brief	UXOSO	Mobilization	Upon Arrival	Safety Logbook
Visitor Log	UXOSO	All Field	As Required	Safety Logbook

Site Approval Plan	SUXOS	Mobilization	Once	Project Folder
Seed Tracking Chart	UXOQCS	MEC Clearance	Daily	QCP/QAPP
Daily Report	Project Leader	All Field	Daily	Project Folder
QC Nonconformance Report	UXOQCS	MEC Clearance	As Required	QCP/QAPP
QC Deficiency Report	UXOQCS	MEC Clearance	As Required	QCP/QAPP
QC Logbook	UXOQCS	MEC Clearance	As Required	QC Logbook

Bering Sea Eccotech, Inc.

Operational Risk Assessment

(OPNAVINST 3500.39C)

Activity/Department: Bering Sea Eccotech, Inc.

Work Process: Waikane Valley Impact Area Remedial Actions (MEC)

Reference: OPNAVINST 3500.39C, 02 Jun 2010

Step 1. Identify Hazards	**Yes**	**No**	**N/A**
a. Has a flowchart been completed identifying major steps in the work process?	X		
b. Have applicable hazards of each step with possible causes for those hazards been documented? If yes, attach copy (format on page 3). If no, comment on page 2.	X		
Step 2. Assess Hazards			
Each hazard identified in Step 1 will be assigned a "Hazard Severity Category" a "Mishap Probability Rating" and a "Risk Assessment Code (RAC)." The below matrices are a guide for assessing hazards.			
a. Has each hazard been assigned a Hazard Severity Category?	X		
b. Has each hazard been assigned a Mishap Probability Rating?	X		
c. Has each hazard been assigned a RAC?	X		
Hazard Severity Category Matrix:			
I (death, loss, or grave damage)			
II (severe injury, damage, inefficiencies)			
III (minor injuries, damage, inefficiencies)			
IV (minimal threat to personnel and property)			
Mishap Probability Sub-Category Matrix:			

A (likely to occur immediately)	
B (probably will occur in time)	
C (may occur in time)	
D (unlikely to occur)	
Risk Assessment Code Matrix:	
Risk Assessment Matrix	
Hazard Severity	
Category I:	The hazard may cause death, loss of facility/assets or result in grave danger.
Category II:	The hazard may cause sever injury, illness, or property damage.
Category III:	The hazard may cause minor injury, illness, or property damage.
Category IV:	The hazard presents minimal threat to personnel and equipment.
Probability	
Category A:	Likely to occur immediately.
Category B:	Probably will not occur in time.
Category C:	May occur in time.
Category D:	Unlikely to occur, but not impossible.

PROBABILITY				
SEVERITY	A	B	C	D
I	1	1	2	3
II	1	2	3	4
III	2	3	4	5
IV	3	4	5	5

Step 3. Risk Decisions	**Yes**	**No**	**N/A**
a. Have risks been prioritized and internal controls selected to reduce process risks?	X		
b. Do selected internal controls provide benefits that outweigh the risks?	X		
c. If risk outweighs benefit, does the process warrant reporting to higher authority as a material weakness? Discuss issues on page 2.			X
Step 4. Internal Control Implementation (more than one type of internal control may apply)	**Yes**	**No**	**N/A**
a. Have "Engineering Controls" been implemented that reduce risk by design, material selection, or substitution technically or economically feasible?	X		
b. Have "Administrative Controls" been implemented that reduce risk through specific administration action such as: (1) Providing suitable warnings, markings, placards, signs, and notices? (2) Establishing written policies, programs, instructions, and standard operating procedures? (3) Training personnel to recognize hazards and take appropriate precautionary measures? (4) Limiting the exposure to hazard either by reducing the number of personnel/assets or the length of time they are exposed?	X		
c. Is their use of "Personnel Protective Equipment" (serves as a barrier between personnel and a hazard and should be used with other controls do not reduce the hazard to an acceptable level)?	X		
Step 5. Supervision:			
a. Is there periodic supervisory oversight of internal controls for the work process?	X		

1. Hazard. Slip, Trip, Fall, resulting in injury to personnel		
Daily and Weekly safety inspections are dictated by BSE policy to identify hazards	Before Controls	After Controls

associated with slip, trip, and fall hazards. Personnel are empowered to identify any hazards and take precautions to mitigate risks. Personal Protective Equipment (PPE) is mandated by the Site Safety And Health Plan (SSHP) in effort to minimize slip, trip, and fall hazards on the job site.		
a. Cause. Inattentiveness, Situational Awareness, spillages, slippery surfaces, inclines, poor lighting, and improper footwear		
b. Hazard Severity Category:	III	III
c. Mishap Probability Sub-Category:	D	D
d. Risk Assessment Code:	5	5
e. Controls		
1. Continue to address safe workplace practices and continue to enforce safety controls currently in place.		
2. Hazard. Struck by/Against Heavy Equipment/Pinch		
Daily and Weekly safety inspections are dictated by current BSE policy to identify hazards associated pinching. Personnel are empowered to identify any hazards and take precautions to mitigate risks. Machine guards, lockout/tag out, pre-operational checklists for equipment currently exist. Personnel Protective Equipment (PPE) is mandated by Site to minimize hazards associated with pinching. Adequate controls are currently in place.	Before Controls	After Controls
a. Cause. Inattentiveness, Situational Awareness, Lack of Machine Guarding, or Proper PPE.		
b. Hazard Severity Category:	III	III
c. Mishap Probability Sub-Category:	D	D
d. Risk Assessment Code:	5	5
1. Continue to address safe workplace practices and continue to enforce safety controls currently in place. Continue to brief lockout/Tagout to all personnel working with machinery with pinch hazards		
3. Hazardous Noise Levels, resulting in injury		
Equipment causing unsafe noise levels,	Before Controls	After Controls

i.e. heavy machinery, generator, string trimmers, will be identified prior to personnel exposure. All personnel are briefed on unsafe noise levels and proper PPE usage. PPE is available to all personnel for this hazard		
a. Cause. Inattentiveness, Situational Awareness, improperly maintained equipment or PPE.		
b. Hazard Severity Category	III	IV
c. Mishap Probability Sub-Category	D	D
d. Risk Assessment Code:	5	5
e. Controls		
1. Unsafe noise hazards will be briefed daily. Equipment will be identified to all personnel. Noise level meters will be available, or personnel will wear earplugs.		
4. Hazardous Wildlife, resulting in personnel injury		
Personnel are briefed on hazardous organisms during initial safety brief. Encounter with hazardous wildlife is against corporate policy. PPE, such as insect repellant may be used to deter ticks, mosquitos, etc.	Before Controls	After Controls
a. Cause. Inattentiveness, Situational Awareness, accidental encounter.		
b. Hazard Severity Category	III	III
c. Mishap Probability Sub-Category	D	D
d. Risk Assessment Code	5	5
e. Controls		
1. Continue to address safe work practices and avoid wildlife		
5. Improper Lifting, resulting in personnel injury		
Personnel are briefed on proper lifting techniques during initial safety brief	Before Controls	After Controls
a. Cause. Inattentiveness, Situational Awareness		
b. Hazard Severity Category	III	IV
c. Mishap Probability Sub-Category	D	D
d. Risk Assessment Code	5	5
e. Controls		
1. Continue to address safe workplace practices and continue to enforce safety controls currently in place.		
6. Eye Injury, resulting in personnel injury		

Personnel are briefed during initial safety brief on the proper use of PPE	Before Controls	After Controls
a. Cause. Inattentiveness, Situational Awareness		
b. Hazard Severity Category	III	IV
c. Mishap Probability Sub-Category	D	D
d. Risk Assessment Code	5	5
e. Controls		
1. Continue to address safe workplace practices. Make PPE available for all personnel.		
7. Electrocution, resulting in personnel injury/death		
Personnel are briefed during initial safety brief on the proper use of electrical tools.	Before Controls	After Controls
a. Cause. Inattentiveness, Situational Awareness, Substandard Maintenance		
b. Hazard Severity Category	I	IV
c. Mishap Probability Sub-Category	D	D
d. Risk Assessment Code	4	5
e. Controls		
1. Ensure tools and equipment are electrically sound. Follow manufacture's guidance on tool use. Use Lockout/Tagout procedures for unsafe tools.		
8. Sharp Objects, resulting in personnel injury		
Personnel are briefed during initial safety brief on the hazards of sharp objects and proper use of PPE	Before Controls	After Controls
a. Cause. Inattentiveness, Situational Awareness		
b. Hazard Severity Category	II	IV
c. Mishap Probability Sub-Category	D	D
d. Risk Assessment Code	5	5
e. Controls		
1. Reinforce proper use of PPE such as leather gloves. Communicate hazards to workers during daily safety briefs.		
9. MEC Encounter, resulting in personnel injury		
Personnel are briefed during initial safety brief on hazards associated with MEC. Only UXO personnel may handle MEC	Before Controls	After Controls
a. Cause. Inattentiveness, Situational		

Awareness		
b. Hazard Severity Category	I	IV
c. Mishap Probability Sub-Category	D	D
d. Risk Assessment Code	5	5
e. Controls		
1. Reinforce MEC avoidance for all personnel. Report UXO/MEC to UXO technician.		
10. Heat/Cold Stress, resulting in personnel injury		
Personnel are allowed to acclimate to the environment. Personnel are briefed daily to hydrate	Before Controls	After Controls
a. Cause. Inattentiveness, Strenuous Terrain, Situational Awareness		
b. Hazard Severity Category	I	IV
c. Mishap Probability Sub-Category	D	D
d. Risk Assessment Code	5	5
E Controls		
1. Provide water for personnel. Brief each morning the importance of hydration. Brief personnel on the symptoms of dehydration.		

Draft
Site Safety and Health Plan
Remedial Action
Munitions Response Program

WAIKANE VALLEY IMPACT AREA
KANEOHE, HAWAII

December 2013

Commander
Naval Facilities Engineering Command, Pacific
258 Makalapa Drive, Suite 100
Pearl Harbor, HI 96860-3134

Contract Number N62470-12-D-7017
Task Order KB01

Draft
Site Safety and Health Plan
Remedial Action
Munitions Response Program

WAIKANE VALLEY IMPACT AREA
KANEOHE, HAWAII

December 2013

Prepared for:

Department of the Navy
Naval Facilities Engineering Command, Pacific
258 Makalapa Drive, Suite 100
Pearl Harbor, HI 96860-3134

Prepared by:

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Prepared under:
Contract Number N62470-12-D-7017
Task Order KB01

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LIST OF ACRONYMS

BSE	Bering Sea Eccotech
CFR	Code of Federal Regulations
CPR	cardiopulmonary resuscitation
DDESB	Department of Defense Explosives Safety Board
DERP	Defense Environmental Restoration Program
EOD	explosive ordnance disposal
ESS	explosives safety submission
FUDS	Formerly Used Defense Site
HAZWOPER	Hazardous Waste Operations and Emergency Response
IAW	in accordance with
MCB	Marine Corps Base
MEC	munitions and explosives of concern
MM	millimeter
MPPEH	material possibly presenting an explosive hazard
MRS	Munitions Response Site
NAVFAC	Naval Facilities Engineering Command
ORM	operational risk management
PSHO	Project Safety and Health Officer
PM	Project Manager
PPE	personal protective equipment
RA	remedial action
RAC	Risk Assessment Code
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
SUXOS	Senior UXO Supervisor
USMC	United States Marine Corps
UXO	unexploded ordnance
UXOSO	UXO Safety Officer
WVIA	Waikane Valley Impact Area

PROCESS SUPERVISOR'S STATEMENT

I have read and understand this Site Safety and Health Plan (SSHP). To the best of my knowledge, the processing described within this SSHP can be done in a safe, healthful, and environmentally sound manner. I have made sure all persons assigned to this process are qualified, have read and understood the requirements of this SSHP and have signed the "Worker's Statement" for this process. I will ensure that the SSHP has current procedures. If a major change to the SSHP is necessary, I will ensure that the process is stopped until the SSHP is revised and approved. If unexpected safety, health, or environmental hazards are found, I will make sure the process is stopped until the hazards have been eliminated.

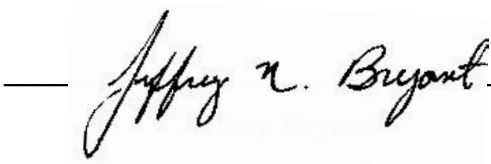
NAME	SIGNATURE	ORGANIZATION	DATE

PROCESS WORKER'S STATEMENT

I have read this Site Safety and Health Plan (SSHP) and I have received adequate training to perform the process according to this SSHP. I will follow the SSHP unless I identify a hazard not addressed in it or encounter an operation I cannot perform according to the SSHP. If that occurs, I will stop the process and notify my immediate supervisor of the problem.

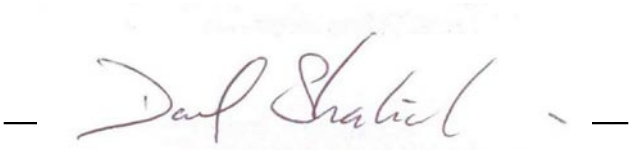
NAME	SIGNATURE	ORGANIZATION	DATE

Prepared by:



Project Planning Manager, Munitions Response Services

Approved by:



Daniel Skrodialowski

Munitions Response Director, Munitions Response Services

December 2013

SECTION 1 PURPOSE AND APPLICABILITY

1.1 Purpose

This Site Safety and Health Plan (SSHP) provides the process, procedures, and plans to safely perform munitions response actions under a remedial action (RA) to address the past use of munitions and explosives of concern (MEC) for Munitions Response Site (MRS) UXO 0022 at the Waikane Valley Impact Area (WVIA) at Marine Corps Base (MCB) Hawaii, Kaneohe, Oahu, Hawaii.

This SSHP is for the following actions in preparation for RA:

- Mobilization
- Site preparation
- Geophysical surveys
- Surface and subsurface MEC clearance
- Restoration of existing fences
- Installation of fences and signs
- Removal of existing fences
- Demobilization

1.2 Applicability

The provisions of this SSHP are mandatory for all onsite activities by all Bering Sea Eccotech (BSE) and subcontractor personnel. All site activities will comply with applicable federal, state, and local requirements. As site conditions change, this plan may need to be modified. Such modifications will be submitted as SSHP addenda and will be numbered sequentially. All SSHP addenda must be reviewed and approved by the Site Safety and Health Officer (SSHO) or Unexploded Ordnance (UXO) Safety Officer (UXOSO). All BSE and subcontractor personnel must read and understand this SSHP and sign the Plan Acceptance Form before starting work at the site.

1.3 Contractor

Bering Sea Eccotech

1.4 Contract Number/Task Order#

N62470-12-D-7017 / KB01

1.5 Project Name

Waikane Valley Impact Area Remedial Action

SECTION 2 PROJECT DESCRIPTION

2.1 Location of Work

The WVIA is a 187-acre area approximately 10 miles northwest of Marine Corps Base Hawaii. It was once part of a 2,000-acre lease used for military jungle training and field maneuvers. The remaining acres fall under the Defense Environmental Restoration Program (DERP) for Formerly Used Defense Sites (FUDS) and are depicted in Figure 1.

Military use of the site dates back to the early 1940s when it was used for jungle training; small arms, artillery, and mortar firing; field maneuvers; and a bombing range for air-to-ground ordnance delivery practice. Two significant accidents can be attributed to the site's MEC. In 1944, four people were injured, two fatally, when a 60-millimeter (mm) mortar discovered accidentally detonated. In 1963, a "souvenir" rifle grenade discovered in WVIA exploded after it was thrown against a wall, injuring three children. There have been no other reports of fatalities or injuries attributable to MEC discovered at Waikane Valley.

In 1953, the United States Marine Corps (USMC) leased 1,061 acres of the training area and used it for small arms, 3.5-inch rockets, and possibly medium artillery fire. Live fire apparently stopped in the early 1960s. In 1976, the USMC conducted UXO clearance operations; however, 187 acres were not certified free of UXO. The After Action Report stated that the 187 acres could never be certified free of UXO because of the ground cover and topography. The lease was terminated following the clearance effort, and the land was returned to the original owners, who farmed and developed it.

In 1983, heavy rain exposed ordnance on the property, and USMC explosive ordnance disposal (EOD) removed numerous 3.5-inch rockets. USMC EOD conducted a second clearance sweep in January 1984 and removed 480 3.5-inch rockets. In June 1984, a third intensive ordnance clearance resulted in the removal of an additional 190 items of UXO from the parcel. The After Action Report affirmed the conclusion of the initial clearance that the property could never be certified clear of UXO.

In 1989, the government acquired the title to the 187-acre site because of safety concerns about the ordnance. In 1992, a chain link fence was placed around the perimeter of the site to control access to the area. Civilians may legally enter the property only if accompanied by EOD personnel. The area is currently controlled and maintained by MCB Hawaii.

2.2 Description of Project

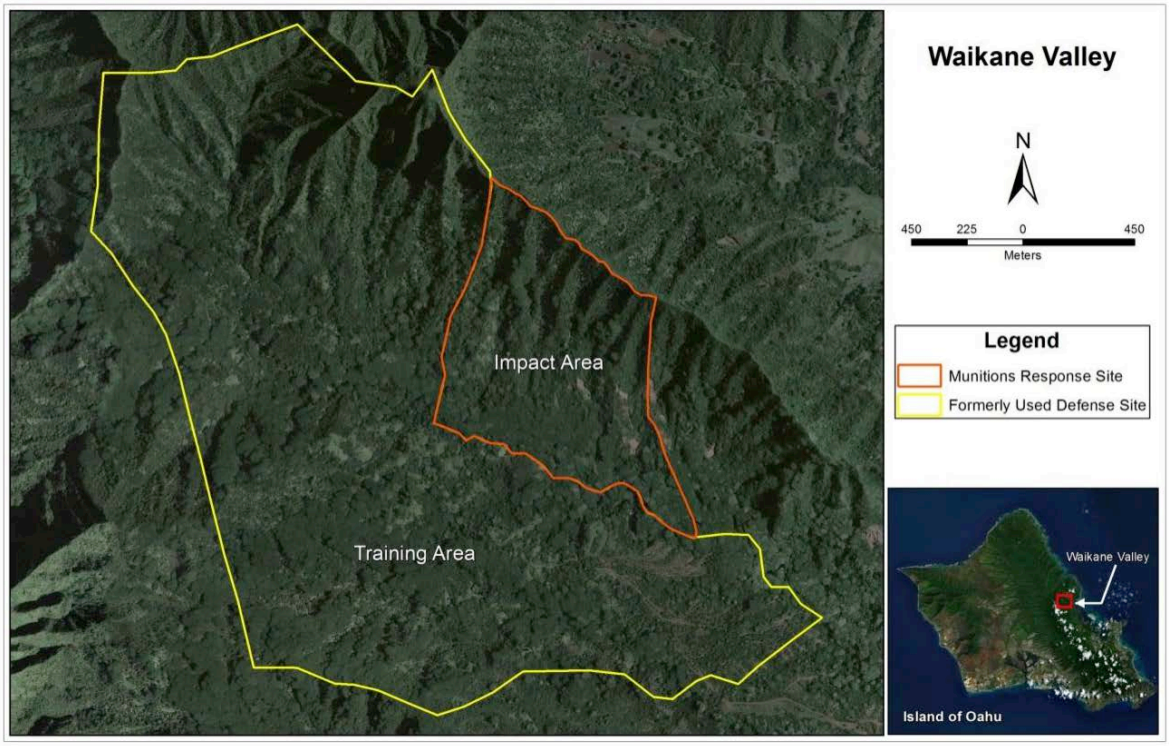
This abbreviated SSHP is supplements BSE's contract accident prevention plan and covers the Remedial Actions and supplemental work including site preparation, MEC surveys/removal actions, and installation of new fences. Activities include installing perimeter fences and other remedial actions to reestablish site control and allow future public access to the southern area of the Impact Area (MRS UXO 0022). Fence installation work will consist of installing fabric, hardware, barbed wire, padlocks, and signs across the east, west, and southern side of the stream along the southern portion of the site. UXO escort will be provided to ensure safety from potential MEC hazards at the site. No one will work on this site without UXO escort. UXO escort will not perform any remedial actions, and duties will be limited only to UXO escort and

anomaly avoidance. The UXO escort will act as site safety and also conduct safety briefs daily and ensure that the abbreviate SSHP is being followed accordingly.

The response actions include the following elements:

- Surface clearance of accessible areas in the Southern Area and the Northern Area
- Subsurface clearance to a depth of 2 feet of a 10-foot-wide buffer strip along the boundary separating the Southern and Northern Areas
- Removal of the existing fences from the Southern Area and installation of new fences along the north edge of the cleared buffer strip between the Southern and Northern Areas
- Subsurface clearance to a depth of 2 feet in the Southern Area in a 50-foot radius of any MEC found during the surface clearance
- Subsurface clearance to a depth of 2 feet along 50-foot-wide corridors to and around the Kamaka Shrine and Waikane Spring, and the installation of fences along and around these cleared areas, to allow free access to these sites from the Southern Area
- Additional LUCs applied to the entire 187 acres, including construction of a fence between the Southern and Northern Areas, notification letters to local landowners, and an educational program to inform the community of risks and mitigation measures

Figure 1
Waikane Valley Impact Area Map



SECTION 3 STAFF ORGANIZATION AND RESPONSIBILITIES

3.1 Corporate Health and Safety Policy

The health, safety, and protection of our employees, environment, clients, company property, and communities in which we operate are our most important priorities. Our vision statement documents this philosophy best: "Caring professionals successfully impacting safety, health, and the environment in our world."

It is the policy of BSE to achieve continuous improvement in our health, safety, and environment record and prevent personal injury and damage to property or the environment. Willingly and diligently adhering to all applicable local, state, provincial, and federal regulations relative to health, safety, and the environment is only the beginning.

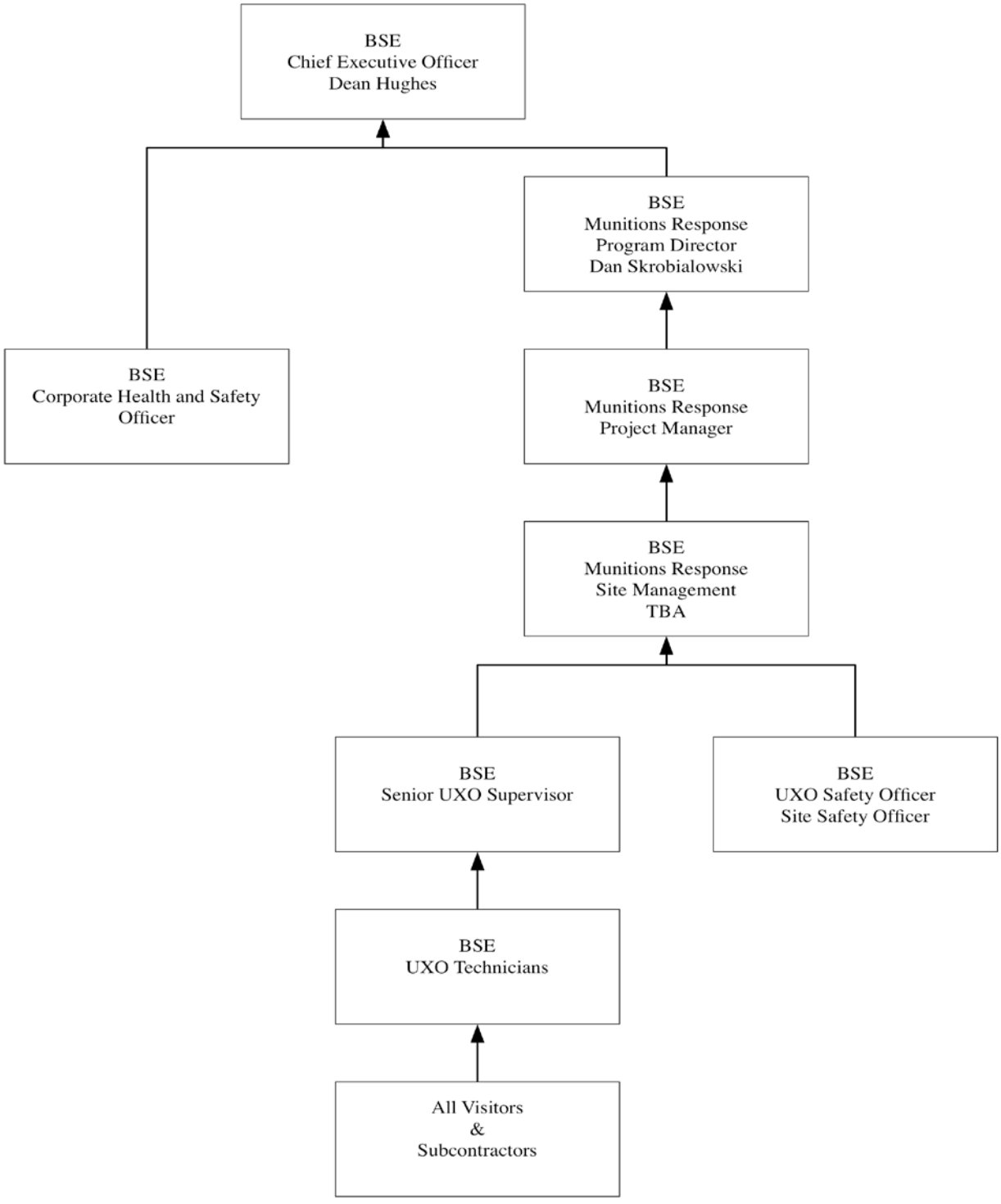
To further support our goals, health, safety, and environmental programs must be behavioral based and established at each operating location, including but not limited to service operations, construction, maintenance, shop, material handling, transportation, production, and office operations. Our programs will promote an organizational culture that instills an exemplary attitude and fosters behavior that prioritizes protection of health, safety, company property, third parties, and the environment. These programs will comply with all applicable governmental regulations and company policies. Although specific members of the management team are designated by the General Manager as responsible for the development, implementation, and evaluation of BSE's health, safety, and environment, these concerns are the responsibility of every employee. All BSE employees are expected to identify and eliminate risks and make loss prevention and control an integral part of their work ethic.

BSE senior leadership is responsible for the overall implementation of the health and safety procedures outlined in this SSHP and are tasked with the enforcement, goals, and growth of BSE Safety.

3.1.1 Lines of Authority and Accountability

BSE Site Superintendents, Project Managers (PMs), and the UXO Division Manager have the responsibility and are accountable for incorporating health and safety into the earliest stages of the project and the project planning process. PMs and the UXO Division Manager also have the responsibility and are accountable for knowing and following all applicable BSE and client health and safety requirements to ensure work is conducted under the policy stated in the Corporate Health and Safety Program and this SSHP. PMs and the General Manager are responsible for implementing the procedure requirements provided in this SSHP that pose hazards to BSE employees or employees of its subcontractors/vendors, clients, and other organizations present in the vicinity of work controlled by BSE. Figure 2 illustrates the lines of authority and internal safety reporting for the project.

Figure 2
Organizational Safety Chart



NOTE: Site Safety reports directly to the BSE PM

3.1.2 Coordination and Control of Subcontractors

A copy of this SSHP is to be provided to all subcontractors before the start of work so that the subcontractor/vendor is informed of the hazards at the site. While the BSE SSHP will be the minimum health and safety requirements for the work completed by BSE and its subcontractors/vendors, each subcontractor/vendor, in coordination with BSE health and safety personnel, is expected to perform its operations in accordance with its own SSHP, policies and procedures unique to the subcontractor/vendor's work to ensure that hazards associated with the performance of the work activities are properly controlled. Copies of any required safety documentation for a subcontractor/vendor's work activities will be provided to BSE for review before the start of onsite activities. Safety documentation must be current for all subcontractor/vendors. If the subcontractor/vendor's procedures/requirements conflict with requirements specified in this SSHP, the more stringent guidance will be adopted after discussion and agreement between the subcontractor/vendor and BSE project health and safety personnel. Hazards not listed in this SSHP, but known to the subcontractor/vendor or known to be associated with the subcontractor/vendor's services, must be identified and addressed to the BSE PM / Senior UXO Supervisor (SUXOS) and SSHO/UXOSO prior to beginning work operations.

3.1.3 Safety and Responsibilities of Subcontractors

If the subcontractor/vendor prefers to adopt this SSHP, the subcontractor will sign and date the SSHP along with BSE personnel and other subcontractors/vendors adopting the BSE SSHP. Once signed, an electronic version of our SSHP will be submitted to the subcontractor/vendor to use and follow. Subcontractors/vendors working at the site will need to have this plan with them. Subcontractors/vendors are responsible for the health and safety of their employees at all times, and they have the authority to halt work if unsafe conditions arise.

3.1.4 Standard Safety Work Practices

All site personnel shall observe the following general safety precautions:

1. Do not use radios or cell phones in the vicinity of MEC / material possibly presenting an explosive hazard (MPPEH).
2. Do not smoke except in approved smoking areas designated by the UXO technician.
3. UXO technician must brief any site visitors before site entry.
4. Do not enter the site unless accompanied by a "buddy."
5. Highly visible upper garment must be worn onsite.
6. Only trained personnel are allowed to operate heavy equipment and power tools.
7. Everyone has "Stop Work" authority. If you recognize an unsafe condition or unsafe act, stop work!
8. Personal protective equipment (PPE) is not an option. Site Safety is responsible for enforcing the use of PPE.

9. Don’t harass or handle wildlife.
10. Allergies must be identified to Site Safety before beginning work on the site.

SECTION 4 OPERATIONAL RISK MANAGEMENT

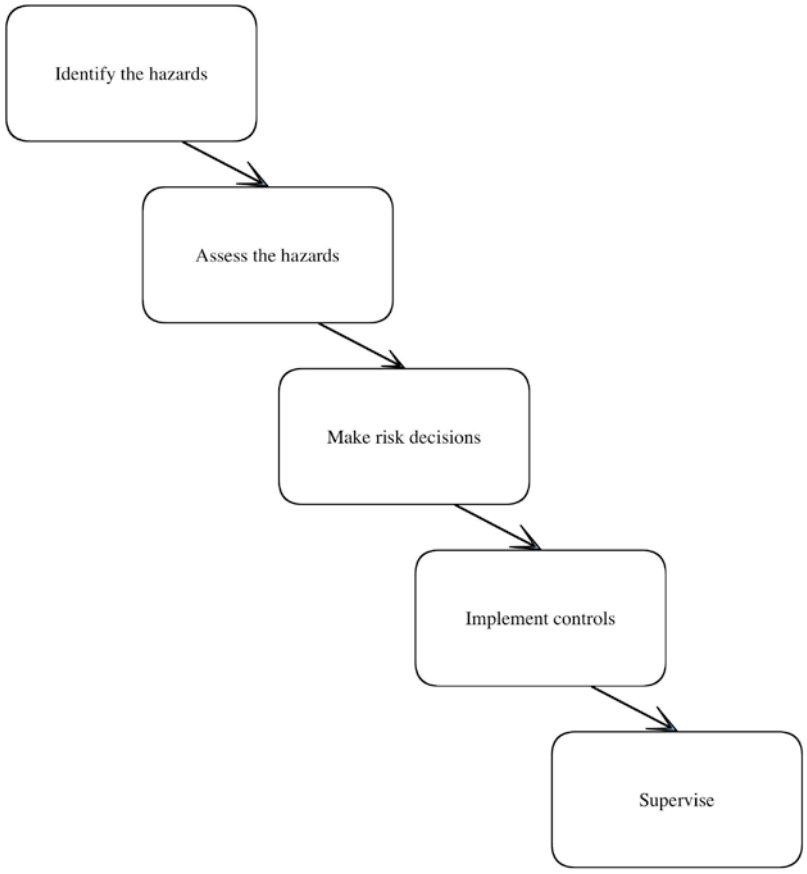
4.1 Introduction

Risk is inherent in all tasks, training, missions, operations, and personal activities no matter how routine. The most common cause of task degradation or mission failure is human error; specifically the inability to consistently manage risk. Risk management reduces or offsets risks by systematically identifying hazards and assessing and controlling the associated risks allowing decisions to be made that weigh risks against mission or task benefits. As professionals, BSE and its subcontractors are responsible for managing risk in all tasks, while leaders at all levels are responsible for ensuring that proper procedures are in place and that appropriate resources are available for their personnel to perform assigned tasks.

4.2 Operational Risk Management

Operational risk management (ORM) for the project was completed using the five-step process per OPNAVINST 3500.59 (series) instructions (Figure 3). The following is the ORM risk assessment:

Figure 3
Five-Step Operational Risk Management Process



Activity/Department: **Bering Sea Eccotech**

Work Process: **Fence Installation**

Reference: **OPNAVINST 3500.39C, 02 Jul 2010**

Step 1. Identify Hazards	**Yes**	**No**	**N/A**
a. Has a flowchart been completed identifying major steps in the work process?	X		
b. Have applicable hazards of each step with possible causes for those hazards been documented? If yes, attach copy (format on page 3). If no, comment on page 2.	X		
Step 2. Assess Hazards			
Each hazard identified in Step 1 will be assigned a "Hazard Severity Category" a "Mishap Probability Rating" and a "Risk Assessment Code (RAC)." The below matrices are a guide for assessing hazards.			
a. Has each hazard been assigned a Hazard Severity Category?	X		
b. Has each hazard been assigned a Mishap Probability Rating?	X		
c. Has each hazard been assigned a RAC?	X		

Hazard Severity Category Matrix:
I (death, loss, or grave damage)
II (severe injury, damage, inefficiencies)
III (minor injuries, damage, inefficiencies)
IV (minimal threat to personnel and property)
Mishap Probability Sub-Category Matrix
A (likely to occur immediately)
B (probably will occur in time)
C (may occur in time)
D (unlikely to occur)
Risk Assessment Code Matrix

Risk Assessment Matrix	
Hazard Severity	
Category I	The hazard may cause death, loss of facility/assets, or result in grave danger.
Category II	The hazard may cause severe injury, illness, or property damage.

Category III	The hazard may cause minor injury, illness, or property damage.
Category IV	The hazard presents minimal threat to personnel and equipment.
Probability	
Category A	Likely to occur immediately.
Category B	Probably will not occur in time.
Category C	May occur in time.
Category D	Unlikely to occur, but not impossible.

	PROBABILITY			
SEVERITY	A	B	C	D
I	1	1	2	3
II	1	2	3	4
III	2	3	4	5
IV	3	4	5	5

Step 3. Risk Decisions	**Yes**	**No**	**N/A**
a. Have risks been prioritized and internal controls selected to reduce process risks?	X		
b. Do selected internal controls provide benefits that outweigh the risks?	X		
c. If risk outweighs benefit, does the process warrant reporting to higher authority as a material weakness? Discuss issues on page 2.			X
Step 4. Internal Control Implementation (more than one type of internal control may apply)	**Yes**	**No**	**N/A**
a. Have engineering controls been implemented that reduce risk by design, material selection, or substitution technically or economically feasible?	X		
b. Have administrative controls been implemented that reduce risk through specific administration action such as: (1) Providing suitable warnings, markings, placards, signs, and notices? (2) Establishing written policies, programs, instructions, and standard operating procedures? (3) Training personnel to recognize hazards and take appropriate precautionary measures? (4) Limiting the exposure to hazard either by reducing the number of personnel/assets or the length of time they are exposed?	X		

c. Is their use of personnel protective equipment (serves as a barrier between personnel and a hazard and should be used with other controls do not reduce the hazard to an acceptable level)?	X		
Step 5. Supervision:			
a. Is there periodic supervisory oversight of internal controls for the work process?	X		

1. Hazard. Slip, Trip, Fall, resulting in injury to personnel		
Daily and weekly safety inspections are dictated by BSE policy to identify hazards associated with slip, trip, and fall hazards. Personnel are empowered to identify any hazards and take precautions to mitigate risks. Personal protective equipment (PPE) is mandated by the Site Safety And Health Plan (SSHP) in effort to minimize slip, trip, and fall hazards on the job site.	Before Controls	After Controls
a. Cause. Inattentiveness, situational awareness, spillages, slippery surfaces, inclines, poor lighting, and improper footwear		
b Hazard Severity Category	III	III
c. Mishap Probability Sub-Category	C	D
d. Risk Assessment Code	4	5
e. Controls		
Continue to address safe workplace practices and continue to enforce safety controls currently in place.		
2. Hazard. Struck by/against Heavy Equipment/Pinch		
Daily and weekly safety inspections are dictated by current BSE policy to identify hazards associated pinching.	Before Controls	After Controls

Personnel are empowered to identify any hazards and take precautions to mitigate risks. Machine guards, lockout/tag out, pre-operational checklists for equipment currently exist. Personnel protective equipment (PPE) is mandated by Site to minimize hazards associated with pinching. Adequate controls are currently in place.		
a. Cause. Inattentiveness, situational awareness, lack of machine guarding or proper PPE.		
b. Hazard Severity Category	II	II
c. Mishap Probability Sub-Category	D	D
d. Risk Assessment Code	4	4
Continue to address safe workplace practices and continue to enforce safety controls currently in place. Continue to brief lockout/tagout to all personnel working with machinery with pinch hazards		
3. Hazardous Noise Levels, resulting in injury		
Equipment causing unsafe noise levels, i.e. heavy machinery, generator, string trimmers, will be identified prior to personnel exposure. All personnel are briefed on unsafe noise levels and proper PPE usage. PPE is available to all personnel for this hazard	Before Controls	After Controls
a. Cause. Inattentiveness, situational awareness, improperly maintained equipment or PPE.		
b. Hazard Severity Category	III	IV
c. Mishap Probability Sub-Category	D	D
d. Risk Assessment Code	5	5

e. Controls		
Unsafe noise hazards will be briefed daily. Equipment will be identified to all personnel. Noise level meters will be available, or personnel will wear earplugs.		
4. Hazardous Wildlife, resulting in personnel injury		
Personnel are briefed on hazardous organisms during initial safety brief. Encounter with hazardous wildlife is against corporate policy. PPE, such as insect repellant may be used to deter ticks, mosquitoes, etc.	Before Controls	After Controls
a. Cause. Inattentiveness, situational awareness, accidental encounter.		
b. Hazard Severity Category	III	III
c. Mishap Probability Sub-Category	D	D
d. Risk Assessment Code	5	5
e. Controls		
Continue to address safe work practices and avoid wildlife		
5. Improper Lifting, resulting in personnel injury		
Personnel are briefed on proper lifting techniques during initial safety brief	Before Controls	After Controls
a. Cause. Inattentiveness, situational awareness		
b. Hazard Severity Category	II	III
c. Mishap Probability Sub-Category	C	C
d. Risk Assessment Code	3	4
e. Controls		

Continue to address safe workplace practices and continue to enforce safety controls currently in place.		
6. Eye Injury, resulting in personnel injury		
Personnel are briefed during initial safety brief on the proper use of PPE	Before Controls	After Controls
a. Cause. Inattentiveness, situational awareness		
b. Hazard Severity Category	II	II
c. Mishap Probability Sub-Category	C	C
d. Risk Assessment Code	4	5
e. Controls		
Continue to address safe workplace practices. Make PPE available for all personnel.		
7. Electrocution, resulting in personnel injury/death		
Personnel are briefed during initial safety brief on the proper use of electrical tools.	Before Controls	After Controls
a. Cause. Inattentiveness, situational awareness, substandard maintenance		
b. Hazard Severity Category	I	IV
c. Mishap Probability Sub-Category	D	D
d. Risk Assessment Code	4	5
e. Controls		
Ensure tools and equipment are electrically sound. Follow manufacture's guidance on tool use. Use lockout/tagout procedures for unsafe tools.		

8. Sharp Objects, resulting in personnel injury		
Personnel are briefed during initial safety brief on the hazards of sharp objects and proper use of PPE	Before Controls	After Controls
a. Cause. Inattentiveness, situational awareness		
b. Hazard Severity Category	II	IV
c. Mishap Probability Sub-Category	D	D
d. Risk Assessment Code	5	5
e. Controls		
Reinforce proper use of PPE such as leather gloves. Communicate hazards to workers during daily safety briefs.		
9. MEC Encounter, resulting in personnel injury		
Personnel are briefed during initial safety brief on hazards associated with MEC. Only UXO personnel may handle MEC	Before Controls	After Controls
a. Cause. Inattentiveness, situational awareness		
b. Hazard Severity Category	I	IV
c. Mishap Probability Sub-Category	D	D
d. Risk Assessment Code	5	5
e. Controls		
Reinforce MEC avoidance for all personnel. Report UXO/MEC to UXO technician.		
10. Heat/Cold Stress, resulting in personnel injury		
Personnel are allowed to acclimate to	Before Controls	After Controls

the environment. Personnel are briefed daily to hydrate		
a. Cause. Inattentiveness, strenuous terrain, situational awareness		
b. Hazard Severity Category	I	IV
c. Mishap Probability Sub-Category	D	D
d. Risk Assessment Code	5	5
e. Controls		
Provide water for personnel. Brief each morning the importance of hydration. Brief personnel on the symptoms of dehydration.		

ACTIVITY HAZARD ANALYSIS
Clearing and Grubbing

TASK BREAKDOWN	POTENTIAL HAZARDS	CRITICAL SAFETY PRACTICES	PERSONAL PROTECTIVE EQUIPMENT	MONITORING DEVICES
Clearing, Grubbing	Struck by/against heavy equipment	• Wear reflective high-visibility vests when exposed to vehicular traffic • Isolate equipment swing areas • Make eye contact with operators before approaching • Understand and review hand signals	High-visibility vests, hardhat, safety glasses, safety toed boots.	
	Slip, trips, falls	• Clear walkways and work areas of equipment, tools, vegetation, excavated material and debris • Mark, identify, or barricade other obstructions • Maintain three points of contact when ascending/descending slopes, ladders, mounting, dismounting heavy equipment • Halt work in high winds, lightning severe weather.		
	Handling heavy objects	• Observe proper lifting techniques • Obey sensible lifting limits (49 lb. or less) • Use mechanical lifting equipment (hand carts, trucks) to move large awkward loads		

	Eye injuries	• Wear face shield, goggles, safety glasses while operating powered clearing/grubbing equipment	Face shield, goggles	
	Sharp objects	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects • Maintain all hand and power tools in a safe condition • Keep guards in place during use • Close doors, windows on heavy equipment to prevent injuries from tree branches or other vegetation	Leather gloves	
	High noise levels	• Use hearing protection when exposed to excessive noise levels (greater than 85 dB over an 8 hour work period • Assess noise level with sound level meter if possibility exists that level may exceed 85 dB time-weighted average	Ear plugs	Sound Level Meter
	Insect bites	• Avoid insect nests areas • Emphasize the buddy system where such injury potential exists • Use insect repellant, wear PPE to protect against sting/bite injuries		

	Contact dermatitis	• Wear PPE to avoid skin contact with contaminated soil, plants, or other skin irritants • Identify and review poisonous plants with workers • Apply protective cream/lotion to exposed skin to prevent poison oak or similar reactions	Wear long sleeve shirt, plants, gloves	
	Operations of power clearing tools (brush saws, string trimmers)	• Wear eye, face, hand, and hearing protection when operating power equipment • Shut-off/idle power tools walking between work areas • Store flammable liquids in well ventilated areas, away from work areas, in approved containers • Shut off equipment during refueling • Use funnels to prevent spillage • Prohibit smoking during equipment operation • Provide ABC (or equivalent) fire extinguishers for all work areas	Face shield, goggles, leather gloves, ear plugs, safety toed boots	
	High/low ambient temperature	• Monitor for heat/cold stress • Provide fluids to prevent worker dehydration • Establish work/rest	Wicking or insulated clothing	Thermometer and local weather conditions

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
• Brush saws, string trimmers, mowers • First-aid kit, insect repellant • Fire extinguisher • Personal protective equipment • Hand tools	• Inspect equipment and tools daily in accordance with manufacturer's requirements • Inspect all emergency equipment (i.e.: first aid kits, fire extinguishers)	• Proper use of equipment • Review AHA with all site personnel

ACTIVITY HAZARD ANALYSIS
Fence Installation

TASK BREAKDOWN	POTENTIAL HAZARDS	CRITICAL SAFETY PRACTICES	PERSONAL PROTECTIVE CLOTHING	MONITORING DEVICES
Fence Installation	Sharp objects	• Maintain all hand tools in safe condition • Keep guards in place during use	Leather gloves	
	Slips, trips, falls	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be cause by sharp edges or objects • Clear walkways, work areas of equipment, tools vegetation, excavated material, and debris • Mark, identify, or barricade other obstructions		
	Handling heavy objects	• Observe proper lifting techniques • Obey sensible lifting limits (49 lb. or less) per person • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads		
	Eye injuries	• Wear face shield, goggles when operating powered clearing/grubbing equipment • Exercise caution when handling rolled up	Goggles, face shield, safety glasses	

TASK BREAKDOWN	POTENTIAL HAZARDS	CRITICAL SAFETY PRACTICES	PERSONAL PROTECTIVE CLOTHING	MONITORING DEVICES
		hog wire and welded wire mesh. Untying materials my expose worker to spring forces.		
	High noise levels	• Use hearing protection when exposed to excessive noise levels (greater than 85 dB over an 8-hour work period) • Assess noise level with sound level meter if possibility exists that level may exceed 85 dB time-weighted average	Ear Plugs	Sound Level Meter
	Electrical Shock	• De-energize or shut off utility lines at their source before work begins • Use double insulated or properly grounded electric power-operated tools • Maintain tools in a safe condition • Provide an equipment-grounding conductor program or employ ground-fault circuit interrupters • Use qualified electricians to hook up electrical circuits • Inspect all extension cords daily for structural integrity, ground continuity, and damaged insulation	Lockout/Tagout Devices	

TASK BREAKDOWN	POTENTIAL HAZARDS	CRITICAL SAFETY PRACTICES	PERSONAL PROTECTIVE CLOTHING	MONITORING DEVICES
		• Cover or elevate electric wire of flexible cord passing through work areas to protect from damage • Keep all plugs and receptacles out of water • Use approved water-proof, weather-proof type if exposure to moisture is likely • Inspect all electrical power circuits prior to commencing work • Follow Lockout-Tagout procedures		
	High/low ambient temperature	• Monitor for heat/cold stress • Provide fluids to prevent worker dehydration • Establish work/rest schedule	Wicking or Insulated Clothing	Thermometer and local weather conditions

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
• Wire cutters and tools • Wrenches • Forklift • Back-up alarm • Hand tools and lifting devices • Ladders • First-aid kit, fire extinguisher • Operator's manual for the equipment	• Inspect equipment and tools daily in accordance with manufacturer's requirements • Inspect all emergency equipment (i.e.: first aid kits, fire extinguishers)	• Proper use of equipment and tools • Review AHA with all site personnel

ACTIVITY HAZARD ANALYSIS
MEC/UXO/MPPEH Handling

TASK BREAKDOWN	POTENTIAL HAZARDS	CRITICAL SAFETY PRACTICES	PERSONAL PROTECTIVE CLOTHING	MONITORING DEVICES
Establish location for desired work area to conduct operations, to include: Establish Work Area Control Zones in a Conventional MEC/UXO Environment Debris Identification Munitions Debris Segregation	Slip, trip and fall.	Worker awareness of potential slippery surfaces and tripping hazards plus inspection and policing of debris.		
	Biological hazards.	See Biological Hazards AHA, which must be used in conjunction with this AHA if applicable.		
	Endangered/threatened flora/fauna.	Conduct reconnaissance IAW approved WP and avoid endangered and threatened species if at all possible.		
	Cold/Heat Stress	All site activities must be conducted IAW the approved WP ensuring that appropriate clothing and PPE is worn to assist in the prevention of cold and heat stress injuries. Use the buddy system at all times and have sufficient and appropriate fluids available for the conditions.		
	Contact with chemical agent or other hazardous chemicals	Personnel will don the proper PPE commensurate with the chemical hazard encountered and the work that is being accomplished.		
	MEC/UXO Hazards	If an MEC item is encountered alert the rest of the team and conduct an inspection of the item		

TASK BREAKDOWN	POTENTIAL HAZARDS	CRITICAL SAFETY PRACTICES	PERSONAL PROTECTIVE CLOTHING	MONITORING DEVICES
		IAW the approved WP.		
	Unintentional Detonation	Establish clear and defined work area zones, such as Minimum Safe Distance (MSD) between teams and non-essential personnel. All MEC/UXO work ceased when unauthorized personnel enter into the work area.		
	Severe Weather (containing potential electrical charge)	UXOSO will verify through local and national weather forecast agencies that an optimum time frame to complete all MPPEH/MD operations is in effect for the area. There will be no scheduled MPPEH/MD operations during weather conditions that pose static electrical charges.		
	Pinch and cut hazard from handling sharp scrap material.	All UXO personnel will use good and serviceable leather gloves when handling potentially contaminated MPPEH/UXO scrap. Items have extremely sharp edges and surfaces that will cut and lacerate hands.		
	Vehicle and heavy equipment traffic in area.	Be aware of any vehicles or heavy equipment in area and be certain to wear a hard hat, safety glasses and a high visibility safety vest when working around heavy equipment. Establish arm and hand signals or radio communication with the equipment operator and be certain the equipment is grounded and shut off when		

TASK BREAKDOWN	POTENTIAL HAZARDS	CRITICAL SAFETY PRACTICES	PERSONAL PROTECTIVE CLOTHING	MONITORING DEVICES
		within the arc of the boom, shovel, etc.		
	Noise in excess of OSHA standards	If the heavy equipment and/or power tools used are louder than 85dB (A) then the appropriate hearing attenuation PPE must be worn. This could be ear plugs, ear muffs or both depending on the noise level. The site safety officer will measure the noise level of the equipment and prescribe the applicable noise attenuation PPE to be worn.		
	Lifting hazards.	Ensure that you, and if there is another individual assisting you, both have solid footing, leather work gloves and use the proper lifting technique, bend at the knees keeping your back as straight as possible and lift with your knees, not your back. Ensure you have good visibility in the direction you are carrying an item. Do not attempt to carry anything by yourself in excess of 50 lbs. or any item that blocks your visibility or is cumbersome to carry alone.		
Segregate items for MPPEH assessment, to include:	The Hazards itemized in Hazard 1 are applicable to Hazard 2. Contact with	The Controls itemized in Control 1 are also applicable to Control 2. UXO Workers will don the proper PPE when handling potentially contaminated scrap metal.		

TASK BREAKDOWN	POTENTIAL HAZARDS	CRITICAL SAFETY PRACTICES	PERSONAL PROTECTIVE CLOTHING	MONITORING DEVICES
• Ordnance Identification • Disposal • Munitions Debris Segregation	chemical agent or other hazardous chemicals MEC/UXO Hazards	There is a potential of lead exposure from small arms constituents (.50cal and smaller), or possibly explosives remnants. Lead in this form, poses only a dermal contact threat to workers. UXOSO will provide proper decontamination for workers, when dealing with small arms constituents. MEC/UXO inspection involves a five step process once the item is identified as MEC/UXO, the item is destroyed, through explosive means. The MEC/UXO process is repeated and if confirmed as MPPEH, the item is staged for additional disposal. Only UXO technicians will handle MPPEH/UXO material.		
Segregate metal scrap and items for MD assessment, to include: • Ordnance Identification	Contact with chemical agent or other hazardous chemicals	MPPEH/MD workers need to be aware of potential exposure to corrosive and/or flammable liquids when conducting inspections of hard targets. Any visible leaking will be immediately reported and any spills (anti-freeze, oil, hydraulic fluids, etc.) will be cleaned up immediately. UXOSO will provide proper decontamination for workers. During cutting/brazing operations, certain debris may require an established Respiratory Protection		

TASK BREAKDOWN	POTENTIAL HAZARDS	CRITICAL SAFETY PRACTICES	PERSONAL PROTECTIVE CLOTHING	MONITORING DEVICES
• Disposal, if needed • Munitions Debris Segregation	Hand and Power tool operation Fire/Explosion	Plan; ensure local ventilation/engineering controls are in place. UXOSO will monitor exposure and area, if additional respiratory guidance is needed. See Brazing, Cutting AHA. When operating power tools they will be handled, operated and maintained IAW the manufactures instructions, the approved WP and any applicable SOPs. The power tool will be inspected prior to use to ensure that all of the hand and safety guards are in place and that the chain, if present, is properly tightened and that the tool is otherwise in good working order. Depending on the power tool PPE will vary and it too must be serviceable, operable and free of any defect. PPE will be worn IAW the approved WP and inspected by the user prior to donning. Proper fire extinguishers will be on site and serviceable.		
Segregate non UXO metal scrap and non metal		Proper fire extinguishers will be on site and serviceable.	Leather gloves	

TASK BREAKDOWN	POTENTIAL HAZARDS	CRITICAL SAFETY PRACTICES	PERSONAL PROTECTIVE CLOTHING	MONITORING DEVICES
scrap items assessment, to include: • Munitions Debris Segregation • Packaging		All UXO personnel will use good and serviceable leather gloves when handling all types of range residue scrap. Items include barbed wire; damaged and cut tires and creosote treated timbers that have extremely sharp edges and surfaces which will cut and lacerate hands.		

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
1. Hand and Power Tools 2. Appropriate PPE for selection operation, at minimum – • Long Sleeve Shirt • Long Legged Pants • Sturdy Work Boots • Leather Gloves • Safety Glasses, when required • Hard Hat, when required • Safety Vest, when required Additional PPE to conduct other operations, as directed 3.Heavy Equipment, as needed or specified by WP or SSHP 4.Additional equipment to conduct other operations, that may include – • Cutting and Brazing material and equipment, to include PPE • Hand Metal Saw/Wet Saw • Wrenches and Vises • MPPEH/MD Storage	1. **Initial (Site Selection)** – General inspection of assembly area. Equipment will be inspected daily by operator prior to use in accordance with the manufacturer's instructions. If during inspection or during use, equipment fails to function properly, equipment is to be turned in for repair/replacement. 2. **Daily**- Housekeeping of assembly and work areas for debris and hazards. UXOSO will perform audits and spot checks to verify compliance. UXOSO will update site's MSDS files on all items, supplies and material brought onto site. Periodic communication checks between Field Office or UXOSO and Field Crews, as deemed necessary, to ensure crew's status and relay emergency information. Field Office and UXOSO will maintain a telephonic roster of all site personnel's cellular phone numbers to ensure two forms of communications. In the event that a field crew fails to make a communications check, they will cease operations and relocate to re-establish communications link with the Field Office	• Only qualified personnel will be allowed to operate hand and power tools. <u>Qualified Personnel</u> • First Aid/CPR – UXOSO or site safety officer and one other individual. • Site Manager or SUXOS • All personnel operating heavy equipment will provide proof of competency (documentation of training or experience) to the UXOSO prior to operating the equipment. • UXO Personnel must be certified as an EOD-trained and must have the necessary experience for the position filled. • Certified Cutting/Brazing Operator <u>Training</u> • Site-specific WP, SOP and AHA • OSHA 40 hour and applicable 8 hour • Equipment operation

Bins/Drums 5. Designated Site vehicles will be equipped with the minimum - • Map and Directions to site medical facility • Project Emergency Contact Telephone Listing • Serviceable First Aid Kit • Serviceable ABC rated 2.5lb or larger fire extinguisher 6. Other vehicles designated as personnel conveyance will be equipped with – • Map and Directions to site medical • facility • Project Emergency Contact • Telephone Listing 7. Two forms of Communications • Project issued Radio • Project supplied or personal cellular phone	or UXOSO. **Weekly** – First Aid/CPR kit(s), fire extinguisher(s), vehicles and equipment. **Final** (Site Departure) – Inspection of the entire area to ensure the site is left in the same or better than when we arrived.	• Heat/Cold Stress • Biological hazards • Flora/Fauna endangered/threatened • Daily safety and operational briefing • Site visitor training

ACTIVITY HAZARD ANALYSIS
Demolition Operations

TASK BREAKDOWN	POTENTIAL HAZARDS	CRITICAL SAFETY PRACTICES	PERSONAL PROTECTIVE CLOTHING	MONITORING DEVICES
Establish location for desired work area to conduct operations, to include: • Establish Work Area Control Zones in a Conventional MEC/UXO Environment • Disposal Operations • Post Blast Check of Demolition Area	Slip, trip and fall	Worker awareness of potential slippery/uneven surfaces and tripping hazards plus inspection and policing of debris.	Work boots with treads in good condition.	
	Cold/heat stress	All site activities must be conducted IAW the approved WP ensuring that appropriate clothing and PPE is worn to assist in the prevention of cold and heat stress injuries. Use the buddy system at all times and have sufficient and appropriate fluids available for the conditions		
	Contact with explosives or other hazardous chemicals	Personnel will don the proper PPE commensurate with the chemical hazard encountered and the work being accomplished.	Demolition crew will use nitrile gloves when handling bulk explosives	
	MEC/UXO hazards	No MEC/MPPEH will be moved prior to SUXOS approval. SUXOS with UXOSO concurrence will be the final authority on "safe to move" items. If UXO is "safe to move", it may be positioned in the assessment/demo box to optimize safety and destruction. Demo will be performed IAW TM 60A-1-1-31, the approved WP, Demo SOP and the ESS.		
	Lifting hazards	Ensure that you, and if there is another individual		

TASK BREAKDOWN	POTENTIAL HAZARDS	CRITICAL SAFETY PRACTICES	PERSONAL PROTECTIVE CLOTHING	MONITORING DEVICES
		assisting you, both have solid footing, leather work gloves and use the proper lifting technique, bend at the knees keeping your back as straight as possible and lift with your knees, not your back. Ensure you have good visibility in the direction you are carrying an item. Do not attempt to carry anything by yourself in excess of 50 lbs. or any item that blocks your visibility or is cumbersome to carry alone.		
	Hand tool operation	When operating hand tools they will be handled, operated and maintained IAW the manufactures instructions, the approved WP and any applicable SOPs. The hand tool will be inspected prior to use to ensure that it is otherwise in good working order. Depending on the hand tool PPE will vary and it too must be serviceable, operable and free of any defect. PPE will be worn IAW the approved WP and inspected by the user prior to donning.		
	Pinch and cut hazard from handling sharp scrap material	Wear all required PPE, ensure that it is serviceable, and check hand placement to ensure there are no sharp surfaces or pinch areas.	Work gloves.	
	Unintentional detonation	Establish clear and defined work zones, such as minimum safe distance (MSD) between work teams.		
	Intentional/ unintentional	All demolition operations will be conducted IAW the ESS. All MEC/UXO work ceases when		

TASK BREAKDOWN	POTENTIAL HAZARDS	CRITICAL SAFETY PRACTICES	PERSONAL PROTECTIVE CLOTHING	MONITORING DEVICES
	detonation	unauthorized personnel enter into the MSD. A remote firing device will be used for demolition to ensure that the demo team has complete control of the time of detonation and to provide ample space for the demo team to move to outside the MSD.		
	Fire/ explosion	Refueling will be conducted in accordance with the SSHP and applicable SOPs. Proper fire extinguishers will be on site and serviceable. There will be no "Hot Fueling" authorized at any time.		
	Misfires	Misfires will be handled, as prescribed in TM60A-1-1-31, Explosive Ordnance Disposal Procedures and Demolition SOP.		
	Severe weather (lightning, winds, fog)	No demolition operations will be conducted during the on-set of severe weather (strong winds above 25 mph; lightning, fog and other visibility reducing events).		
	Low-flying aircraft	The SUXOS will prepare and telephonically submit a NOTAM (Notice to Airmen) through the servicing Federal Aviation Administration Office during the entire Demolition Operation. Above Ground Limit (AGL or Ceiling Limitations) requirements for the NOTAM will be based on calculations from 1q below.		
	Hazardous fragmentation	During demolitions, the all personnel will withdraw beyond the MGFD during demolition events. SUXOS/UXOSO will make a situational		

TASK BREAKDOWN	POTENTIAL HAZARDS	CRITICAL SAFETY PRACTICES	PERSONAL PROTECTIVE CLOTHING	MONITORING DEVICES
		determination for each event.		

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
1. Hand and power tools 2. Minimum appropriate PPE for selection operation • Long-sleeve shirt • Long-legged pants • Sturdy work boots • Leather and nitrile gloves • Safety glasses, when required • Hard hat, when required • Safety flotation vest, when required • Additional PPE to conduct other operations, as directed 3. Heavy equipment, as needed or specified by WP or SSHP 4. Additional equipment to conduct other operations, which may include • Demolition material sufficient to complete the operation • Galvometer • Firing device • Sandbags 5. Two forms of communications • Project issued radio • Project supplied or personal cellular phone	• **Initial** (site selection) – General inspection of assembly area. • **Daily** – Housekeeping of assembly and work areas for debris and hazards. UXOSO will perform audits and spot checks to verify compliance. UXOSO will update site's MSDS files on all items, supplies and material brought onto site. Periodic communication checks between Field Office or UXOSO and Field Crews, as deemed necessary, to ensure crew's status and relay emergency information. Field Office and UXOSO will maintain a telephonic roster of all site personnel's cellular phone numbers to ensure two forms of communications. In the event that a field crew fails to make a communications check, they will cease operations and relocate to re-establish communications link with the Field Office or UXOSO. • **Weekly** – First aid/CPR kit(s), fire extinguisher(s), vehicles and equipment. • **Final** (site departure) – Inspection of the entire area to ensure the site is left in the same or better than when we arrived.	**Qualified Personnel** • First aid/CPR – UXOSO or site safety officer and one other individual. • Site Manager or SUXOS • UXO personnel must meet DDESB TP-18 requirements. • UXO Tech III, serving as a licensed blaster, if required by state. **Training** • Site-specific WP, SOP and AHA • OSHA 40 hour and applicable 8 hour • Equipment operation • Heat/cold stress • Daily safety and operational briefing • Site visitor training • 7. Review AHA with all site personnel

ACTIVITY HAZARD ANALYSIS
Surface Sweep/Clearance

TASK BREAKDOWN	POTENTIAL HAZARDS	CRITICAL SAFETY PRACTICES	PERSONAL PROTECTIVE CLOTHING	MONITORING DEVICES
Walking/hiking over terrain that may be contaminated with UXO or other hazards to individuals or the environment.		**Situational awareness** is a control critical to all aspects of this AHA. Situational awareness consists of **location, location, and location**. Can you answer the following four questions? 1) Where am I and where is my buddy? 2) What things can hurt me? 3) How do I get out? 4) Where is the essential equipment (GPS, keys, phone, emergency contact numbers etc.)?		
	Slips, trips and falls	• Before activity, ensure that the footwear has adequate non-slip soles and ankle-support. • Ensure that you are thoroughly inspecting the ground in front of you for possible wet or muddy spots, holes, vines, rocks etc. that could cause you to slip, trip or fall. Carefully pick the spots where you intend to step. • Walk carefully in uneven terrain, especially when the ground surface may be obscured by vegetation.		
	Poking face/eye with branches	• Wear eye protection to prevent the branches from	Safety glasses.	

TASK BREAKDOWN	POTENTIAL HAZARDS	CRITICAL SAFETY PRACTICES	PERSONAL PROTECTIVE CLOTHING	MONITORING DEVICES
		poking you in the face. • When moving through the brush/trees, watch for branches. • Keep your "situational awareness" to assess if the trees/brush has the potential to come in contact with you. Use your hands and body to move the branches aside. If your partner is close to you and may be hit by the branches, warn them of the hazard.		
	Biological hazard (poisonous plants, ticks, bees, mosquitoes, spiders, etc.)	See Biological Hazards AHA, which must be used in conjunction with this AHA if applicable.	Long pants / long sleeve shirts.	
	Severe weather conditions	• Dress appropriately for the weather conditions: as necessary wear a hat, long pants, boots or sturdy shoes, jacket, and skin and eye protection (i.e., sunscreen and sunglasses). • Layered clothing made of wool or synthetic (polyester, polar fleece, etc.) is most efficient in protecting you from the weather and can be removed or added as needed. • Other items that should at least be present in the vehicle include raingear, warm shirt or jacket, emergency food (granola bars or other non-perishable items), waterproof matches or cigarette lighter, pocket knife, flashlight, duct tape,		

TASK BREAKDOWN	POTENTIAL HAZARDS	CRITICAL SAFETY PRACTICES	PERSONAL PROTECTIVE CLOTHING	MONITORING DEVICES
		emergency thermal blanket, and maps. These items should be carried with the field team if they are planning on hiking a long distance from the vehicle. • Whenever a lightning threat becomes apparent, move to a low spot and seek shelter immediately. • The team will carry First Aid Kit — for any small emergencies. It should also contain sunscreen and insect repellent.		
	Heat and cold stress	• As the temperature rises heat stress will become critical. With dehydration, comes a decrease in the ability to think and concentrate. Staying hydrated will allow you to remain alert and less likely to lose concentration and slip/fall. • Drink plenty of fluids to maintain adequate levels of hydration. • During warm weather, ensure at least that the team will carry at least 1 gallon of drinking water per person.		
	Strains and sprains	Treatment of Sprains and Strains: First aid measures for a sprain or strain can best be remembered by the acronym RICE - Rest, Ice, Compression, and Elevation. ***R****est* the injured area. Try not to move or put pressure on the affected joint. A sling or splint may be recommended to immobilize the joint and allow		

TASK BREAKDOWN	POTENTIAL HAZARDS	CRITICAL SAFETY PRACTICES	PERSONAL PROTECTIVE CLOTHING	MONITORING DEVICES
		damaged ligaments or muscles to heal. ***I**ce* the affected area to reduce swelling. After 24 hours, either ice or heat may be applied to reduce pain. ***C**ompress* the joint by wrapping it in an Ace bandage to help reduce swelling and pain. ***E**levate* the joint to reduce swelling.		
	Operating magnetometers	• Ensure that you have at least one hand free while walking when conducting a sweep or a surface clearance to provide balance and a means of breaking your fall should you slip or trip. • Maintain your proper distance from the individual on your right or left and warn the team should you encounter a hazard of see one in their rout of travel.		

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
Hand-held magnetometer, GPS equipment, shovel, hand tools, PPE to include gloves, work boots, eye protection, hard hats and hearing protection as necessary. Depending on condition requirements, also ensure everyone has an adequate supply of water and emergency food or snacks. There should be at least one small first aid kit/team. Other items may include sunscreen, insect repellant, maps, compass, survival gear (matches/lighter, knife,	Workers will inspect PPE before each use in accordance with the manufacturer's instructions. If equipment fails to function properly during inspection or during use, equipment is to be turned in for repair/ replacement. Inspect contents of first aid kit.	At least two members onsite will hold current certification in first aid and CPR. These personnel will also be current in OSHA training in accordance with 29 CFR 1910.120 (HAZWOPER) and enrolled in a medical monitoring program in accordance with 29 CFR 1910.120(f). These personnel will receive UXO awareness as a component of their site-specific training. Team members will also have OSHA 8-hr

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
emergency blanket, raingear, etc.)		Training in accordance with 29 CFR Part 1910.120(e) for Supervisors.

ACTIVITY HAZARD ANALYSIS
Material Potentially Presenting an Explosive Hazard (MPPEH), Inspection and Munition Debris (MD) Turn-In

TASK BREAKDOWN	POTENTIAL HAZARDS	CRITICAL SAFETY PRACTICES	PERSONAL PROTECTIVE CLOTHING	MONITORING DEVICES
Establish location for desired work area to conduct operations, to include: • Establish work area control zones in a conventional MEC/UXO environment • Debris identification • Munitions debris segregation	Slip, trip and fall.	Worker awareness of potential slippery surfaces and tripping hazards plus inspection and policing of debris.		
	Biological hazards	See Biological Hazards section of this work plan.		
	Endangered/ threatened flora/fauna	Conduct reconnaissance IAW approved WP and avoid endangered and threatened species if at all possible.		
	Cold/heat stress	All site activities must be conducted IAW the approved WP ensuring that appropriate clothing and PPE is worn to assist in the prevention of cold and heat stress injuries. Use the buddy system at all times and have sufficient and appropriate fluids available for the conditions.		
	Contact with chemical agent or other hazardous chemicals	Personnel will don the proper PPE commensurate with the chemical hazard encountered and the work that is being accomplished.		
	MEC/ UXO hazard	If an MEC item is encountered alert the rest of the team and conduct an inspection of the item IAW the		

TASK BREAKDOWN	POTENTIAL HAZARDS	CRITICAL SAFETY PRACTICES	PERSONAL PROTECTIVE CLOTHING	MONITORING DEVICES
		approved WP, SOP, and ESS.		
	Unintentional detonation	Establish clear and defined work area zones, such as minimum safe distance (MSD) between teams and non-essential personnel. All MEC/UXO work ceased when unauthorized personnel enter into the work area.		
	Severe weather (containing potential electrical charge)	UXOSO will verify through local and national weather forecast agencies that an optimum time frame to complete all MPPEH/MD operations is in effect for the area. There will be no scheduled MPPEH/MD operations during weather conditions that pose static electrical charges.		
	Pinch and cut hazard from handling sharp scrap material	All UXO personnel will use good and serviceable leather gloves when handling potentially contaminated MPPEH/UXO scrap. Items have extremely sharp edges and surfaces that will cut and lacerate hands.	Leather work gloves.	
	Vehicle and heavy equipment traffic in area	Be aware of any vehicles or heavy equipment in area and be certain to wear a hard hat, safety glasses and a high visibility safety vest when working around heavy equipment. Establish arm and hand signals or radio communication with the equipment operator and be certain the equipment is grounded and shut off when within the arc of the boom, shovel, etc. Ensure you have good visibility in the direction you are carrying an item. Do not attempt to carry anything by yourself in excess of 50 lbs. or any item		

TASK BREAKDOWN	POTENTIAL HAZARDS	CRITICAL SAFETY PRACTICES	PERSONAL PROTECTIVE CLOTHING	MONITORING DEVICES
		that blocks your visibility or is cumbersome to carry alone.		
	Noise in excess of OSHA standards	If the heavy equipment and/or power tools used are louder than 85 dB (A) then the appropriate hearing attenuation PPE must be worn. This could be ear plugs, ear muffs or both depending on the noise level. The site safety officer will measure the noise level of the equipment and prescribe the applicable noise attenuation PPE to be worn.	Ear plugs and/or ear muffs.	
	Lifting hazards	Ensure that you, and if there is another individual assisting you, both have solid footing, leather work gloves and use the proper lifting technique, bend at the knees keeping your back as straight as possible and lift with your knees, not your back.		
Segregate items for MPPEH assessment, to include: • Ordnance identification • Disposal • Munitions debris segregation	Contact with chemical agent or other hazardous chemicals	UXO workers will don the proper PPE when handling potentially contaminated scrap metal. There is a potential of lead exposure from small arms constituents (.50 cal and smaller),or possibly explosives remnants. Lead in this form, poses only a dermal contact threat to workers. UXOSO will provide proper decontamination for workers, when dealing with small arms constituents.		
	MEC/UXO hazards	MEC/UXO inspection involves a five-step process once the item is identified as MEC/UXO, the item is destroyed, through explosive means. The MEC/UXO process is repeated and if confirmed as MPPEH, the item is staged for additional disposal. Only UXO		

TASK BREAKDOWN	POTENTIAL HAZARDS	CRITICAL SAFETY PRACTICES	PERSONAL PROTECTIVE CLOTHING	MONITORING DEVICES
		technicians will handle MPPEH/UXO material.		
Segregate metal scrap and items for MD assessment, to include: • Ordnance identification • Disposal, if needed • Munitions debris segregation	Contact with chemical agent or other hazardous chemicals	MPPEH/MD workers should be aware of potential exposure to corrosive and/or flammable liquids when conducting inspections of hard targets. Any visible leaking will be immediately reported and any spills (anti-freeze, oil, hydraulic fluids, etc.) will be cleaned up immediately. UXOSO will provide proper worker decontamination. During cutting/brazing operations, certain debris may require an established Respiratory Protection Plan; ensure local ventilation/engineering controls are in place. UXOSO will monitor exposure and area, if additional respiratory guidance is needed. See Brazing, Cutting AHA.		
	Hand and power tool operation	When operating power tools they will be handled, operated and maintained IAW the manufactures instructions, the approved WP and any applicable SOPs. The power tool will be inspected prior to use to ensure that all of the hand and safety guards are in place and that the chain, if present, is properly tightened and that the tool is otherwise in good working order. Depending on the power tool PPE will vary and it too must be serviceable, operable and free of any defect. PPE will be worn IAW the approved WP and inspected by the user prior to		

TASK BREAKDOWN	POTENTIAL HAZARDS	CRITICAL SAFETY PRACTICES	PERSONAL PROTECTIVE CLOTHING	MONITORING DEVICES
		donning.		
	Fire/explosion	Proper fire extinguishers will be on site and serviceable.		
Segregate non-UXO metal scrap and non-metal scrap items assessment, to include: • Munitions debris segregation • Packaging	Pinch and cut hazard from handling sharp scrap material	All UXO personnel will use good and serviceable leather gloves when handling all types of range residue scrap. Items include barbed wire; damaged and cut tires and creosote treated timbers that have extremely sharp edges and surfaces which will cut and lacerate hands.		

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
1. Hand and power tools 2. Appropriate PPE for selection operation, at minimum – • Long sleeve shirt • Long legged pants • Sturdy work boots • Leather gloves • Safety glasses, when required • Hard hat, when required • Safety vest, when required • Additional PPE to conduct other operations, as directed 3. Heavy equipment, as needed or specified by WP or SSHP 4. Additional equipment to conduct other operations, that may include – • Cutting and brazing material and equipment, to include PPE • Hand metal saw/wet saw • Wrenches and vises • MPPEH/MD storage bins/drums 5. At a minimum, designated site vehicles will be equipped with • Map and directions to site medical facility	1. **Initial** (site selection) – General inspection of assembly area. Equipment will be inspected daily by operator prior to use in accordance with the manufacturer's instructions. If during inspection or during use, equipment fails to function properly, equipment is to be turned in for repair/replacement. 2. **Daily** – Housekeeping of assembly and work areas for debris and hazards. UXOSO will perform audits and spot checks to verify compliance. UXOSO will update site's MSDS files on all items, supplies and material brought onto site. Periodic communication checks between Field Office or UXOSO and Field Crews, as deemed necessary, to ensure crew's status and relay emergency information. Field Office and UXOSO will maintain a telephonic roster of all site personnel's cellular phone numbers to ensure two forms of communications. In the event that a field crew fails to make a communications check, they will cease operations and relocate to re-establish communications link with the Field Office or UXOSO. 3. **Weekly** – First aid/CPR kit(s), fire	Qualified Personnel 1. First aid/CPR – UXOSO or site safety officer and one other individual. 2. Site Manager or SUXOS 3. All personnel operating heavy equipment will provide proof of competency (documentation of training or experience) to the UXOSO prior to operating the equipment. 4. UXO personnel must meet DDESB TP-18 requirements. 5. Certified cutting/brazing operator Training • Site-specific WP, SOP and AHA • OSHA 40 hour and applicable 8 hour • Equipment operation • Heat/cold stress • Biological hazards • Flora/fauna endangered/threatened • Daily safety and operational briefing 6. Site visitor training

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
• Project emergency contact telephone listing • Serviceable first aid kit • Serviceable A:BC rated 2.5-lb. or larger fire extinguisher 6. Other vehicles designated as personnel conveyance will be equipped with – • Map and directions to site medical facility • Project emergency contact telephone listing 7. Two forms of communications • Project issued radio • Project supplied or personal cellular phone	extinguisher(s), vehicles and equipment. 4. **Final** (site departure) – Inspection of the entire area to ensure the site is left in the same or better than when we arrived.	

SECTION 5 MEDICAL SURVEILLANCE

5.1 Medical Surveillance

Personnel engaged in field activities must be enrolled in a medical surveillance program as required by 29 Code of Federal Regulations Part (CFR) 1910.120(f). The content of the examination must be designed to determine each individual's fitness for duty, including ability to work while wearing protective equipment (e.g., respirator, impermeable clothing).

Personnel performing onsite field activities on this project must present to the field team leader with written proof of current physical. Additionally, the field team leader will ensure that workers remain current in their medical monitoring throughout the duration of the project. Copies of employees' health status reports will be available upon request.

SECTION 6 TRAINING

6.1 Required Training

All personnel performing field activities at WVIA must have 40 hours of initial Hazardous Waste Operations and Emergency Response (HAZWOPER) health and safety training (or equivalent training) in accordance with 29 CFR 1910.120(e)(3) and must be current in their refresher training. The SSHO is responsible for verifying that personnel engaged in field activities have attended site management training as required by OSHA in 29 CFR 1910.120(e)(4). All UXO personnel working at this site must have completed training in accordance with DDESB TP18, which details procedures for evaluation and disposal of MEC. Two members of each field team must be current in first aid, and cardiopulmonary resuscitation (CPR). The team leader will receive copies of training certificates.

6.1.1 Tailgate Safety Meetings

The Site Safety / UXO technician will conduct tailgate safety briefings for field personnel. This training must as a minimum cover the following topics:

- Tasks to be performed
- Hazards that may be encountered, including their effects, how to recognize symptoms or monitor them, or danger signals
- Emergency procedures (emergency equipment, emergency communications, and route to hospital)
- Rallying points and safe refuge areas

6.2 Subjects to Be Discussed with Employees in Safety Indoctrination

Safety training sessions will be conducted for project personnel during mobilization, daily toolbox meetings, and other appropriate occasions. Specific topics will include training on the following:

- Names of personnel responsible for site safety and health
- Reporting emergencies, incidents, and unsafe conditions
- Emergency/evacuation plans
- Safety, health, and other hazards at the site
- Review of all activities on site and related AHAs
- Work practices by which a worker can minimize risk from hazards
- Hazards associated with buried munitions
- Route to hospital in the event of a medical incident
- Transport of fuel and fueling of utility vehicle

- Emergency notifications, and emergency response
- Potential biohazards

If new employees are brought to the project, they must receive a brief orientation covering the topics listed above.

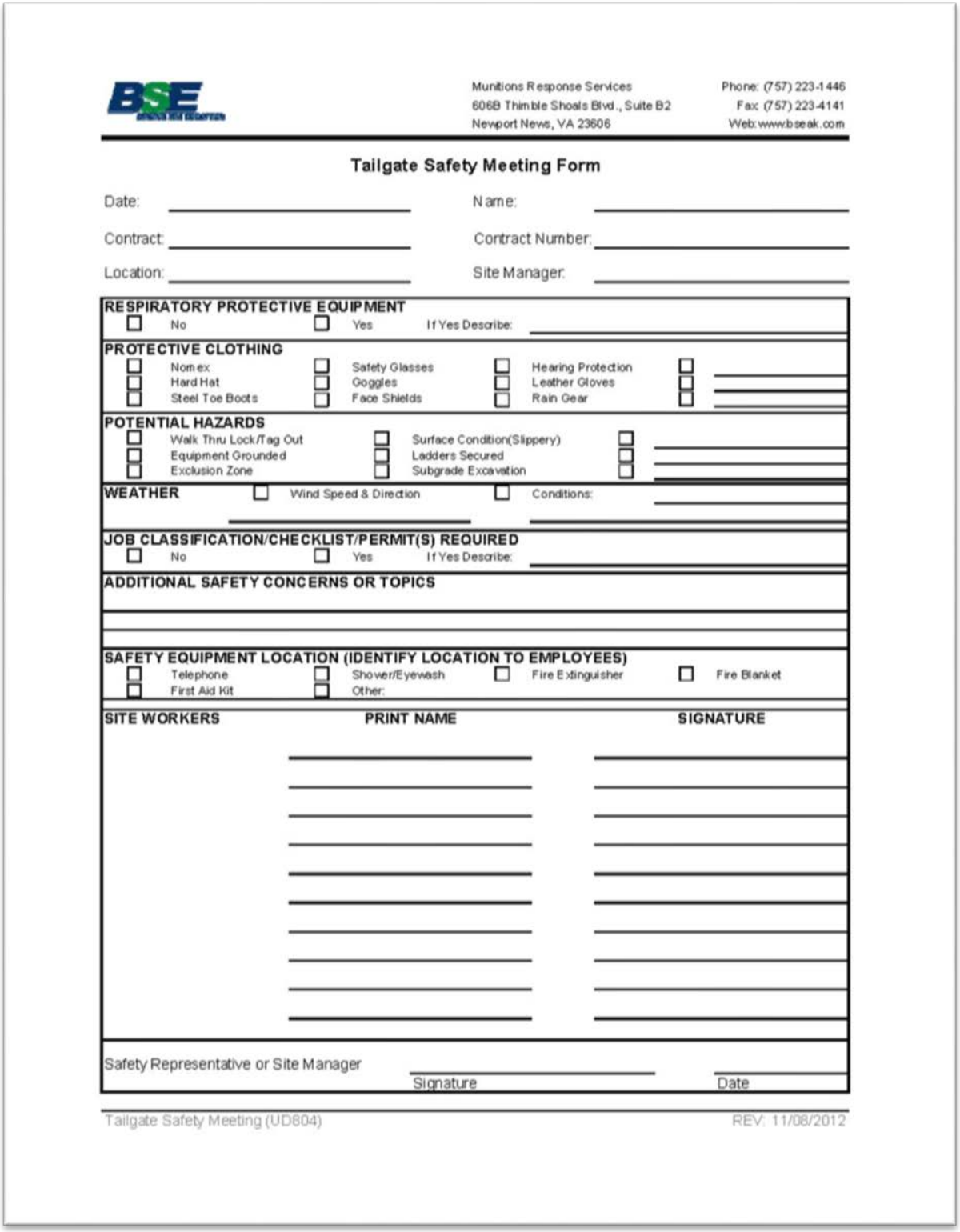
The Site Safety / UXO technician maintains records of training and acknowledgement forms. All training will be documented on the UXO Tailgate Safety Meeting Form (Figure 4).

6.3 Mandatory Training and Certifications

The project has a comprehensive safety and health training program tailored to the scope of work. All employees receive a project orientation upon assignment to the project. All new hires shall receive a facility employee orientation within the first seven days of employment, provided by human resources, a facility manager, a safety and health manager, and staff coordinator or designee. Specific training and certification requirements for all field personnel assigned to this project include the following:

- 40-hour HAZWOPER and 8-hour annual HAZWOPER refresher. All personnel engaged in hazardous substance removal or other activities that expose or potentially expose them to hazardous substances or health hazards shall receive appropriate training as required by 29 CFR 1910.120, including, but not limited to, initial 40-hour, 8-hour supervisor, and annual 8-hour refresher training.
- A minimum of two site personnel will be trained in CPR / first aid.

Figure 4 Tailgate Safety Meeting Form



BSE

Munitions Response Services
606B Thimble Shoals Blvd., Suite B2
Newport News, VA 23606

Phone: (757) 223-1446
Fax: (757) 223-4141
Web: www.bseak.com

Tailgate Safety Meeting Form

Date: _____ Name: _____

Contract: _____ Contract Number: _____

Location: _____ Site Manager: _____

RESPIRATORY PROTECTIVE EQUIPMENT

☐ No ☐ Yes If Yes Describe: _____

PROTECTIVE CLOTHING

☐ Nomex	☐ Safety Glasses	☐ Hearing Protection	☐ _____
☐ Hard Hat	☐ Goggles	☐ Leather Gloves	☐ _____
☐ Steel Toe Boots	☐ Face Shields	☐ Rain Gear	☐ _____

POTENTIAL HAZARDS

☐ Walk Thru Lock/Tag Out	☐ Surface Condition(Slippery)	☐ _____
☐ Equipment Grounded	☐ Ladders Secured	☐ _____
☐ Exclusion Zone	☐ Subgrade Excavation	☐ _____

WEATHER ☐ Wind Speed & Direction ☐ Conditions: _____

JOB CLASSIFICATION/CHECKLIST/PERMIT(S) REQUIRED

☐ No ☐ Yes If Yes Describe: _____

ADDITIONAL SAFETY CONCERNS OR TOPICS

SAFETY EQUIPMENT LOCATION (IDENTIFY LOCATION TO EMPLOYEES)

☐ Telephone	☐ Shower/Eyewash	☐ Fire Extinguisher	☐ Fire Blanket
☐ First Aid Kit	☐ Other:		

SITE WORKERS	PRINT NAME	SIGNATURE

Safety Representative or Site Manager _____ Signature _____ Date

Tailgate Safety Meeting (UD804) REV: 11/08/2012

Munitions Response Services
606B Thimble Shoals Blvd., Suite B2
Newport News, VA 23606

Phone: (757) 223-1446
Fax: (757) 223-4141
Web: www.bseak.com

Tailgate Safety Meeting Form Continuation

Date: _____ Name: _____

Contract: _____ Contract Number: _____

Location: _____ Site Manager: _____

SITE WORKERS	PRINT NAME	SIGNATURE

Safety Representative or Site Manager _____ _____
Signature Date

6.4 Emergency Response Training Requirements

Employees must read this SSHP and familiarize themselves with the information provided. Before project initiation, the SSHO will conduct a meeting with the field team members to review the provisions of this SSHP and to review the emergency response plan.

Employees are required to have a copy of the emergency contacts and telephone numbers immediately accessible on site and know the route to the nearest emergency medical services. Emergency contacts and driving directions to the hospital are in included in Section 9.

6.5 Supervisory and Employee Safety Meetings

Supervisors will ensure that safety briefs are conducted daily prior to field activities. Safety briefs will be documented and topics of discussion will be selected according to the type of work and weather conditions for the site. UXO technicians will document the safety training on the BSE Tailgate Safety Meeting Form and forward to BSE PM along with any safety discrepancies.

6.5.1 Mobilization / Kickoff Training

The Site Safety/ UXO technician will conduct a site-specific orientation for all staff immediately after mobilization and before fieldwork begins. The training will consist of onsite training and is mandatory for all field personnel. The training will include practice scenarios for medical emergencies and emergency response drills.

6.5.2 Daily Tailgate Safety Meetings

Daily tailgate safety meetings will be held with all personnel at the beginning of each shift to review current site conditions, incidents or injuries from the previous shift activities, safe or at-risk observations from the previous shift, activities planned for the current shift, anticipated hazards, engineering controls work practices, PPE to protect against hazards, and any additional safety topic or comments. Tailgate safety meetings will be documented and signed by individuals accessing the site using a safety meeting sign-in sheet.

SECTION 7 PERSONNEL PROTECTIVE EQUIPMENT

7.1 Personal Protective Equipment Summary

Personnel working at WVIA shall use the appropriate type of PPE specified in this plan for each individual task. The starting PPE for all field activities at these sites will be Level D. Hazard and risk assessment is a continuing process to be conducted throughout the duration of the project. Changes in specific PPE, levels of PPE, or respiratory protection may be made in accordance with information obtained from actual implementation of site activities and data derived from the monitoring activities. As a rule, levels of PPE and respiratory protection will need to be reassessed if any of the following occur:

- Appearance of previously unidentified or anticipated chemicals, conditions, or task hazards
- Ambient weather conditions change that impact the use of assigned PPE
- A new task is introduced or a previously assigned and evaluated task is expanded in scope

If activities are added to the statement of work after approval of this SSHP, the field team leader shall identify and assess the activity hazards and relay that information to the Project Safety and Health Officer (PSHO). The PSHO will prepare an amendment to the SSHP and submit the amendment for approval from the Naval Facilities Engineering Command (NAVFAC). The amendment will be added to the SSHP upon NAVFAC approval.

It is the responsibility of each employee to report to work wearing proper attire and to assemble the necessary PPE prior to initiating donning. If respiratory protection is to be used, it is the responsibility of the employee to report to work clean-shaven to ensure a tight and effective seal with the face piece.

7.2 Task-Specific Levels of Personal Protective Equipment

The following special considerations shall be observed in the selection of PPE:

- Hard hats will be worn at all times.
- Steel toe and shank boots are not required during anomaly location and reacquisition unless a serious toe hazard exists, whereupon a fiber safety toe will be used.
- Safety glasses shall be selected that provide site personnel with the best protection from not only physical hazards, such as flying objects, but that also provide adequate splash protection.
- The UXOSO shall continually evaluate site tasks to identify hazards and shall provide PPE necessary to ensure the safety and health of site personnel for all activities performed.

7.2.1 Level D Protective Ensemble

The minimum level of protection for all personnel at this site is Level D. A Level D ensemble consists of:

- Short- or long-sleeve shirt
- Long pants
- Safety toe boots
- ANSI-approved eye protection
- Hard hat
- Leather gloves
- Hearing protection when working around heavy equipment or powered hand tools
- Sun block and insect repellant as needed
- High-visibility with retro-reflective material

SECTION 8 SITE HAZARDS

8.1 Biological Hazards

Biological hazards usually found on site include hazardous plants, ticks, spiders, centipedes, scorpions, feral pigs, and stinging or biting insects, but no large predators or snakes. Depending on the season and weather, the hazards will vary at the site. Employee awareness and the safe work practices outlined in the following paragraphs should reduce the risks associated with these hazards.

8.1.1 Hazardous Plants

Various hazardous plants may be encountered during field operations. The ailments associated with these plants range from mild hay fever to contact dermatitis. Plants that present the greatest risk to site workers are those that produce allergic reactions and tissue injury.

8.1.1.1 Plants That Cause Skin and Tissue Injury

Contact with sharp leaves and thorns are of special concern to site personnel. Punctures, cuts, and even minor scrapes caused by accidental contact may result in skin lesions and the introduction of fungi or bacteria through the skin. This is especially important because the warm, moist environment created inside protective clothing is ideal for the propagation of fungal and bacterial infection. Personnel receiving any of the injuries listed above (even minor scrapes) shall report immediately to the field team leader or UXO Technician II for continued observation and care. Keeping the skin covered as much as possible (e.g., long pants and long-sleeved shirts) in areas where these plants are known to exist will limit much of the potential exposure.

8.2 Hazardous Animals

8.2.1 Spiders

A large variety of spiders may be encountered during site activities. Extreme caution must be used when lifting logs and debris because spiders are typically found in these areas.

While most spider bites merely cause localized pain, swelling, reddening, and in some cases tissue damage, a few spiders are dangerous due to the severity of the physiological effects caused by their venom. The field team leader will brief site personnel on the identification and avoidance of these dangerous spiders. These species include the black widow and the brown recluse or violin spiders.

The black widow (Figure 5) is a coal-black, bulbous spider ¾ to 1½ inch long, with a bright red hourglass on the underside of the abdomen. The black widow is usually found in dark moist locations, especially under rocks and rotting logs, and may be found in outdoor toilets, where they inhabit the underside of the seat.

Figure 5
Black Widow Spider

Victims of a black widow bite may exhibit the following signs or symptoms:

- Sensation of pinprick or minor burning at the time of the bite
- Appearance of small punctures (but sometimes none are visible)
- After 15 to 60 minutes, intense pain at the site of the bite, which spreads quickly and is followed by profuse sweating, rigid abdominal muscles, muscle spasms, breathing difficulty, slurred speech, poor coordination, dilated pupils, and swelling of face and extremities

Recluse spiders are up to 1 inch long with a violin- or fiddle-shaped mark on the top of the head. They have six eyes arranged in three pairs of two – an identifying feature because most spiders have eight eyes.

- Recluse spiders have a necrotic bite, which causes severe damage to the skin and surrounding tissue, resulting in a large, open sore, called a necrotic lesion, which takes a long time to heal.
- In some cases, systemic effects (such as headache, nausea, abdominal cramps, joint stiffness, and/or fever) have been reported as well.

Figure 6
Brown Recluse Spider

8.2.2 Stinging and Biting Insects

Contact with stinging insects may result in site personnel experiencing adverse health effects that range from mildly uncomfortable to life threatening. Therefore, stinging insects present a serious hazard to site personnel, and extreme caution must be exercised whenever site and weather conditions increase the risk of encountering stinging insects Poisonous insects and insect-like creatures that may be encountered at the project sites include the following:

- Scorpions and centipedes
- Bees and wasps
- Fire ants

8.2.2.1 Scorpions and Centipedes

The scorpions and centipedes commonly found in Hawaii can inflict painful stings; however, they are not usually considered to pose a danger to humans except when bites become infected. Stings by these scorpions can be managed by washing the wound with soap and water and by applying an ice pack for a few minutes. Medical attention is usually not needed unless the victim displays signs of an allergic reaction (rash, severe swelling, shortness of breath).

8.2.2.2 Bees

Personnel should be cautious of bees. The colonies are easily disturbed (sometimes just by being nearby). When they do sting, many more bees may participate, so there is a danger of receiving

many stings. This can be life threatening, especially to people allergic to stings or with limited capacity to escape (the young, old, and disabled).

8.2.2.3 Fire Ants

Fire ants are aggressive, reddish-brown to black ants that are ⅛ inch to ¼ inch long. They construct nests, which are often visible as dome-shaped mounds of soil, sometimes as large as 3 feet across and 1½ feet high. In sandy soils, mounds are flatter and less visible. Fire ants usually build mounds in sunny, open areas such as lawns, pastures, cultivated fields, and meadows, but they are not restricted to these areas. Mounds or nests may be in rotting logs, around trees and stumps, under pavement and buildings, and occasionally indoors.

Fire ants use their stingers to immobilize or kill prey and to defend ant mounds from disturbance by larger animals, such as humans. Any disturbance sends hundreds of workers out to attack anything that moves. The ant grabs its victim with its mandibles (mouthparts) and then inserts its stinger. This process of stinging releases a chemical and alerts other ants, which induces them to sting. In addition, one ant can sting several times without letting go with its mandibles.

If stung, humans experience a sharp pain that lasts a couple of minutes, then after a while the sting starts itching and a welt appears. Fire ant venom contains alkaloids and a relatively small amount of protein. The alkaloids kill skin cells; this attracts white blood cells, which form a pustule within a few hours of being stung. The fluid in the pustule is sterile, but if the pustule is broken, the wound may become infected. The protein in the venom can cause allergic reactions that may require medical attention.

8.2.2.4 Risk of Contact

Factors that increase the risk associated with accidental contact with stinging insects include the following:

- The nests for these insects are frequently in remote wooded or grassy areas and hidden in cavities.
- The nests can be in trees, rocks, bushes, or in the ground, and are usually difficult to see.
- If a site worker accidentally disturbs a nest, the worker may be inflicted with multiple stings, causing extreme pain and swelling, which can leave the worker incapacitated and in need of medical attention.
- Some people are hypersensitive to the toxins injected by a sting and, when stung, experience a violent and immediate allergic reaction resulting in a life-threatening condition known as anaphylactic shock.
- Anaphylactic shock manifests itself very rapidly and is characterized by extreme swelling of the body, eyes, face, mouth, and respiratory passages.
- The hypersensitivity needed to cause anaphylactic shock can, in some people, accumulate over time and exposure; therefore, even if someone has been stung previously and not experienced an allergic reaction, there is no guarantee that there will not be an allergic reaction if that person is stung again.

8.2.2.5 Reducing Risk of Contact

With these factors in mind, and with the high probability of contact with stinging insects, all site personnel will comply with the following safe work practices:

- All workers who know that they are hypersensitive to bee, wasp, or hornet stings must inform the field team leader of this condition before participating in site activities.
- All site personnel will be watchful for the presence of stinging insects and their nests, and they will advise the field team leader if a stinging insect nest is located or suspected in the area.
- Any nests on site will be flagged off, and site personnel will be notified of their presence.
- If stung, site personnel will immediately seek shelter and stay there even if some bees come in with them (there are more outside the building or car). Do not jump in water (bees will still be in the area when you come up). Once safe, remove stingers from your skin; it does not matter how you do it, but do it as quickly as possible to reduce the amount of venom they inject. Obtain first aid treatment and contact the field team leader who will observe for signs of allergic reaction.
- Site personnel with a known hypersensitivity to stinging insects will keep required emergency medication on or near their person at all times.

8.2.2.6 Mosquitoes

West Nile virus is not reported in Hawaii. West Nile virus is spread by infected mosquitoes. The virus usually infects birds, but it can be spread to humans by mosquitoes that feed on infected birds and then bite humans. The virus cannot be spread by person-to-person contact.

8.2.3 Snakes

There are no above-ground snakes in Hawaii.

8.3 Physical Hazards

Physical hazards that exist at project sites include heat and cold stress, environmental (weather-related) hazards, and fire hazards. Procedures to protect workers from these hazards are presented below.

8.3.1 Severe Weather

During the course of the project, severe weather may be encountered, including thunderstorms, rainstorms, and other unsafe weather conditions (e.g., high winds). Criteria indicating that severe weather conditions may exist include:

- High winds (>40 miles per hour – depending on the tree cover and other site specific conditions)
- Visible lightning
- Extreme temperatures (e.g., greater than 100 degrees)

- Heavy rainfall that makes footing treacherous and visibility difficult; additionally, the nearby stream may swell/flood – flash flooding is possible during periods of localized or after long periods of upgradient rainfall.

8.3.2 Heat Stress

Heat stress is one of the most common (and potentially serious) illnesses that affect site workers. When site personnel are engaged in operations in hot environments, physiological responses can occur that may seriously affect the health and safety of the workers. These affects can be eliminated or controlled through the use of a comprehensive heat stress prevention and monitoring program.

Individuals vary in their susceptibility and degree of response to stress induced by increased body heat. Heat stress can result in health effects ranging from transient heat fatigue to serious illness or death. Heat stress is cause by interacting factors, including environmental condition, clothing, workload, and the individual characteristics of the worker. Because heat stress is probably one of the most common (and potentially serious) illnesses at MEC sites, regular monitoring and other preventive precautions are vital. Factors that may predispose a worker to heat stress include:

- Lack of physical fitness
- Lack of acclimatization to hot environments
- Degree of hydration
- Obesity
- Current health (e.g., having an infection, chronic disease, diarrhea)
- Alcohol or drug use
- Age and sex

The amount and type of PPE worn influence the worker's heat tolerance. PPE adds weight and bulk, severely reduces the body's access to normal heat exchange mechanisms (evaporation, convection, and radiation), and increases energy expenditure. Therefore, when selecting PPE, each item's benefit should be carefully evaluated in relation to its potential for increasing the risk of heat stress. Once PPE is selected, the safe duration of work/rest periods should be determined based on:

- Anticipated work rate
- Ambient temperature and other environmental factors
- Type of protective ensemble
- Individual worker characteristics and fitness

Sweating does not cool the body unless moisture is removed from the body. The use of PPE reduces the body's ability to eliminate large quantities of heat because the evaporation of sweat is decreased. The body's effort to maintain an acceptable temperature may become impaired, and

this may cause heat stress. Increased body temperature and physical discomfort also promote irritability and a decreased attention to the performance of hazardous tasks. At WVIA, Level D PPE will be used, thus providing minimal increase in the potential for heat stress. Level D PPE is defined as standard work clothes with long pants, hard hat, and safety boots.

8.3.2.1 Early Symptoms of Heat Stress

The early symptoms used to recognize heat related illnesses include:

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

8.3.2.2 Heat Stress Disorders

The following paragraphs outline the major heat related illness that may result from exposure to high heat environments, which include heat rash, fainting, heat cramps heat exhaustion, and heat stroke. For this program, reference to “liquids” will indicate the use of water or an electrolyte replacement solution.

8.3.2.2.1 Heat Rash

Heat rash is caused by continuous exposure to heat and humid air and is aggravated by wet chafing clothing. This condition can decrease a worker’s ability to tolerate hot environments.

Symptoms include a mild red rash, especially in areas of the body that sweat heavily. Treatment of heat rash entails decreasing the amount of time in protective gear and using baby powder to absorb moisture and decrease chafing. Maintain good personal hygiene standards and change into dry clothes as needed.

8.3.2.2.2 Heat Cramps

Heat cramps are caused by a profuse rate of perspiration that is not balanced by adequate fluid and electrolyte intake. The occurrence of heat related cramps are often an indication that excessive water and electrolyte loss has occurred, which can further develop into heat exhaustion or heat stroke. Symptoms include acute, painful spasms of voluntary muscles such as the back, abdomen, and extremities. Treatment involves moving victim to a cool area and loosening restrictive clothing. Stretch and massage affected muscles to increase blood flow to the area.

Have patient drink one to two cups of liquids immediately with fluid intake repeated every 20 minutes thereafter. Consult with physician if condition does not improve. If available, an electrolyte replacement solution should be consumed.

8.3.2.2.3 Heat Exhaustion

Heat exhaustion occurs due to the large fluid and salt loss from profuse sweating. It is a state of very definite weakness or exhaustion caused by increased stress on various organs to meet increased demands to cool the body from excessive loss of fluids. This condition leads to inadequate blood supply and cardiac insufficiency. Heat exhaustion is less dangerous than heat stroke, but nonetheless must be treated. If allowed to go untreated, heat exhaustion can quickly develop into heat stroke. Symptoms include pale and moist skin, profuse perspiration, and extreme weakness. Body temperature is basically normal or slightly elevated. The worker's pulse is weak and rapid, and breathing is often shallow. The individual may have headache or experience nausea. Treatment for heat exhaustion involves removing the individual to a cool, air-conditioned place, loosening the persons clothing, and elevating victim’s feet. Consult physician, especially in severe cases. Have patient drink one to two cups of liquids immediately, and repeat every 20 minutes thereafter. Total liquid consumption should be about one to two gallons per day. If the signs and symptoms of heat exhaustion do not subside or become more severe, medical attention will be required.

8.3.2.2.4 Heat Stroke

Heat stroke is an acute and dangerous reaction to heat caused by failure of the heat regulating mechanisms of the body. The failure of the individual’s temperature control system causes the perspiration system to stop working correctly. When this occurs, the body core temperature rises very rapidly to a point (+105 degree F) where brain damage and death will result if the person is not cooled quickly. The victim’s skin is hot and often dry. Other symptoms include confusion, extremely high body temperature, rapid respiratory and pulse rate, delirium, convulsions, and unconsciousness or coma.

Cool the victim immediately. If the body temperature is not brought down quickly, permanent brain damage or death may result. The victim should be moved to a shady area and should lie down and keep head elevated. Cool the victim by either sponging or immersing the victim in very cool water to reduce the core temperature to a safe level (<102 degree F). If conscious, give the victim cool liquids to drink. Observe the victim and obtain immediate medical help. Do not give the victim caffeinated or alcoholic beverages. Heat stroke is considered a medical emergency. Medical help should be summoned immediately. Early recognition and treatment of heat stroke are the only means of preventing brain damage or death.

8.3.2.3 Heat Stress Preventive Measures

Proper training and preventive measures will help avert serious illness and loss of work productivity. Preventing heat stress is particularly important because once someone suffers from heat exhaustion, that person may become predisposed to additional heat injuries. To avoid heat-related illnesses, proper preventive measures will be implemented whenever environmental conditions dictate the need, normally whenever the temperature reaches at least 75 degrees Fahrenheit. These preventive measures represent the minimal steps to be taken and include the following procedures:

- The field team leader will examine each site worker before the start of daily operations, and periodically throughout the day, to determine the individual's susceptibility to heat-induced stress. Evidence of extreme dehydration or may require the field team leader to restrict the worker's activities until such time as the worker is fit for duty.
- The field team leader will closely monitor personnel identified as being at high risk (e.g., obese, using diuretics) for heat stress.
- Site workers will be trained to recognize and treat heat-related illnesses. This training will include recognizing the signs/symptoms of heat stress disorders and knowing proper treatment.
- To maintain workers' body fluids at normal levels, workers will be encouraged to drink, as a minimum, approximately 16 ounces of liquids prior to start of work in the morning, after lunch, and prior to leaving the site at the conclusion of the day's activities.
- Water will be provided for workers.
- When ambient conditions and site workload requirements dictate, as determined by the field team leader, workers will be required to drink a minimum of 16 to 32 ounces of liquids during each rest cycle. The normal thirst mechanism is not sensitive enough to ensure that enough water will be ingested to replace lost sweat. When heavy sweating occurs, workers shall be encouraged to drink even though they may not be thirsty.
- A shelter or shaded area will be provided where workers may be protected from direct sunlight during rest periods.
- Ambient or physiological heat stress indices will be monitored to allow prevention and early detection of heat-induced stress. Monitoring will be conducted in accordance with applicable paragraphs of this SSHP.
- Site workers will be given time to acclimatize to site work conditions, temperature, protective equipment, and workload.
- Acclimatization is the adaptive process that results in a decrease of the physiological response produced by the application of a constant environmental stress. On initial exposure to a hot environment, there is an impaired ability to work and evidence of physiological strain. If the exposure is repeated on several successive days, there is a gradual return of the ability to work and a decrease in physiological strain. Acclimatization usually takes two to six days of continued work in hot environments, and it allows the worker's body to become adjusted to this level and type of work. This process involves a gradual increase in the workload over the required period, the length of which depends upon the nature of the work performed, the ambient temperatures, and the individual's susceptibility to heat stress. The results of acclimatization include near-disappearance of subjective discomfort, lower body temperature and heart rate; a more stable blood pressure; and more profuse and dilute sweat.
- Workers will be encouraged to achieve and maintain an optimum level of physical fitness. Increased physical fitness will allow workers to better tolerate and respond to hot

environments and heavy workloads. In comparison to an unfit person, a fit person will have less physiological strain, a lower heart rate and body temperature, and a more efficient sweating mechanism.

8.3.2.4 Heat Stress Monitoring

Heat stress prevention is important because once a person suffers from heat stroke or heat exhaustion, that person may be more likely to have additional heat-related illnesses. The signs and symptoms of heat stress are presented in Table 1.

Table 1
Heat Stress Symptoms

Heat Exhaustion	Heat Stroke
Heavy sweating Heavy thirst Panting/rapid breathing Rapid pulse Headache Blurred vision Exhaustion, weakness Clumsiness Confusion Dizziness or fainting Cramps	No sweating Red or flushed, hot dry skin Any symptoms of heat exhaustion, but more severe Difficult breathing Pinpoint pupils Bizarre behavior Convulsions Confusion Collapse

Follow these steps to prevent heat stress:

- Provide shaded areas to protect personnel during rest periods.
- Urge workers to drink water to keep their body fluids at normal levels.
- Adjust work schedules according to monitoring requirements, and perform work during cooler hours of the day. The normal work schedule consists of a 10-hour day, four days per week.
- Provide accurate verbal and written instructions, frequent training programs, and other information about heat stress and strain.
- Permit self-limitation of exposures and encourage coworker observation to detect signs and symptoms of heat strain in others.
- Counsel and monitor those who take medications that may compromise normal cardiovascular, blood pressure, body temperature regulation, renal, or sweat gland functions, as well as those who abuse or are recovering from the abuse of alcohol or other intoxicants.

- Encourage healthy lifestyles, ideal body weight, and electrolyte balance.
- Adjust expectations of those returning to work after absence from hot exposure situations and encourage consumption of salty foods (with approval of physician if on a salt-restricted diet).
- Ensure that workers have current medical screening to identify those susceptible to systemic heat injury.

8.3.4 Cold-Related Illnesses

Cold weather and cold-related illness are not a risk and should not be encountered during work at WVIA.

8.3.5 Fire Hazards

Although fires and explosions may arise spontaneously, they are more commonly the result of carelessness during site activities, such as moving drums, mixing/bulking of site chemicals, and refueling of heavy or hand-held equipment. Some potential causes of explosion and fires include:

- Mixing of incompatible chemicals, which cause reactions that spontaneously ignite due to the production of both flammable vapors and heat
- Ignition of explosive or flammable chemical gases or vapors by external ignition sources
- Ignition of materials due to oxygen enrichment
- Agitation of shock- or friction-sensitive compounds
- Sudden release of materials under pressure

8.3.5.1 Fire Prevention

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 into the environment. Such releases can threaten personnel on site and members of the general public living or working nearby. Site personnel involved with potentially flammable material or operations must follow the guidelines listed below to prevent fires and explosions:

- Potentially explosive/flammable atmospheres involving gases or vapors will be monitored using a combustible gas indicator.
- Before initiation of site activities involving explosive/flammable materials, all potential ignition sources must be removed or extinguished.
- No sparking and explosion-proof equipment may be used whenever the potential for ignition of flammable/explosive gases/vapors/liquids exists.
- Dilution or induced ventilation may be used to decrease the airborne concentration of explosive/flammable atmospheres.
- Smoking is restricted to designated areas on MEC work sites.

- Flammable and/or combustible liquids must be handled only in approved and properly labeled metal safety cans equipped with flash arresters and self-closing lids.
- Transfer of flammable liquids from one metal container to another will be done only when the containers are electrically interconnected (bonded).
- The motors of all equipment being fueled will be shut off during the fueling operations.

SECTION 9 EMERGENCY RESPONSE PLAN PROCEDURES

9.1 Need for the Plan

The frequency and severity of emergency situations can be dramatically reduced through proper implementation of the SSHP. However, if an emergency does occur, quick, decisive action will be required since delays of just minutes can create or escalate life-threatening situations. In an emergency situation, site personnel involved in emergency response and rescue must be prepared to respond immediately, and all required equipment must be on hand, in proper working order, and ready to use. To ensure rapid, effective response to a site emergency, the procedures and contingency plans outlined in this section will be implemented before and during any site activities involving exposure to safety and health hazards.

All hazardous waste site activities present a degree of risk to onsite personnel. During routine operations, establishing good work practices, staying alert, and using proper PPE minimize risk. Unpredictable events such as physical injury, chemical exposure, or fire may occur and must be anticipated. The subsections below establish procedures and guidelines for emergencies.

9.2 Procedures and Tests

9.2.1 Guidelines for Pre-Emergency Planning and Training

Employees must read this SSHP and familiarize themselves with the information provided. Before project initiation, the SSHO will conduct a meeting with the field team members to review the provisions of this SSHP and to review the emergency response plan. Employees are required to have a copy of the emergency contacts and telephone numbers immediately accessible on site and to know the route to the nearest emergency medical services. Directions and routes to hospitals are shown in Figure 7 and Table 2. Emergency contacts are listed in Table 3.

9.2.2 Emergency Recognition and Prevention

Emergency conditions are considered to exist if any of the following occur:

- Any member of the field crew is involved in an accident or experiences any adverse effects or symptoms of exposure while on site.
- A condition is discovered that suggests the existence of a situation more hazardous than anticipated.
- A fire or explosion hazard exists.
- A vehicle accident occurs.

Preventive measures are listed below:

- Site workers must maintain visual contact and should remain close together to assist each other during emergencies. (Use the buddy system.)

- During continual operations, onsite workers act as safety backup to each other.
- All field crewmembers should make use of all of their senses to alert themselves to potentially dangerous situations to avoid.
- Personnel will practice unfamiliar operations before performing them in the field.

Field crewmembers will be familiar with the following:

- Accessibility to coworkers, equipment, vehicles and communication devices
- Communication signals and devices (air horn)
- Site access
- Nearest water sources
- Muster location

The discovery of any condition that would suggest the existence of a situation more hazardous than anticipated will result in the reevaluation of the hazard and the level of protection required, and it may result in a temporary evacuation of the field team from the immediate work area. A muster location and emergency communications devices (air horn) will be identified and briefed during the daily tailgate safety meeting. All personnel will be accounted for if an evacuation is needed.

9.3 Emergency Medical Procedures

9.3.1 Injury

1. Notify **911**.
2. Inform dispatcher that you are at the Waikane Valley Impact Area beyond the Waikane Valley Road. If injured party is in an inaccessible part of WVIA and is safe to move without causing additional injury, move to a location accessible by emergency vehicles or medical evacuation helicopters, as applicable.
3. Stabilize victim until medical personnel arrive.

9.3.2 Fire

1. Evacuate personnel to predetermined safe area.
2. Notify **911**.
3. Inform dispatcher that you are at the Waikane Valley Impact Area beyond the Waikane Valley Road. Move upwind of the smoke and fire.
4. Don’t attempt to extinguish fire if UXO is involved.

9.4 Follow-up Actions

If an emergency response is required, notify the NAVFAC Hawaii Navy Technical Representative via telephone and follow up with the Contractor Significant Incident Report.

Figure 7
Hospital Route Map

Castle Medical Center
640 Ulukahiki Street
Kailua, Hawaii
808-263-5500

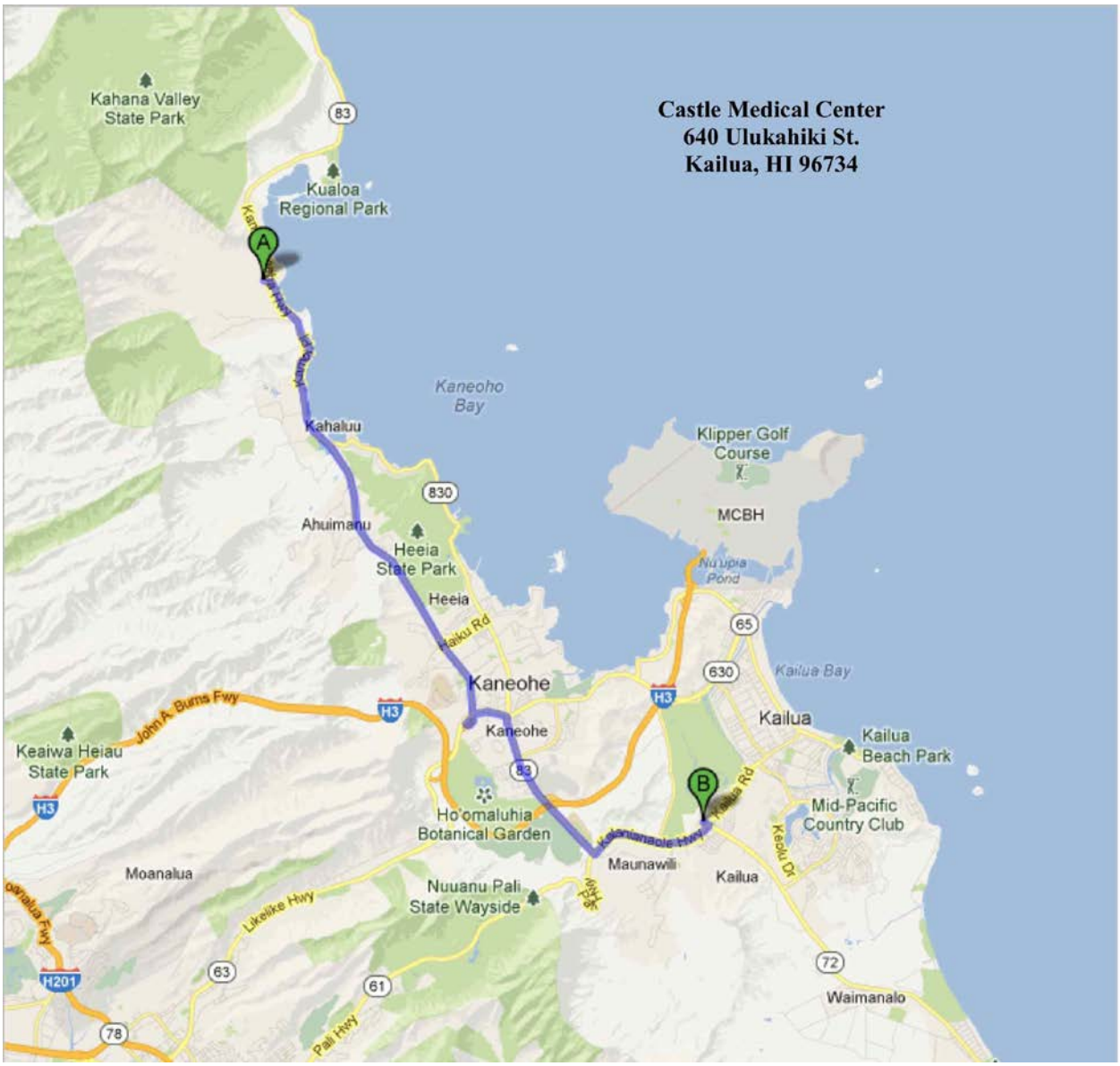


Table 2
Hospital Directions

Castle Medical Center **640 Ulukahiki Street** **Kailua, Hawaii** **808-263-5500**	
1. Head east on Waikane Valley Road toward HI-83W	Go 0.1 miles
2. Turn right onto H-83E	Go 7.1 miles
3. Take Hawaii 63 N ramp to Kailua	Go 0.3 miles
4. Merge onto HI-63 N	Go 0.6 miles
5. Turn right onto HI-83 S / Kamehameha Highway	Go 2.3 miles
6. Turn left onto HI-61 N / HI-72/Kalanianaole Highway	Go 1.8 miles
7. Turn left onto Ulukahiki Street. Hospital on left.	Go 0.1 miles

Table 3
Contact Information

Type of Incident/Situation	Facility	Contact Information	Additional Information
On- Off-Work-Site Emergency	**EMS/City and County of Honolulu Fire Department**	**911**	**If possible, arrange for meeting at the end of Waikane Valley Road.**
Poison Emergency	**Poison Control Center**	**1-800-222-1222**	
Hospital Emergency Room	**Castle Medical Center**	**1-808-263-5500**	

SECTION 10 CONTRACTOR SIGNIFICANT INCIDENT REPORT (CSIR)

10.1 CSIR Instructions

Complete the following report in the event of any incident, and forward completed report to NAVFAC Pacific Navy Technical Representative.

☐ Initial Report
☐ Follow-up Report
☐ Final Report

Contractor Significant Incident Report (CSIR)

1. General Information

Contracting Activity/ROICC Office:

Accident Classification:

☐ Injury ☐ Fatality ☐ Environment ☐ Procedural Issues ☐ Lessons Learned
☐ Illness ☐ Property Damage ☐ Other

Involving:

☐ Confined Space ☐ Equip/Mrt Ver/Mat Handling (Heavy Construction Equip.) ☐ Hazardous Material
☐ Crane and Rigging ☐ Equip/Mrt Ver/Mat Handling (Material Handling) ☐ Trenching/Excavation
☐ Diving ☐ Equip/Mrt Ver/Mat Handling (Man-Lift/Elevated Platform) ☐ Waterfront/Marine
☐ Demolition/Renovation ☐ Fall from Ladder ☐ Fall from Scaffold ☐ Other
☐ Electrical ☐ Fall from Roof ☐ Fire

2. Personal Information

Name (Last, First, MI):	**Age:**	**Sex:**

Job Title/Description:	**Employed By:**
Supervisor Name (Last, First, MI) & Title:	**Was the person trained to perform this activity/task?** ☐ Yes ☐ No
What type of training was received (OJT, classroom, etc)?	**Date of the most recent formal training and topics discussed?**

3. Witness Information

Witness #1: Name (Last, First, MI):	**Job Title/Description:**
Employed By:	**Supervisor Name (Last, First, MI):**
Witness #2: Name (Last, First, MI):	**Job Title/Description:**
Employed By:	**Supervisor Name (Last, First, MI):**

Additional Witnesses: ☐ Yes ☐ No
(List any additional witnesses on a separate sheet and attach.)

4. Contract Information

Type of Contract:

☐ A/E ☐ BOS ☐ CLEAN ☐ Construction ☐ Design Build ☐ FSCC ☐ FSSC
☐ JOC ☐ RAC ☐ Service ☐ Other [redacted]

Contract Number & Title: [redacted]	**Industrial Group & Industrial Type:** [redacted]
Prime Contractor Name/Address/Phone & Fax No: [redacted]	**Sub Contractor Name/Address/Phone & FAX No:** [redacted]
Safety Manager (Last, First, MI): [redacted]	**Safety Manager (Last, First, MI):** [redacted]
Insurance Carrier: [redacted]	**Insurance Carrier:** [redacted]

5. Accident Description

Date of Accident:	**Time of Accident:**	**Exact Location of Accident:**
[redacted]	[redacted]	[redacted]

Describe the accident in detail in your words: ***(Use the back of page if you need additional space)***

[redacted]

Direct Cause(s) of Accident:

[redacted]

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Indirect Cause(s) of Accident:

Action(s) taken to prevent re-occurrence or provide on-going corrective actions:

Corrective Action Beginning Date:	**Anticipated Completion Date:**

Personal Protective Equipment:

☐ Available and used ☐ Available and not used ☐ Not Required

☐ Not related to Mishap ☐ Wrong PPE for job

List PPE Used:

Type of Construction Equipment (Make, Model, Serial #, VIN#) Involved:

Was Hazardous Material Spilled/Released? ☐ **Yes** ☐ **No**

Please List Hazardous Material(s) Involved:

Who provided first aid or cleanup of mishap site?

Any blood-borne pathogen exposure, other than EMTs? ☐ **Yes** ☐ **No**

Who?

List OSHA and WM-385-1-1 standards that were violated:

Was site secured and witness statements taken immediately? ☐ **Yes** ☐ **No**

By Whom?

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6. Injury Illness/Fatality Information

☐

☐

8. OSHA Information			
Date OSHA was Notified:	**Date(s) of Investigation:**	**Date of citation:** *(Attach Copy)*	**Dollar amount of Penalties:**

9. Report Preparer	
Name (Last, First, MI):	**Date of Report:**
Title: **Employer:** **Phone #:**	**Signature:**

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CONTRACTOR SIGNIFICANT INCIDENT REPORT (CSIR) INSTRUCTIONS

Complete Sections Appropriate to Incident (Rev. 06/02).

NOTE: THE ATTACHED CSIR FORM IS TO BE USED BY CONTRACTORS TO RECORD THE RESULTS OF THEIR ACCIDENT/INCIDENTS INVESTIGATIONS AND SHALL BE PROVIDED TO THE CONTRACTING OFFICER WITHIN THE REQUIRED TIMEFRAMES.

GENERAL. Complete a separate report for each person who was injured in the accident. A report needs to be completed for all OSHA recordable accidents, property damage in excess of $2000.00 (This amount is for record purposes only. GOV is not required to enter property damage reports into FAIR database if it is less than $10,000.00.), WHE accidents, or near miss/high visibility mishaps. Please type or print legibly. Appropriate items shall be marked with an "X" in box(es), non-applicable sections shall be marked "N/A". If additional space is needed, provide the information on a separate sheet of paper and attach to the completed form.

Mark the report:
INITIAL – If this form is being used as initial notification of a Fatality or High Visibility Mishap. The initial form is due within 4 hours of a serious accident. A form marked 'Follow-up' or 'Final' is required within 5 days.
FOLLOW-UP – If you are providing additional information on a report previously submitted.
FINAL – If you are providing a completed report and expect no changes.

SECTION 1 – GENERAL INFORMATION

CONTRACTING ACTIVITY/ROICC OFFICE - Enter the name and address of the Contracting Office administering the contract under which the mishap took place (e.g. ROICC MCBH, ROICC NORFOLK, PWC GUAM, etc.).

ACCIDENT CLASSIFICATION - INJURY/ILLNESS/FATALITY/PROPERTY DAMAGE/-PROCEDURAL ISSUES/-ENVIRONMENTAL/LESSONS LEARNED/OTHER – Mark the appropriate block(s) if the incident resulted in any of these conditions.

INVOLVING - If the mishap involved any of the conditions listed under "Involving" mark the appropriate box(es). Specific questions associated with each of these conditions are available from the Contracting Officer to assist you in your investigation. When these questions are used they shall be attached as part of this report.

SECTION 2 - PERSONAL INFORMATION

NAME - Enter last name, first name, middle initial of person involved.
AGE - Enter age.
SEX - Enter M for Male and F for Female.
JOB TITLE/DESCRIPTION - Enter the job title/description assigned to the injured person (e.g. carpenter, laborer, surveyor, etc.).
EMPLOYED BY - Enter employment company name of the person involved.
SUPERVISOR'S NAME & TITLE - Enter name and title of the immediate supervisor.
WAS PERSON TRAINED TO PERFORM ACTIVITY/TASK? - For the purpose of this section "trained" means the person has been provided the necessary information (either formal and/or on-the-job (OJT) training) to competently perform the activity/task in a safe and healthful manner.
TYPE OF TRAINING - Indicate the specific type of training (classroom or on-the-job) that the injured person received before the accident happened.
DATE OF MOST RECENT FORMAL TRAINING/TOPICS DISCUSSED - Enter the month, day, and year of the last *formal* training completed that covered the activity/task being performed at the time of the accident. List topics that were discussed at the training identified above.

SECTION 3 - WITNESS INFORMATION

The following applies to Witness #1 and Witness #2:
WITNESS NAME - Enter last name, first name, middle initial of the witness.
JOB DESCRIPTION/TITLE - Enter the job title/description assigned to the witness (e.g. carpenter, laborer, surveyor, etc.).
EMPLOYED BY - Enter the name of the employment company of the witness.
SUPERVISORS NAME - Enter name of immediate supervisor of the witness.
ADDITIONAL WITNESSES - Provide same information, as above, for each witnesses. Use additional pages if necessary.

SECTION 4 - CONTRACTOR INFORMATION

TYPE OF CONTRACT - Mark appropriate box. A/E means architect/engineer. If "OTHER" is marked, specify type of contract on line provided.
CONTRACT NUMBER/TITLE - Enter complete contract number and tile of prime contract (e.g. N62477-85-C-0100, 184 Pearl City Hsg. Revitalization).
CONSTRUCTION INDUSTRIAL GROUP AND INDUSTRIAL TYPE – This is the type of construction that will be done at this project.

1. First, you must choose the Industrial Group. You have 4 choices to choose from: **(NOTE!** Review of the Industrial Types below and knowing what the projects scope of work is will assist you in deciding what the Industrial Group should be.)
   a. Buildings
   b. Heavy Industrial
   c. Infrastructure
   d. Light Industrial
2. Once you have chosen the Industrial Group, you now select the Industrial Type. You have multiple choices under each Group, chose the one you feel fits the project most closely because on most projects there won't be an exact match:
   a. Buildings:
      (1) Communications Ctr.
      (2) Dormitory/Hotel
      (3) High-rise Office
      (4) Hospital
      (5) Housing
      (6) Laboratory
      (7) Low-rise Office
      (8) Maintenance Facility
      (9) Parking Garage
      (10) Physical Fitness Ctr.
      (11) Restaurant/Nightclub
      (12) School
      (13) Warehouse
   b. Heavy Industrial:
      (1) Chemical Mfg.
      (2) Electrical (Generating)
      (3) Environmental
      (4) Metals Refining/Processing
      (5) Mining
      (6) Natural Gas Processing
      (7) Oil Exploration/Production
      (8) Oil Refining
      (9) Pulp and Paper
   c. Infrastructure:
      (1) Airport
      (2) Electrical Distribution
      (3) Flood Control
      (4) Highway
      (5) Marine Facilities
      (6) Navigation
      (7) Rail
      (8) Tunneling
      (9) Water/Wastewater
   d. Light Industrial:
      (1) Automotive Assembly/Mfg.
      (2) Consumer Products Mfg.
      (3) Foods
      (4) Microelectronics Mfg.
      (5) Office Products Mfg.
      (6) Pharmaceuticals Mfg.

CONTRACTOR'S NAME/ADDRESS/PHONE NUMBER
(1) PRIME - Enter the exact name (title of firm), address, phone and fax numbers of the prime contractor.
(2) SUBCONTRACTOR - Enter the exact name, address, phone and fax numbers of any subcontractor involved in the accident.

SAFETY MANAGER'S NAME
(1) PRIME - Enter the name of the prime contractor safety manager.
(2) SUBCONTRACTOR - Enter the name of the subcontractors safety manager.

INSURANCE CARRIER
(1) PRIME - Enter the exact name/title of the prime's insurance company. Policy number not required.
(2) SUBCONTRACTOR - Enter the exact name of the subcontractor's insurance company. Policy number not required.

SECTION 5 - ACCIDENT DESCRIPTION

DATE OF ACCIDENT - Enter the month, day, and year of accident.
TIME OF ACCIDENT - Enter the local time of accident in military time. Example: 14:30 hrs (not 2:30 p.m.).
EXACT LOCATION OF ACCIDENT - Enter facts needed to locate the accident scene (installation/project name, building/room number, street, direction and distance from closest landmark, etc.).
DESCRIBE THE ACCIDENT IN DETAIL. Fully describe the accident in the space provided. If property damage involved, give estimated dollar amount of damage and/or repair costs involved. If additional space is needed continue on a separate sheet and attach to this report. Give the sequence of events that describe what happened leading up to and including the accident. Fully identify personnel and equipment involved and their role(s) in the accident. Ensure that relationships between personnel and

equipment are clearly specified. Ensure questions below regarding direct cause(s), indirect cause(s), and actions taken are answered. **NOTE!** Review questions in Section 7 below before completing.
DIRECT CAUSE(S) - The direct cause is that single factor which most directly lead to the accident. See examples below.
INDIRECT CAUSE(S) - Indirect cause are those factors, which contributed to, but did not directly initiate the occurrence of the accident.

Examples for Direct and Indirect Cause:
1. Employee was dismantling scaffold and fell 12 feet from unguarded opening.
Direct cause: Failure to provide fall protection at elevation
Indirect causes: Failure to enforce safety requirements: improper training/motivation of employee (possibility that employee was not knowledgeable of fall protection requirements or was lax in his attitude toward safety); failure to ensure provision of positive fall protection whenever elevated; failure to address fall protection during scaffold dismantling in phase hazard analysis.

2. Private citizen had stopped his vehicle at intersection for red light when vehicle was struck in rear by contractor vehicle. (note contractor vehicles was in proper safe working condition.)
Direct cause: Failure of contractor driver to maintain control of and stop contractor vehicle within safe distance.
Indirect cause: Failure of employee to pay attention to driving (defensive driving).

ACTION(S) TAKEN TO PREVENT RE-OCCURRENCE OR PROVIDE ON-GOING CORRECTIVE ACTIONS. Fully describe all the actions taken, anticipated, and recommended to eliminate the cause(s) and prevent reoccurrence of similar accidents/illnesses. Continue on back or additional sheets of paper if necessary to fully explain and attach to the complete report form.
CORRECTIVE ACTION DATES -
(1) Beginning - Enter the date when the corrective action(s) identified above will begin.
(2) Anticipated Completion - Enter the date when the corrective action(s) identified above will be completed.
PERSONAL PROTECTIVE EQUIPMENT (PPE) - Mark appropriate box(es) and list PPE which was being used by the injured person at the time of the accident (e.g. protective clothing, shoes, glasses, goggles, respirator, safety belt, harness, etc.)
TYPE OF CONTRACTOR EQUIPMENT - Enter the Serial Number, Model Number and specific type of equipment involved in the mishap (e.g. dump truck (off highway), crane (rubber tire), pump truck (concrete), etc.).
WAS HAZARDOUS MATERIAL SPILLED/RELEASED? - Mark appropriate block and list name(s) of any reportable quantities of hazardous materials spilled/released during the mishap.
WHO PROVIDED FIRST AID OR CLEAN-UP OF MISHAP SITE? - List name(s) of individual(s) and employer, if known.
ANY BLOOD-BORNE PATHOGEN EXPOSURE, OTHER THAN EMT? - Mark appropriate block and list name(s) of individual(s) and employer, if known.
LIST OSHA AND/OR EM 385-1-1 STANDARDS THAT WERE VIOLATED. - Self explanatory.
WAS SITE SECURED AND WITNESS STATEMENT TAKEN IMMEDIATELY? - Mark appropriate block and list by whom.

SECTION 6 - INJURY/ILLNESS/FATALITY INFORMATION

SERVERITY OF INJURY/ILLNESS – Mark appropriate box.
ESTIMATED DAYS LOST - Enter the estimated number of workdays the person will lose from work. Update when final data is known.
ESTIMATED DAYS HOSPITALIZED - Enter the estimated number of workdays the person will be hospitalized. Update when final data is known.
ESTIMATED DAYS RESTRICTED DUTY - Enter the estimated number of workdays the person, as a result of the accident, will not be able to perform all of their regular duties. Update when final data is known.
BODY PART(S) AFFECTED - Enter the most appropriate primary and when applicable, secondary, etc. body part(s) affected (e.g. arm: wrist: abdomen: single eye; jaw : both elbows: second finger: great toe: collar bone: kidney, etc.).
NATURE OF INJURY/ILLNESS FOR PRIMARY BODY PART - Enter the most appropriate nature of injury/illness (e.g. amputation, back strain, dislocation, laceration, strain, asbestosis, food poisoning, heart conditions, etc.).
TYPE AND SOURCE OF INJURY/ILLNESS - Type and Source Codes are used to describe what caused the incident.
(1) TYPE Code stands for an "Action" (Example: Worker, installing conduit, lost his balance and fell five feet from a ladder. Type Code: Fell different levels".) Select the most appropriate Type of injury from the list below:

TYPE OF INJURY/ILLNESS

STRUCK BY/AGAINST	CONTACTED CONTACTED WITH (INJURED PERSON MOVING) CONTACTED BY (OBJECT WAS MOVING)
FELL, SLIPPED, TRIPPED SAME LEVEL/DIFFERENT LEVEL/NO FALL	EXERTED LIFTED, STRAINED BY (SINGLE ACTION) STRESSED BY (REPEATED ACTION)
CAUGHT ON/IN/BETWEEN	EXPOSED INHALED/INGESTED/ABSORBED/EXPOSED TO
PUNCTURED, LACERATED PUNCTURED BY/CUT BY/STUNG BY/BITTEN BY	TRAVELING IN

(2) SOURCE Code stands for an "object or substance." (Example: Worker, installing conduit, lost his balance and fell five feet from a ladder. Source Code: "Ladder".) Select the most appropriate Source of injury from the list below:

SOURCE OF INJURY/ILLNESS

BUILDING OR WORKING AREA WALKING/WORKING AREA STAIRS/STEPS LADDER FURNITURE BOILER/PRESSURE VESSEL EQUIPMENT LAYOUT WINDOWS/DOORS ELECTRICITY	DUST, VAPOR, ETC. DUST (SILICA, COAT, ETC.) FIBERS ASBESTOS GASES CARBON MONOXIDE MIST, STEAM, VAPOR, FUME WELDING FUMES PARTICLES (UNIDENTIFIED)
ENVIRONMENT CONDITION TEMPERATURE EXTREME (INDOOR) WEATHER (ICE, RAIN, HEAT, ETC.) FIRE, FLAME, SMOTE (NOT TABACCO) NOISE RADIATION LIGHT VENTILATION TOBACCO SMOKE STRESS (EMOTIONAL) CONFINED SPACE	CHEMICAL, PLASTIC, ETC. DRY CHEMICAL - CORROSIVE DRY CHEMICAL - TOXIC DRY CHEMICAL - EXPLOSIVE DRY CHEMICAL - FLAMMABLE LIQUID CHEMICAL - CORROSIVE LIQUID CHEMICAL - TOXIC LIQUID CHEMICAL - EXPLOSIVE LIQUID CHEMICAL - FLAMMABLE PLASTIC WATER MEDICINE
MACHINE OR TOOL HAND TOOL (POWERED: SAW, GRINDER, ETC.) HAND TOOL (NON POWERED) MECHANCIAL POWER TRANSMISSION APPARATUS GUARD, SHIELD (FIXED, MOVEABLE, INTERLOCK) VIDEO DISPLAY TERMINAL PUMP, COMPRESSOR, AIR PRESSURE TOOL HEATING EQUIPMENT WELDING EQUIPMENT	INANIMATE OBJECT BOX, BARREL, ETC. PAPER METAL ITEM, MINERAL NEEDLE GLASS SCRAP, TRASH, WOOD FOOD CLOTHING, APPAREL, SHOES
MACHINE OR TOOL HAND TOOL (POWERED: SAW, GRINDER, ETC.) HAND TOOL (NON POWERED) MECHANCIAL POWER TRANSMISSION APPARATUS GUARD, SHIELD (FIXED, MOVEABLE, INTERLOCK) VIDEO DISPLAY TERMINAL PUMP, COMPRESSOR, AIR PRESSURE TOOL HEATING EQUIPMENT WELDING EQUIPMENT	INANIMATE OBJECT BOX, BARREL, ETC. PAPER METAL ITEM, MINERAL NEEDLE GLASS SCRAP, TRASH, WOOD FOOD CLOTHING, APPAREL, SHOES
VEHICLE AS DRIVER OF PRIVATELY OWNED, RENTAL VEH. AS PASSENGER OF PRIVATELY OWNED, RENTAL VEH. DRIVER OF GOVERNMENT VEHICLE PASSENGER OF GOVERNMENT VEHICLE COMMON CARRIER (AIRLINE, BUS, ETC.) AIRCRAFT (NOT COMMERCIAL) BOAT, SHIP, BARGE	ANIMATE OBJECT DOG OTHER ANIMAL PLANT INSECT HUMAN (VIOLENCE) HUMAN (COMMUNICABLE DISEASE) BACTERIA, VIRUS (NOT HUMAN CONTACT)
MATERIAL HANDLING EQUIPMENT EARTHMOVER (TRACTOR, BACKHOE, ETC.) CONVEYOR (FOR MATERIAL AND EQUIPMENT) ELEVATOR, ESCALATOR, PERSONNEL HOIST HOIST, SLING CHAIN, JACK CRANE FORKLIFT HANDTRUCK, DOLLY	PERSONAL PROTECTIVE EQUIPMENT PROTECTIVE CLOTHING, SHOES, GLASSES, GOGGLES RESPIRATOR, MASK DIVING EQUIPMENT SAFETY BELT, HARNESS PARACHUTE

SECTION 7 - CAUSAL FACTORS

Review thoroughly. Answer each question by marking the appropriate block. **NOTE!** If any answer is yes, explain in section 5 above.

(1) **DESIGN** - Did inadequacies associated with the building or work site play a role? Would an improved design or layout of the equipment or facilities reduce the likelihood of similar accidents? Were the tools or other equipment designed and intended for the task at hand?

(2) **INSPECTION/MAINTENANCE** - Did inadequately or improperly maintained equipment, tools, workplace, etc., create or worsen any hazards that contributed to the accident? Would better equipment, facility, work site or work activity inspections have helped avoid the accident?
(3) **PERSONS PHYSICAL CONDITION** - Do you feel that the accident would probably not have occurred if the employee was in "good" physical condition? If the person involved in the accident had been in better physical condition, would the accident have been less severe or avoided altogether? Was overexertion a factor?
(4) **OPERATION PROCEDURES** - Did lack of or inadequacy within established operating procedures contribute to the accident? Did any aspect of the procedures introduce any hazard to, or increase the risk associated with the work process? Would establishment or improvement of operating procedures reduce the likelihood of similar accidents?
(5) **JOB PRACTICES** - Were any of the provision of the Safety and Health Requirements Manual (EM 385-1-1) violated? Was the task being accomplished in a manner which was not in compliance with an established job hazard analysis or activity hazard analysis? Did any established job practice (including EM 385-1-1) fail to adequately address the task or work process? Would better job practices improve the safety of the task?
(6) **HUMAN FACTORS** - Was the person under undue stress (either internal or external to the job)? Did the task tend toward overloading the capabilities of the person: i.e., did the job require tracking and reacting to many external inputs such as displays, alarms, or signals? Did the arrangement of the workplace tend to interfere with efficient task performance? Did the task require reach strengths, endurance, agility, etc., at or beyond the capabilities of the employee? Was the work environment ill-adapted to the person? Did the person need more training, experience, or practice in doing the task? Was the person inadequately rested to perform safely?
(7) **ENVIRONMENTAL FACTORS** - Did any factors such as moisture, humidity, rain, snow, sleet, hail, ice, fog, cold, heat, sun temperature changes, wind, tides, floods, currents, terrain, dust, mud, glare, pressure changes, lighting, etc., play a part in the accident?
(8) **CHEMICAL AND PHYSICAL AGENT FACTORS** - Did exposure to chemical agents (either single shift exposure or long-term exposure such as dusts, fibers, (asbestos, etc.), silica, gases (carbon, monoxide, chlorine, etc.), mists, steam, vapors, fumes, smoke, other particulates, liquid or dry chemicals that are corrosive, toxic, explosive or flammable, by-products of combustion or physical agents such as noise, ionizing radiation, non-ionizing radiation (UV radiation created during welding, etc.) contribute to the accident/incident?
(9) **OFFICE FACTORS** - Did the fact that the accident occurred in an office setting or to an office worker have a bearing on its cause? For example, office workers tend to have less experience and training in performing tasks such as lifting office furniture. Did physical hazards within the office environment contribute to the hazard?
(10) **SUPPORT FACTORS** - Was the person using an improper tool for the job? Was inadequate time available or utilized to safely accomplish the task? Were less than adequate personnel resources (in terms of employee skills, number of workers, and adequate supervision) available to get the job done properly? Was funding available, utilized and adequate to provide proper tools, equipment, personnel, site preparation, etc.
(11) **PERSONAL PROTECTIVE EQUIPMENT** - Did the person fail to use appropriate personal protective equipment (gloves, eye protection, hard-toed shoes, respirator, etc) for the task or environment? Did protective equipment provided or worn fail to provide adequate protection from the hazard(s)? Did lack of or inadequate maintenance of protective gear contribute to the accident?
(12) **DRUGS/ALCOHOL** - Is there any reason to believe the person's mental or physical capabilities, judgment, etc., were impaired or altered by the use of drugs or alcohol? Consider the effects of prescription medicine and over the counter medications as well as illicit drug use. Consider the effect of drug or alcohol induced "hangovers".
(13) **JOB/ACTIVITY HAZARD ANALYSIS** - Was a written Job/Activity Analysis completed for the task being performed at the time of the accident? If one was made, did it address the hazard adequately or does it need to be updated? If none made, will one be made? These may also need to be addressed in the Corrective Actions Taken section. Mark the appropriate box. If one was made, attach a copy of the analysis to the report.
(14) **MANAGEMENT** - Did the lack of supervisor or management support play a part in the mishap? Mark the appropriate box.

SECTION - 8 OSHA INFORMATION - Complete this section if applicable

SECTION 9 - REPORT PREPARER

Providing a completed CSIR to the Contracting Officer is the PRIME CONTRACTOR'S RESPONSIBILITY. Enter the name, date of report, title, employer, phone number and signature of person completing the accident report and provide it to the Contracting Officer, or his representative, responsible for oversight of that contractor activity. **NOTE!** If prepared by other than the Prime Contractor, a person employed by the Prime Contractor must sign that they have reviewed and concur with the report and it's findings (e.g. company owner, project supervisor/foreman, Safety Officer, etc.).