



**Base Realignment and Closure
Program Management Office West
1455 Frazee Road, Suite 900
San Diego, CA 92108-4310**

**FINAL
EXPLOSIVES SAFETY SUBMISSION
February 7, 2007**

**INSTALLATION RESTORATION SITE 1
FORMER NAVAL AIR STATION ALAMEDA
ALAMEDA POINT, ALAMEDA, CALIFORNIA**

**Base Realignment and Closure
Program Management Office West
1455 Frazee Road, Suite 900
San Diego, California 92108-4310**

**CONTRACT NO. N62473-06-D-2201
CTO No. 0015**

**FINAL
EXPLOSIVES SAFETY SUBMISSION
February 7, 2007**

**INSTALLATION RESTORATION SITE 1
FORMER NAVAL AIR STATION ALAMEDA
ALAMEDA POINT, ALAMEDA, CALIFORNIA**

DCN: ECSD-RACIV-07-0327



**TETRA TECH EC, INC.
1230 Columbia Street, Suite 750
San Diego, CA 92101-8536**

A handwritten signature in black ink, appearing to read 'Abram Eloskof', written over a horizontal line.

**Abram Eloskof, P.E.
Project Manager**



TRANSMITTAL/DELIVERABLE RECEIPT

Contract No. N62473-06-D-2201 (RAC IV)

Document Control No. 07-0327

File Code: 5.0

TO: Contracting Officer
Naval Facilities Engineering Command SW
Ms. Beatrice Appling, AQE.BA
Building 127, Room 108
1220 Pacific Highway
San Diego, CA 92132-5190

DATE: 02/09/07

CTO: 0015

LOCATION: Alameda, CA

FROM:

[Signature]
A. N. Bolt, Program Manager

DESCRIPTION: Final Explosives Safety Submission, February 7, 2007
Installation Restoration Site 1

TYPE: [] Contract/Deliverable [x] CTO Deliverable [] Notification
[] Other

VERSION: Final REVISION #: N/A
(e.g. Draft, Draft Final, Final, etc.)

ADMIN RECORD: Yes [x] No [] Category [] Confidential []
(PM to Identify)

SCHEDULED DELIVERY DATE: 02/07/07 ACTUAL DELIVERY DATE: 02/09/07

NUMBER OF COPIES SUBMITTED: 0/8C/5E Copy of SAP to N. Ancog []

COPIES TO: (Include Name, Navy Mail Code, and Number of Copies)

NAVY: TtEC: OTHER: (Distributed by TtEC)

A. Baughman - BRAC - O/1E

D. Silva (EVR.DS)

3C/3E + 3 CD's

T. Machiarella (06CAATM)

1C/1E

G. Lorton (06GL) 1C/1E

NOSSA - 2C/2E

Basic Contract Files (AQE)

1C

A. Eloskof

M. Schneider

B. Devine

L. Humphrey

Date/Time Received

FINAL
EXPLOSIVES SAFETY SUBMISSION
REVISION 1

DATED 02 MARCH 2007

IS FILED AS ADMINISTRATIVE RECORD NO.
N00236.002750

FINAL
EXPLOSIVES SAFETY SUBMISSION
REVISION 2

DATED 09 MARCH 2007

IS FILED AS ADMINISTRATIVE RECORD NO.
N00236.002775

N00236.002696
ALAMEDA POINT
SSIC NO. 5090.3

FINAL
EXPLOSIVES SAFETY SUBMISSION
REVISION 3

DATED 18 JUNE 2007

IS FILED AS ADMINISTRATIVE RECORD NO.
N00236.002797

TABLE OF CONTENTS

	<u>PAGE</u>
LIST OF TABLES.....	iii
LIST OF FIGURES.....	iii
ATTACHMENTS.....	iii
ABBREVIATIONS AND ACRONYMS.....	iv
1.0 PROJECT SUMMARY.....	1
1.1 SITE DESCRIPTION.....	1
1.2 REASONS FOR SUSPECTED MEC/MPPEH.....	2
1.3 CONCLUSIONS FROM PREVIOUS STUDIES.....	2
1.4 SUSPECTED TYPE AND AMOUNT OF MEC AND MPPEH CONTAMINATION.....	2
1.5 PLANNED FUTURE USE OF THE PROPERTY.....	3
1.6 REMEDIATION GOALS.....	3
1.7 TYPE OF MUNITIONS RESPONSE ACTION.....	3
2.0 MAPS.....	3
2.1 ALAMEDA POINT VICINITY MAP.....	3
2.2 ALAMEDA POINT MUNITIONS RESPONSE SITE MAP.....	3
2.3 Q/D ARC AND EXCLUSION ZONES.....	4
2.4 IR SITE 1 EXCLUSION ZONES.....	4
2.5 MRS CONFIGURATION.....	4
2.6 DISPOSAL TRENCH.....	4
2.7 MRS SITE.....	4
2.8 MAGAZINE COMPOUND.....	4
2.9 SCREEN PLANT CONFIGURATION.....	4
3.0 AMOUNT AND TYPE OF MEC.....	4
3.1 MUNITION WITH THE GREATEST FRAGMENTATION DISTANCE.....	5
3.2 ENCOUNTERING MEC OTHER THAN SELECTED MGF.....	5
4.0 START DATE.....	5
5.0 FROST LINE.....	5
6.0 RESPONSE TECHNIQUES.....	6
6.1 CERTIFICATION/VERIFICATION.....	6
6.2 VEGETATION CUTTING.....	6
6.3 GEOPHYSICAL SURVEY.....	7

TABLE OF CONTENTS
(Continued)

	<u>PAGE</u>
6.4 MEC/MPPEH REMOVAL	8
6.4.1 Removal Action Methodology	8
6.4.2 Disposal Trench	8
6.4.3 Debris Pits	9
6.4.4 Former Firing-range Berm	10
6.5 SOIL SCREENING	10
6.5.1 MEC and MPPEH	11
6.6 QUALITY ASSURANCE/QUALITY CONTROL	13
7.0 QUANTITY/DISTANCE	15
7.1 MPPEH PROCESSING AREAS	15
7.2 MUNITIONS RESPONSE SITE (MRS)	16
7.3 PROTECTIVE AND ACCESS CONTROLS	17
8.0 OFF-SITE DISPOSAL	17
9.0 ENVIRONMENTAL CONSIDERATIONS	18
9.1 WILDLIFE AND PLANT SPECIES	18
9.2 WETLANDS PROTECTION	18
9.3 WILDLIFE PROTECTION	18
9.4 PLANT COMMUNITY PROTECTION	19
10.0 TECHNICAL SUPPORT	19
11.0 LAND USE RESTRICTIONS	20
12.0 PUBLIC INVOLVEMENT	20
12.1 PUBLIC INFORMATION	20
12.2 PUBLIC PARTICIPATION	20
13.0 REFERENCES	21

LIST OF TABLES

Table 7-1	Munition Blast and Fragment Distances
-----------	---------------------------------------

LIST OF FIGURES

Figure 1-1	Alameda Point Vicinity Map
Figure 1-2	Alameda Point Munitions Response Site
Figure 1-3	Quantity/Distance Arc
Figure 1-4	IR Site 1 Exclusion Zones
Figure 2-1	MRS Site Elements
Figure 2-2	Disposal Trench
Figure 2-3	MRS Site
Figure 2-4	Magazine Compound
Figure 2-5	Proposed Screen Plant Configuration

ATTACHMENTS

Attachment 1	Standard Operating Procedure SOP-1, Material Potentially Presenting an Explosive Hazard Removal
Attachment 2	Correspondence
Attachment 3	Site Approval Request

ABBREVIATIONS AND ACRONYMS

C/D	class/division
CQC	Contractor Quality Control
DDESB	Department of Defense Explosives Safety Board
DGPS	Differential Global Positioning System
DoD	Department of Defense
DON	Department of the Navy
ECM	earth-covered magazine
EMM	earth-moving machinery
EOD	Explosive Ordnance Disposal
ERA	Emergency Removal Action
ESS	Explosives Safety Submission
ESQD	explosive safety quantity distance
EZ	exclusion zone
HE	high-explosive
HFD	hazardous fragmentation distance
IBD	inhabited building distance
IL	interline
IR	Installation Restoration
MEC	munitions and explosives of concern
MGFD	munition with the greatest fragmentation distance
mm	millimeter
MPPEH	material potentially presenting an explosive hazard
MRS	Munitions Response Site
MSD	minimum separation distance
NAS	Naval Air Station
NEW	net explosive weight
NOSSA	Naval Ordnance Safety and Security Activity
PjM	Project Manager
PTR	public transportation route
QA	quality assurance
QC	quality control
Q/D	quantity/distance

ABBREVIATIONS AND ACRONYMS

(Continued)

RAB	Restoration Advisory Board
RAO	removal action objective
RCT	Radiological Control Technician
RPM	Remedial Project Manager
SOP	standard operating procedure
SSPORTS	Supervisor of Shipbuilding, Conversion and Repair, Portsmouth
SUXOS	Senior UXO Supervisor
TCRA	time-critical removal action
TP	target practice
TSD	Team Separation Distance
TtEC	Tetra Tech EC, Inc.
USAESC	U.S. Army Engineering and Support Center
UXO	unexploded ordnance

1.0 PROJECT SUMMARY

This Explosives Safety Submission (ESS) is being submitted to support the time-critical removal action (TCRA) of munitions and explosives of concern (MEC) including material potentially presenting an explosive hazard (MPPEH) from Installation Restoration (IR) Site 1 on the former Naval Air Station (NAS) Alameda, Alameda Point, Alameda, California. While the TCRA involves the removal of discrete radiological sources from IR Sites 1, 2, and 32 at the former NAS Alameda, this ESS only addresses munitions response activities that will be conducted at the Munitions Response Site (MRS) located on IR Site 1. The format and informational content of this ESS is compliant with the requirements of Naval Ordnance Safety and Security Activity (NOSSA) Instruction 8020.15.

The removal of MEC/MPPEH from the IR Site 1 MRS will be completed in conjunction with a radiological survey and will include a geophysical survey to identify locations of suspected debris pits and a disposal trench, followed by the excavation of the pits/trench and the removal of the entire former Firing-range Berm located within the former small arms range at IR Site 1. The Department of the Navy (DON), Base Realignment and Closure Program Management Office West directs these actions in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act and the National Oil and Hazardous Substances Pollution Contingency Plan. Tetra Tech EC, Inc. (TtEC), as the general contractor, is responsible for conducting this work under contract number N62473-06-D-2201. The DON has initiated the planned TCRA to substantially eliminate, prevent, or abate any potential hazards associated with MPPEH and radiological items.

A vicinity map that illustrates the location of Alameda Point, IR Site 1 and its planned usage can be found in Figure 1-1.

1.1 SITE DESCRIPTION

IR Site 1 is relatively remote from occupied buildings and public traffic routes, and access to the site is prevented by a fence line that segregates the western runway and tarmac areas of the former air station from the populated portions of the base to the east. This fence is shown in Figure 1-2.

The site is an area of approximately 78 acres located on the western coastline of Alameda Point, in Alameda, California. The site is rectangular in shape and is bordered on the west by San Francisco Bay and on the north by Oakland Inner Harbor. The former NAS Alameda borders the site on the east and south. IR Site 1 was used as the main disposal area for the former NAS Alameda from approximately 1943 through March 1956. A map showing various aspects of IR Site 1 can be found in Figures 1-1 through 1-4.

The firing range area is located on the coastline in the middle of IR Site 1 and was formerly used for pistol, rifle, and shotgun practice. The southern portion (approximately 70 feet) of the small arms range was designated as the shotgun range, and the center of the range (approximately 80 feet) was designated as the pistol range. The northern section of the small arms range (approximately 45 feet) was designated as a disposal area, and is the general location of debris pits known to contain 20 millimeter (mm) projectiles. The former Firing-range Berm runs along the coastline on the western side of the range.

IR Site 1 is currently not in use, although Alameda law enforcement agencies sometimes use the adjacent runways for high-speed driving maneuver training.

1.2 REASONS FOR SUSPECTED MEC/MPPEH

A radiological survey of IR Site 1 in 1998 resulted in the discovery of 335 live, 20mm high-explosive (HE) projectiles, two small arms rounds, 12,259 – 20mm target practice (TP) projectiles, 1,689 .50 caliber armor-piercing projectiles, and 359 assorted brass casings. The HE-filled projectiles were detonated as a part of an Emergency Removal Action (ERA) completed by Unexploded Ordnance (UXO) technicians from Supervisor of Shipbuilding, Conversion and Repair, Portsmouth (SSPORTS) Environmental Detachment.

A 2001 surface removal action at 5 locations within IR Site 1 resulted in the discovery of 1,079 – 20mm TP projectiles and an empty 40mm grenade casing. Most of these objects were found in large groups in the vicinity of the former pistol range, but some were found in individual units. During activities conducted on IR Site 1 in the years subsequent to the removal action, an additional accumulation of approximately 300 – 20mm projectiles were encountered that appeared to have migrated to the ground surface from debris pits after rain events or heavy surf.

1.3 CONCLUSIONS FROM PREVIOUS STUDIES

The UXO Emergency Removal Action Summary Report for IR Site 1 concluded that *“another apparent ordnance ‘burial site’ was discovered during the surface sweep but it was not excavated since its boundaries could not be accurately defined, and since it was possible to clear ordnance from the surface with some confidence that radiation survey personnel would not disturb additional items. The site is located on the north side of the small arms range at the toe of the backstop berm.”* (SSPORTS, 1998). This report is consistent with the location of the 20mm projectiles that have been found in the years since this removal action.

1.4 SUSPECTED TYPE AND AMOUNT OF MEC AND MPPEH CONTAMINATION

Based on the history of the MRS, including facts obtained from the summary reports of previous actions on the site, both HE-filled and TP 20mm projectiles are likely to be present on site. The expected amount is unknown, and will be determined by the size and contents of the debris pits, the disposal trench, and the former Firing-range Berm.

1.5 PLANNED FUTURE USE OF THE PROPERTY

The TCRA activities will all occur on Alameda Point, which is DON property. IR Site 1 is proposed to be conveyed to the City of Alameda for recreational use. The site will likely be used as a golf course and regional park trail.

1.6 REMEDIATION GOALS

The debris pit(s) and the disposal trench will be excavated in their entirety; that is, debris and material found in those areas will be excavated until native soil that meets removal action objectives (RAOs) as defined in the Action Memorandum (TtEC, 2007) or groundwater is reached. The former Firing-range Berm will also be removed in its entirety. The soil in it will be excavated to ground surface, or when native soil is reached if debris is still present at that elevation. The assessment/removal depth of the debris pits, disposal trench, and the former Firing-range Berm will be the depth where native soil is reached that meets RAOs as defined in the Action Memorandum (TtEC, 2007) or groundwater is encountered, which could be as deep as 8 feet, based on the history of the site.

1.7 TYPE OF MUNITIONS RESPONSE ACTION

The TCRA is being performed in accordance with the Action Memorandum (TtEC, 2007) that addresses MPPEH and radiological point source removal.

2.0 MAPS

A description of each map required by NOSSA is provided below.

2.1 ALAMEDA POINT VICINITY MAP

Figure 1-1 shows the location of Alameda Point relative to the state of California and the locations of IR Site 1 where activities will take place.

2.2 ALAMEDA POINT MUNITIONS RESPONSE SITE MAP

Figure 1-2 better illustrates the location of IR Site 1, and includes the distances to the nearest inhabited building/public traffic route and the Quantity/Distance (Q/D) arc for the magazine planned for use in this project.

2.3 Q/D ARC AND EXCLUSION ZONES

Figure 1-3 shows the established Q/D arc and exclusion zones (EZ) for the MRS site at IR Site 1, the MPPEH storage and processing magazines, the lay-down pad, and the temporary storage point.

2.4 IR SITE 1 EXCLUSION ZONES

Figure 1-4 illustrates the MRS in relation to IR Site 1 and the EZ associated with it.

2.5 MRS CONFIGURATION

Figure 2-1 shows the MRS, screen plant, lay-down pad, and collection point.

2.6 DISPOSAL TRENCH

Figure 2-2 shows the estimated location of the disposal trench and the associated EZ/QD arc (if MEC/MPPEH is found).

2.7 MRS SITE

Figure 2-3 shows the MRS site and the location of the screen plant, collection point, and the EZ/QD arcs.

2.8 MAGAZINE COMPOUND

Figure 2-4 shows the magazine compound and the distances and EZ/QD arcs associated with them.

2.9 SCREEN PLANT CONFIGURATION

Figure 2-5 is a drawing of the proposed screen plant configuration.

3.0 AMOUNT AND TYPE OF MEC

No live MEC has been found on IR Site 1 since the ERA was performed in 1998, despite over 13,000 inert projectiles having been recovered on different occasions since then. The fact that live projectiles may be encountered cannot be ruled out; therefore, adequate protective precautions will be used in the course of this project to protect project workers and the environment.

3.1 MUNITION WITH THE GREATEST FRAGMENTATION DISTANCE

Based on the results of past characterizations and removal actions, for the purpose of this project, the MEC/MPPEH item selected as the munition with the greatest fragmentation distance (MGFD) is the 20mm HE-filled projectile (M56A4), with a contingency MGFD based on a 40mm M406 grenade.

3.2 ENCOUNTERING MEC OTHER THAN SELECTED MGFD

If MEC is encountered, it will fall into one of three categories:

- MEC item fragment distance less than MGFD
- MEC item fragment distance greater than primary MGFD, but less than contingency MGFD
- MEC item fragment distance greater than primary and all contingency MGFDs

The procedures for each of these situations are found in Section 6.5.1.

4.0 START DATE

Start dates for the activities planned at IR Site 1 are provided as follows:

<u>Activity</u>	<u>Start Date</u>
Mowing/Vegetation removal	February 12, 2007
Surface Sweep	February 20, 2007
Geophysical Survey	February 26, 2007
MPPEH Excavation	March 5, 2007
Radiological Point Source Removal	March 5, 2007
Project end	June 30, 2007

5.0 FROST LINE

There is no frost line in Alameda, California.

6.0 RESPONSE TECHNIQUES

The planned approach for the upcoming MPPEH and radiological source removal is straightforward and uses conventional methodology and technology to achieve the project remediation goals, which is the removal of MPPEH to the best extent possible and radiological sources on the site. Steps to accomplish this include:

- A pre-vegetation cutting surface search of the area(s) around the former Firing-range Berm
- A UXO technician-escorted vegetation cutting of the former Firing-range Berm, disposal trench area, and all areas where radiological point source removal is planned
- A geophysical survey of the former Firing-range Berm, and the area north of the small arms range bordered by San Francisco Bay to the west, the road to the east, and the fence line to the north
- The delineation of boundaries for debris pits and the disposal trench based on the results of the geophysical survey
- The 100 percent mechanized removal of debris and material from the debris pits and disposal trench
- The separation of MEC and MPPEH from the other debris
- The mechanized excavation/removal of the former Firing-range Berm

6.1 CERTIFICATION/VERIFICATION

All MPPEH is considered hazardous and must be managed as class/division (C/D) 1.1 until it is inspected, certified, and verified as safe. At that point it is no longer MPPEH and after demilitarization may be released from Department of Defense (DoD) control.

6.2 VEGETATION CUTTING

A surface search of the MRS will be performed by UXO technicians to determine the limits of surface MEC/MPPEH on site and those boundaries will be marked with surveyor's tape or another suitable method. (UXO avoidance techniques will be used if an intrusive marking method is used.) This portion of IR Site 1 is on the coastline and the vegetation is stunted so the search should be easily accomplished. Because a surface search of IR Site 1 was completed in 2004, mechanized vegetation cutting machinery (brush hog, tractor with cutting deck, etc.) will be used to mow areas outside the perimeter of the MRS. When that has been accomplished, UXO technicians will perform a surface sweep of the MRS and remove all MEC/MPPEH items from the ground surface. They will then escort laborers with portable, powered string trimmers (e.g., weed-whacker) to cut the vegetation on the parts of the MRS that require it (sides and top of berm, area under tree, etc.).

6.3 GEOPHYSICAL SURVEY

Following the surface sweeps and the vegetation cutting, a geophysical survey will be conducted to identify the location and boundaries of the debris pits (both on and off the berm) and the disposal trench. A UXO technician will escort the geophysicist(s) during the survey when near the area suspected to contain the debris pits.

The location of the disposal trench is unknown, but is believed to lie in a location west of the road that traverses the site and north of the small arms range. The geophysical survey will use these boundaries for the initial data collection (road/coastline, small arms range/fence line). If the location of the trench cannot be determined after processing and interpreting the data, the search area will be expanded eastward after consulting with the project geophysicists and DON representatives.

Where accessible, the entire former Firing-range Berm will be surveyed. The steep incline of the western slope may prevent surveying activities on that part of the berm. The geophysical map produced from the trench-location survey and from the berm survey should reveal all potential debris pits where MEC/MPPEH may be concentrated.

Survey control will be established and used to provide precise positional data. To delineate the debris pit(s) and disposal trench boundaries, the geophysical data collection will use a Geonics EM61 time-domain electromagnetic instrument or a Geonics EM-31 MKII ground conductivity meter, or a combination of the two. Both will be supported by the Allegro CX field data logger and a Leica Differential Global Positioning System (DGPS) to provide precise location coordinates, if required, and debris pit/trench boundaries. The systems are certified under the DON's Hazards of Electromagnetic Radiation to Ordnance program.

The geophysical and DGPS data will be concatenated, processed, and a geophysical map will be generated that identifies debris pit/trench boundaries and the position, depth, and estimated size of significant subsurface anomalies. The map and a DGPS receiver will be used to delineate the perimeters of pits/trenches and/or mark any anomalies of interest.

Anomaly discrimination and reacquisition activities are not planned for this project, and due to the nature of the intended geophysical survey, TtEC does not intend to perform a geophysical prove-out to demonstrate the detection capabilities of the geophysical system. The debris pits and disposal trench are expected to contain significant amounts of metal at relatively shallow depths, and the proposed instrumentation should be able to easily detect these anomalous areas. TtEC will perform daily instrument calibration and/or functionality checks to ensure that the instrumentation is operating properly and is within specifications. The geophysical instrument(s) will be run over a known target at the beginning of each file to ensure proper operation.

6.4 MEC/MPPEH REMOVAL

Operators of mechanized equipment will be provided blast overpressure protection of K24 and fragment protection. Q/D and fragment protection materials are discussed in Section 7. EZs applicable to equipment operators, UXO and Radiological Control Technician (RCT) personnel are also found in Section 7.

The excavation of the debris pit(s) and the disposal trench will cease when native soil that meets RAOs as defined in the Action Memorandum (TtEC, 2007) or groundwater is reached, and a hand-held magnetometer (i.e., Vallon, White, etc.) indicates that metallic debris is no longer present in the excavation. The soil in the former Firing-range Berm will also be removed with armored earth-moving machinery (EMM).

6.4.1 Removal Action Methodology

Three distinct areas are planned for excavation within IR Site 1: the disposal trench where radiological sources reportedly have been buried, debris pits where HE and TP 20mm projectiles are known to exist, and the former Firing-range Berm, a part of which is suspected to also contain MEC/MPPEH items. MEC/MPPEH items are not anticipated to be found in the radiological disposal trench. The potential presence of MEC/MPPEH in the disposal pits and former Firing-range Berm will require slightly different processes to protect UXO and RCT personnel.

The first step in the MEC/MPPEH and radiological source removal process is the manual survey of the top 6 inches of soil with hand-held radiological instruments and magnetometers. RCTs will conduct the radiological survey and UXO technicians may assist them with magnetometers (for metal sources), if required. For the areas known and suspected to contain MEC/MPPEH items, a barricade will be installed for UXO and RCT personnel to take shelter behind when the actual excavation of the soil is taking place. The procedures are described below.

6.4.2 Disposal Trench

Prior to the start of excavation, the approximate boundaries of the disposal trench will be delineated and marked with tape, paint, lath, etc. (If an intrusive marking method is used, a UXO technician will perform anomaly avoidance procedures before the markers are installed.) The excavation will begin at a boundary of the trench and proceed inward. The top 6 inches of soil in the excavation area will be surveyed for radiological items, and if any are found, they will be hand excavated and placed in a storage container. When the survey of the first layer is complete, EMM will remove the top 6 inches of soil in the excavation area (this may be accomplished by scraping, excavating, etc.) and place it in a dump truck. When the truck is full, the excavated soil will be transported to a lay-down area, spread in a 6-inch layer, and surveyed a second time for radiological sources. When the entire layer of soil has been surveyed twice for radiological sources, the soil will be removed from the lay-down pad and transported to the stockpile area.

A radiological survey of the next 6 inches of soil in the excavation will then be accomplished; and when complete, EMM will remove the next 6 inches of soil, transport it to the lay-down pad, spread it in another 6-inch layer, and it will be surveyed for radiological anomalies again. This process will be repeated until the trench is completely excavated and native soil that meets RAOs as defined in the Action Memorandum (TtEC, 2007) or groundwater is reached.

If MEC/MPPEH is encountered in the disposal trench, the Senior Unexploded Ordnance Supervisor (SUXOS) will direct that the excavation cease, establish an appropriate EZ as described in Section 6.5 and notify the Project Manager (PjM).

6.4.3 Debris Pits

The process for excavating the burial pits will be nearly identical to that used for the disposal trench, with the addition of a barricade that provides fragment protection for RCT personnel and UXO technicians when the soil is excavated (see Section 7). The process will proceed as follows:

- The boundaries of the pit(s) will be marked and the entire area inside the pit perimeter will be surveyed for radiological sources that will be hand excavated and placed in a container if found. (UXO technicians will use anomaly avoidance techniques during each intrusive dig for marking or hand excavation).
- UXO and RCT personnel will then take shelter behind a barrier located outside the swing radius of the EMM being used for the excavation. The construction of the barrier is discussed in Section 7.
- The equipment operator will remove the top 6 inches of soil within the boundary markers and place it in a dump truck.
- The UXO technician(s) will then return to the excavation and check it to see if MEC/MPPEH was unearthed. If the excavation is clear, the RCT(s) will return, survey the next 6 inches of soil, and all will relocate behind the barricade while the next 6 inches of soil is removed.
- If a radiological source is detected, a UXO technician will survey the location with a metal detector. If metal is detected, the RCT will relocate behind the barricade while the UXO technician hand excavates the anomaly using appropriate procedures (i.e., digging behind the anomaly and gaining access from the side). If the anomaly is not MEC/MPPEH, the RCT will return to the excavation and remove the radiological source. If there is extensive metallic contamination in the excavation to the point that the magnetometer is saturated, the UXO technician and RCT will take station behind the barrier and the EMM operator will remove 6 inches of soil in the location of radiological source and layer it next to the excavation. The RCT will survey the layered soil and debris to locate the radiological source.

This process will be repeated until the burial pit is completely exhumed and the magnetometer indicates that nothing metallic lies beneath the floor of the pit.

6.4.4 Former Firing-range Berm

Only the northern portion of the backstop berm is suspected to contain buried MEC/MPPEH items, and the geophysical survey of the berm should show their precise locations. The area containing buried debris will be marked on the ground surface (lath, stakes, caution tape, etc.), and this area will be excavated last. (Anomaly avoidance procedures will be used if an intrusive marking method is used.)

The excavation of the berm will be conducted in a manner similar to the trench and pit excavation. The vegetation on the berm will be cut as near to the ground as possible. Beginning at the southern end of the berm, RCT personnel will survey the top 6 inches of soil on the top of the berm for radiological sources and hand excavate them if found. EMM will remove the top 6 inches of the berm and place it in a dump truck. The next 6 inches of soil will be surveyed, and that layer of soil removed. This process will be repeated until the southern portion of the berm is removed.

On the portion of the berm suspected to contain buried debris, the procedures used for the disposal pit excavation will be used.

All of the soil will be transported to the lay-down pad, layered, and surveyed again for radiological sources. After the survey on the lay-down pad, the soil will be transported to the screening plant stockpile. This process will be repeated until the berm has been removed.

Recovered MPPEH items will be placed in a container at a temporary collection point awaiting transportation to the magazine. The collection point will be located on the paved area adjacent to the target line near the northern toe of the former Firing-range Berm. The MPPEH items will be stored in wooden boxes (or other suitable containers). Near the end of each work day, the accumulated items will be counted, photographed, entered into the UXO acquisition log, and stored in the magazine until the certification/verification process is completed. These activities will take place in the MPPEH processing area.

6.5 SOIL SCREENING

The soil and debris from the debris pits and the former Firing-range Berm will be processed through a screening plant. The screening plant is anticipated to be a Trommel equipped with a 6-inch grizzly and a rotating drum (approximately 6 feet in diameter and 25 feet long) fitted with ¾-inch screens. (A Trommel screening plant with 2 screen drums may be used if one can be located.) The ¾-inch screen size will prevent 20mm projectiles from passing through it. The excavated soil/debris will be processed as follows:

- Loaders will place the soil atop the feed hopper grizzly. All soil clumps and objects larger than 6 inches will drop off the back of the grizzly, while soil and debris smaller than 6 inches in size will drop into the feed hopper, where it will be transported, via a conveyor, to the Trommel.
- Soil and debris larger than ¾-inch will be transported out of one end of the Trommel drum. As shown in Figure 2-5, a conveyor will be placed there, which will move the material to a stockpile. A UXO technician will monitor the oversized materials on the conveyor for MPPEH items.
- Soil and objects smaller than ¾ inches (the “fines”) will pass through the Trommel screen and be carried by conveyor to another stockpile.

The UXO technician(s) monitoring the oversized materials from the Trommel as they travel down the conveyor will be stationed on an observation platform equipped with Lexan or plexi-glass shields and a “kill switch” to halt the screen plant if MEC/MPPEH items are observed. A quality control (QC) check of both the >6-inch and >¾-inch stockpiles will be performed and is discussed in Section 6.6. Figure 2-5 provides a drawing of the planned screening plant configuration.

A loader may be used to return soil clumps and other debris that do not break down in the Trommel to the feed hopper for reprocessing. Items that do not break down after several passes through the screen plant will be inspected with radiological instruments and metal detectors to determine if MEC/MPPEH or radiological items might be present inside the clumps. Those clumps that test positive for metal and/or radiation will be disassembled with armored EMM by cutting them into small segments with EMM buckets or crushing them with the tracks and/or buckets.

6.5.1 MEC and MPPEH

EZs will be established prior to operations in areas where an MGF has been identified and are discussed in Section 7.

MEC Procedures

If UXO technicians encounter a MEC item, excluding those classified as MPPEH during any step of the removal and screening process, they will direct that work be stopped and will notify the SUXOS. The SUXOS will then confirm the item’s identity and if the EZ must be expanded, will consult with NOSSA N54, and then direct that the EZ be adjusted accordingly. The SUXOS will also make required notifications (PjM, RPM, Resident Officer in Charge of Construction, Caretaker Site Manager, Alameda Police, etc.), and one of the Bay Area Explosive Ordnance Disposal (EOD) Detachments (U.S. Air Force at Travis, U.S. Army at Moffett) will be requested to respond. The contact information for the EOD Detachments is found in standard operating procedure (SOP)-1 (Attachment 1). While waiting for the EOD response, the SUXOS will

supervise the preparation of the site for their arrival by placing barricades on the road at the EZ boundaries, photographing the MEC item, recording pertinent information, etc. When EOD personnel arrive, the project UXO technicians will provide assistance as necessary.

Encountering MEC with a Greater Fragment Distance than the MGFDF or Contingency MGFDF

If, while executing a munitions response, a MEC item is encountered with a greater fragmentation distance than the selected MGFDF or a greater fragmentation distance than the contingency MGFDF, the SUXOS will direct the cessation of removal operations and contact the PjM and UXO coordinator. The PjM will notify the DON Remedial Project Manager (RPM) and direct the UXO coordinator to liaise with NOSSA N5 to request permission to proceed after an EZ appropriate to the MEC item found is put in place, and to submit an amended ESS.

Encountering MEC with Approved Contingency MGFDFs

If a MEC item with a greater fragmentation distance than the selected MGFDF is encountered, the arcs and distances for the contingency MGFDF will be installed and the PjM will: (1) select a new MGFDF with a fragmentation distance greater than the MEC encountered from the list of contingency MGFDFs in the ESS; (2) implement the increased protection required by the new MGFDF; and (3) notify NOSSA N54 of the change in MGFDF. If the newly encountered MEC has a MGFDF less than the contingency MGFDF, the PjM may submit a revised ESS to NOSSA N54. NOSSA shall provide the PjM with EZs specific to the new MGFDF following guidance found in Department of Defense Explosives Safety board (DDESB) Technical Paper 16 *Methodologies for Calculating Primary Fragment Characteristics* (DDESB, 2003). The change in the MGFDF will be documented in the After Action Report.

MEC Processing, Storage and Demilitarization.

The MPPEH Processing and Storage Location (Magazine M354) will be used for the certification and verification process, where each item will receive a dual inspection and receive an explosive safety designation of 5X and safe. Following the inspections, the required documentation will be completed and the items stored in a drum or other suitable container. 5X material will not be commingled with items that have not undergone the certification/verification process. These activities are planned to take place inside Magazine M354.

When the removal action is complete, and all recovered materials (primarily 20mm TP projectiles) will be demilitarized by cutting them into pieces. This will be accomplished inside Magazine M353 with a hydraulically operated re-enforcing bar cutter that can cut up to 10 projectiles at once. The cutter will be placed inside the magazine and a metal sheet will be installed between the cutter and the magazine door. The cutter will be remotely operated outside the magazine, behind the magazine wall. Each projectile will be cut into two or three pieces.

6.6 QUALITY ASSURANCE/QUALITY CONTROL

This section provides an overview of significant QC information as it applies to the ESS. Specific and detailed components of the quality assurance (QA)/QC program have been finalized in the Site-specific Contractor Quality Control (CQC) Plan. The information presented below has been approved for contractor MPPEH work at the site under the TCRA.

Contractor Organization

QC is conducted using a three-phase control process that consists of preparatory, initial, and follow-up inspections. These are performed to ensure that processes are in control and opportunities for improving processes are captured and implemented. The three-phase QC program is based on the three phases of contractor QC procedures. Each significant activity identified as a definable feature of work at the site undergoes the three-phase control process.

QC inspectors who have stop-work authority and are organizationally independent from the processes are assigned to conduct QC inspections. The project is supported by a Program QC Manager who will visit the site on a regular basis.

The contractor PjM, Site Superintendent, and SUXOS are all committed to ensuring that the QC process is maintained. This level of commitment is implicit in the job description and the individual qualifications for the position.

Quality Assurance/Quality Control Processes

Each component of site work has a built-in QC function to ensure that safe work practices are followed, the provisions of the established plans are adhered to, and collected data is accurate and defensible. Detailed QA/QC procedures are outlined in the CQC Plan and in SOP-1, MPPEH Removal (Attachment 1) for the phases of the project.

Lot Acceptance and Rejection Criteria

Three debris streams will emerge from the Trommel, specifically:

- Objects larger than 6 inches that will accumulate below the grizzly
- Objects larger than $\frac{3}{4}$ inches that will leave the Trommel at the end opposite the feed hopper
- Objects smaller than $\frac{3}{4}$ inches (fines) that will leave the Trommel via a conveyor emerging from the side of the Trommel

The fines should not contain MEC/MPPEH items because of the size of the Trommel screens. The other debris streams (“overs”) may contain MEC/MPPEH items of 20mm projectile size and larger. The conveyor carrying the smaller overs stream ($>\frac{3}{4}$ inch) will be monitored by UXO

technicians for MEC/MPPEH items. The $>3/4$ inch overs will agglomerate in a stockpile at the end of a conveyor, and the overs stream >6 inches will be form a stockpile at the base of the grizzly.

Both of the overs piles will be sampled for MEC items. Front-end loaders with 2-cubic-yard buckets and dump trucks with 20-cubic-yard boxes (10 buckets per truck) will be used to move the overs stockpiles. The unit of production for this sampling plan will be the bucket, and a number of these will make up a lot. A lot size of 40 buckets (4 dump trucks) is recommended for this project. This will provide a more economical level of rework if a sample fails inspection and the entire lot has to be re-screened.

When the overs stockpiles grow to approximately 20 cubic yards, they will be loaded into dump trucks, transported to the lay-down pad, and deposited there in separate stockpiles (>6 inches and $>3/4$ inches). When four dump truck loads have been added to each of the piles, they will be sampled for MEC/MPPEH. An armored front-end loader will remove 2 buckets (4 cubic yards, 10 percent of the accumulated soil and debris) from random locations in each stockpile and spread it in a 6-inch layer on the lay-down pad. QC inspectors will complete a QC lot inspection of the sample for radiological sources and MEC/MPPEH. If neither are found, the lot is accepted and the entire stockpile may be relocated from the lay-down pad to “clean” stockpiles. If a MEC/MPPEH item is found, the lot is rejected and the entire stockpile must be re-processed through the Trommel. If a radiological source is found, the lot is also rejected, and the entire stockpile must be placed in a 6-inch layer on the lay-down pad, manually surveyed with radiological instruments, and sampled again.

Instrument Functionality Tests

All-metal detectors will be used on this project. A test plot with both ferrous and non-ferrous items will be installed and will be used to ensure that the instruments are capable of detecting all the surrogate MEC/MPPEH items upon initial receipt of the instruments, and daily, before work activities commence. The results of every functionality test will be recorded in the project QC log.

Demilitarization Inspection

A count of the projectiles will be maintained as they are demilitarized and the UXO QC person will inspect 10 percent of the demilitarized projectiles in each lot. The lot size will be selected based on the cutter used, and will either be numerical (i.e., 500, 1000) or time-driven (i.e., 1 hour, 3 hours, etc.). If a projectile is found in a lot that is not demilitarized, or demilitarized incorrectly, the lot is rejected and will require a 100 percent inspection by the UXO QC.

7.0 QUANTITY/DISTANCE

Explosives Safety Quantity Distance (ESQD) arcs and EZs will be established for this project and are explained in the sections that follow.

7.1 MPPEH PROCESSING AREAS

Two barricaded undefined earth-covered magazines (ECMs) M353 and M354 are located in the magazine compound situated between IR Sites 1 and 2, and both magazines are currently empty. Previous authorization for use of Magazine M354 for the storage of UXO was granted by the Naval Ordnance Center in a letter (8020, Ser N7112/720) to the SSPTS on November 6, 1998, (see copy of the letter in Attachment 2) for the storage of 15,000 pounds NEW for C/D 1.1 explosives.

Magazine M354

It is requested that ECM M354 be site approved as a processing facility to manually inspect/certify and store 100 pounds net explosive weight (NEW) of C/D 1.1 and inert materials based on the following ESQD arcs: interline (IL) K18 distance for front of 84 feet, sides of 74 feet, and rear of 56 feet; public transportation route (PTR) distances for side and rear of 150 feet and front of 300 feet; and inhabited building distance (IBD) for side and rear of 250 feet and front of 500 feet. ESQD is met since M353 is separated from M354 by 522 feet, and meets K18 IL separation with no PTR or IBD encumbrances. The site approval request is provided in Attachment 3.

Magazine M353

It is requested that ECM M353 be site approved as a processing facility to remotely cut up to ten 20mm projectiles at a time using a rebar cutter. The MEC for this operation is based on ten 20mm M456A4 projectiles (0.03 pounds NEW of C/D 1.1 material per item) or 0.3 pounds NEW C/D 1.1 material based on the following ESQD arcs: IL K24 distances of 17 feet; PTR distance of 120 feet based on 60 percent of the hazardous fragment distance (HFD); and IBD of 200 feet based on the HFD. The following engineering designs will further mitigate the hazards associated with primary fragments due to an unintentional detonation during the cutting operation:

- The rebar cutter will be located inside ECM M353 with a 0.25-inch by 6-foot by 4-foot sheet of mild steel plate placed 2 feet from the cutter, between the cutter and the ECM door. The ECM and steel plate will contain the primary fragments.

ESQD is met since M353 is separated from M354 by 522 feet and meets K24 IL separation, and there are no PTR or IBD encumbrances. The remote controlled operating station will be located at least 17 feet from the magazine door. To facilitate an efficient operation, a total of 1,000 –

20mm projectiles or NEW of 30 pounds C/D 1.1 may be staged on the walkway between M353 and M354 provided the staging area is at least 17 feet from the entrance to M353. The site approval request is provided in Attachment 3.

Screening Plant

It is requested that a remote-controlled mechanized earth-screening facility, to be located within the footprint of the Munitions Response Site (MRS), be site approved for MEC based on one 20mm M456A4 projectile or 0.03 pounds NEW of C/D 1.1 material based on the following ESQD arcs: IL K24 distances of 8 feet; PTR distance of 120 feet based on 60 percent of the HFD; and IBD of 200 feet based on the HFD. Operators will be located at least 8 feet from the screen plant and be provided with 2.25 inches of Lexan or 1.25 inches plexiglass for protection from hazardous fragments (U.S. Army Engineering and Support Center [USAESC], 2006). ESQD is met since the screening plant is separated from the nearest potential explosion site by 222 feet and meets K24 IL separation, and there are no PTR or IBD encumbrances.

Temporary Collection Point

It is requested that a temporary storage/collection point, to be located within the footprint of the MRS, be site approved for MEC based on an accumulation of 1,000 – 20mm M456A4 projectiles or a NEW of 30 pounds of C/D 1.1 material based on the following ESQD arcs: IL K18 distances of 56 feet; PTR distance of 120 feet based on 60 percent of the HFD; and IBD of 200 feet based on the HFD.

7.2 MUNITIONS RESPONSE SITE (MRS)

The northern toe area of the former Firing-range Berm, the temporary collection point and the screen plant location is considered the MRS for this project and is shown in Figures 2-3 and 2-4. If needed (i.e., MEC or MPPEH is discovered), EZs will be established for the disposal trench site. Removal and screening actions will involve both manual and mechanized operations, and the EZs are based on the following MGFDS:

**TABLE 7-1
MUNITION BLAST AND FRAGMENT DISTANCES**

Munitions with Greatest Fragment Distance (MGFD)				Maximum Detonation		
Item	Net Explosive Weight (NEW) (pounds)	Hazardous Fragment Distance (HFD) (feet)	Maximum Fragment Distance (MFD)(feet)	K328 (feet)	K40 (feet)	K24 (feet)
40mm M406	0.071*	200*	345*	136	17	10
20mm M456A4	0.03*	200*	558*	102	13	8

Notes:

* Values from USAESC, 2006.

- 1) Unintentional detonation EZ for Team Separation Distance (TSD) for manual operations is K40 of the MGF. Use 13 feet for a 20mm and 17 feet for a 40mm projectile.
- 2) Unintentional detonation EZ for TSD for mechanized operations is the greater of HFD or K24 of the MGF. Use 200 feet for a 20mm or a 40mm projectile.
- 3) Unintentional detonation EZ for public and non-essential personnel for manual operations is the greater of K40 or HFD of the MGF. Use 200 feet for a 20mm or a 40mm projectile.
- 4) Unintentional detonation EZ for public and non-essential personnel for mechanized operations is identical to the intentional detonation EZ for public and all personnel of the MGF. Use 558 feet for a 20mm or a 40mm projectile.
- 5) Intentional detonation EZ for public and all personnel is the greater of K328 or MFD of the MGF. Use 558 feet for a 20mm or a 40mm projectile.
- 6) Mechanized equipment operators will be provided both blast overpressure protection separation distance based on K24 and shielding from hazardous fragments. Use 8 feet for a 20mm projectile and 10 feet for a 40mm projectile separation for blast overpressure, ensuring the operator in the cab is at least 8 feet or 10 feet from the point of excavation, or truck tailgate. Use 1.25 inches concrete, 0.25 inch mild steel, 2.25 inches Lexan or 1.25 inches plexiglass for fragment protection for 20mm or 40mm projectiles (USAESC, 2006).

7.3 PROTECTIVE AND ACCESS CONTROLS

The contractor will provide separation distance and shielding as required, establish EZs based on the process(es) being conducted, and ensure that related personnel, unrelated personnel, and the public are prohibited from entering those EZs. The north-south access gates and eastern fence line of IR Site 1 are all located beyond the EZ perimeter. These gates will remain locked while investigation/excavation work is being performed and a gated fence separates the main air station from the runway and tarmac areas. This gate also remains locked except for entering and exiting the tarmac areas. The EZs do not encumber a navigation channel; however, patrol boats will be deployed to prevent recreational boaters from entering the EZs if required.

8.0 OFF-SITE DISPOSAL

Military EOD personnel will respond for all MEC items encountered and either detonate them on site or transport them to their bases for later treatment. Recovered TP projectiles will be demilitarized by cutting them in half with a remotely operated cutter. Following that operation, the metal fragments will be placed in drums, sealed, and disposed of in an approved landfill. The forms and records used to document the certification/verification process, the demilitarization, and the chain of custody through to the disposal facility will be retained in the project files for no less than 3 years.

The excavated soil and debris from the former Firing-range Berm and debris pits will be processed through a screening plant to remove MPPEH items and then disposed of off-site.

9.0 ENVIRONMENTAL CONSIDERATIONS

The planned work activities on IR Site 1 will not adversely affect wildlife or plant species native to the sites. Critical habitat will not be removed or damaged. A brief description of wildlife and wetlands is provided below for each of the sites.

9.1 WILDLIFE AND PLANT SPECIES

The runway tarmac, located approximately ½ mile southeast of IR Site 1, provides an important nesting habitat for sensitive species such as the California least tern (*Sterna antillarum browni*). This area falls outside the boundaries established for IR Site 1, and will not be impacted by the any of the work planned for this project.

Grasses are the dominant vegetation for IR Site 1 and feral rabbits, black-tailed jackrabbits, Canada geese, and European starlings are the dominant animal species on these sites. No listed or sensitive species are identified as inhabiting the area within the boundaries of the sites.

Wildlife species that are federally listed as endangered or threatened could potentially occur on any of the sites, based on their presence at similar areas in Alameda County. These species include the winter-run chinook salmon, tidewater goby, California brown pelican, California clapper rail, western snowy plover, California least tern, American peregrine falcon, Steller sea lion, and salt marsh harvest mouse. None of these species are known to currently inhabit the site, and they should not be affected by planned activities. The open water area adjacent to IR Site 2 is a wintering area for migratory birds and provides a resting and feeding habitat for waterfowl during the winter. The work planned for IR Site 1 should not affect any of the migratory waterfowl or water birds found offshore.

9.2 WETLANDS PROTECTION

Seasonal wetlands exist on IR Site 1 but they are all located east of the road that crosses the site, where no work will occur. The Project Biologist will inspect the site prior to beginning vegetation clearance activities to ensure that this status has not changed. Personnel assigned to the project will be directed to remain outside the area east of the road.

9.3 WILDLIFE PROTECTION

Wildlife species most susceptible to project activities include shorebirds and small mammals. These species may be adversely affected by the mowing of existing vegetation to a 4-inch height. To minimize impacts to these species, no cutting will occur during the peak of the nesting season (April 1 – August 31). This project is planned to commence in February 2007, long after the 2006 nesting season has ended, and well before the 2007 season has begun.

To prevent direct impacts to any special-status species, an environmental survey will be conducted by a qualified wildlife biologist not more than 48 hours prior to the start of field activities to confirm that federally listed species are not residing within the limits of the project activity areas.

9.4 PLANT COMMUNITY PROTECTION

None of the plant species found within IR Site 1 are state or federally listed. Some vegetation will be mowed to a maximum height of 4 inches to facilitate the surface sweep, geophysical and radiological surveys, investigations, excavations, and other planned activities.

10.0 TECHNICAL SUPPORT

Two military EOD Detachments in the San Francisco Bay area are responsible for responding to off-base situations involving military munitions. They are the 77th Ordnance Company on the former NAS Moffett Field (650-603-8301) and the 60th Civil Engineering Squadron on Travis Air Force Base (707-424-2040). Both of these units have responded to other Bay Area project sites in the past and both have been contacted and made aware of the work that will take place on the Alameda Site.

MPPEH operations will be conducted by UXO technicians on TtEC's staff. All assigned UXO technicians surpass the minimum qualification standards identified in the DDESB Technical Paper 18 (DDESB, 2004) for personnel performing UXO-related operations (with the exception of DoD EOD personnel). Both the Project and the Site Geophysicists exceed the qualifications required in the U.S. Army Data Item Description OT-025 (U.S. Army Corps of Engineers, 1999).

There are no security forces on the former NAS Alameda. The Alameda Police Department is the primary law enforcement agency for the area and the Alameda Fire Station provides fire support. Both can be reached by calling 9-1-1.

High-security locks will be used to secure both of the magazines that will be used for this project, and the fenced compound the magazines are in will also be kept locked. A fence stretching from the Oakland inner harbor to the Alameda seaplane lagoon restricts access to the former air station and all of the gates along its length remain locked.

11.0 LAND USE RESTRICTIONS

There are no land use restrictions or other institutional controls placed on any of the property within IR Site 1.

12.0 PUBLIC INVOLVEMENT

Activities pertaining to community relations will be conducted to inform the public about the ongoing activities and to encourage involvement in the review of relevant documents and discussions regarding the proposed removal action.

12.1 PUBLIC INFORMATION

The ESS and other documentation associated with these activities will be contained in the administrative records for IR Site 1. The Administrative Record for Alameda Point is located at the Base Realignment and Closure Program Management Office West, 1455 Frazee Road, Suite 900, San Diego, California 92108-4310.

12.2 PUBLIC PARTICIPATION

The DON established a Restoration Advisory Board (RAB) for this base to encourage local participation in the hazardous waste cleanup program at former NAS Alameda. This board is a citizen-based committee representing local community interests. All meetings are advertised locally in an effort to encourage public attendance and participation. RAB meeting agendas, minutes, and presentation materials are included in the administrative record for public review. Attendance at the RAB meetings fluctuates as does their interest in the many projects in progress simultaneously on Alameda Point. There was public interest in the explosives safety aspects of the ERA and TCRA that occurred in 1998 and 2002, but interest has waned since then, the topic is seldom discussed, and has not appeared on a RAB agenda for the past several months.

13.0 REFERENCES

- Department of the Army. 2006. Letter correspondence. Subject: Safety Alert 01-06, 20mm Minimum Separation Distance (MSD) Change. November 28.
- Department of Defense Explosive Safety Board (DDESB). 2003. *Methodologies for Calculating Primary Fragment Characteristics*. Technical Paper No. 16, Revision 1. Alexandria, Va. December 1.
- DDESB. 2004. *Minimum Qualifications for Unexploded Ordnance (UXO) Technicians and Personnel*. Technical Paper 18. Alexandria, Va.
- Naval Ordnance Safety and Security Activity (NOSSA). 2004. *Military Munitions Response Program Oversight*. Indian Head, Md. March 8.
- Naval Sea Systems Command (NAVSEA). 2006. *Ammunition and Explosives Ashore; Safety Regulations for Handling, Storing, Production, Renovation and Shipping*. NAVSEA OP 5, Volume 1, Seventh Revision, Change 5. HQ NAVSEA, Washington Navy Yard, Washington, D.C. June 1.
- Supervisor of Shipbuilding, Conversion and Repair, Portsmouth (SSPORTS). 1998. *Unexploded Ordnance Removal Action, Installation Restoration Site 1, Alameda Point – Alameda, California, Summary Report*. Vallejo, California.
- Tetra Tech EC, Inc. (TtEC). 2007. *Final Action Memorandum, Installation Restoration Sites 1, 2, and 32, Alameda Point, Alameda, California*. January 31.
- U.S. Army Corps of Engineers. 1999. Data Item Description OT-025. August 25.
- U.S. Army Engineering and Support Center (USAESC). 2006. Fragmentation Data Review Form. Huntsville, Al. November 9.

FIGURES

DRAWING NO:
07032711.DWG

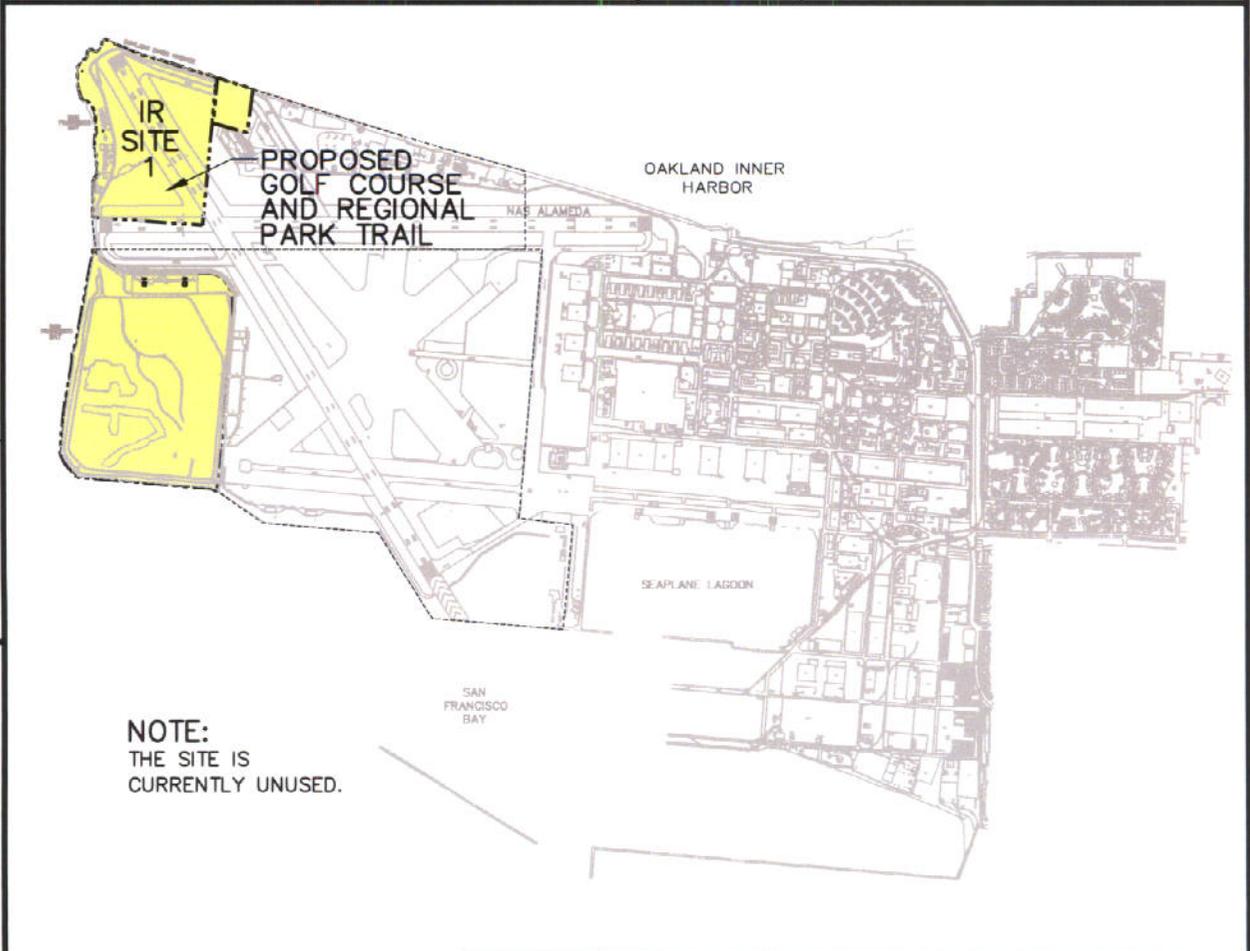
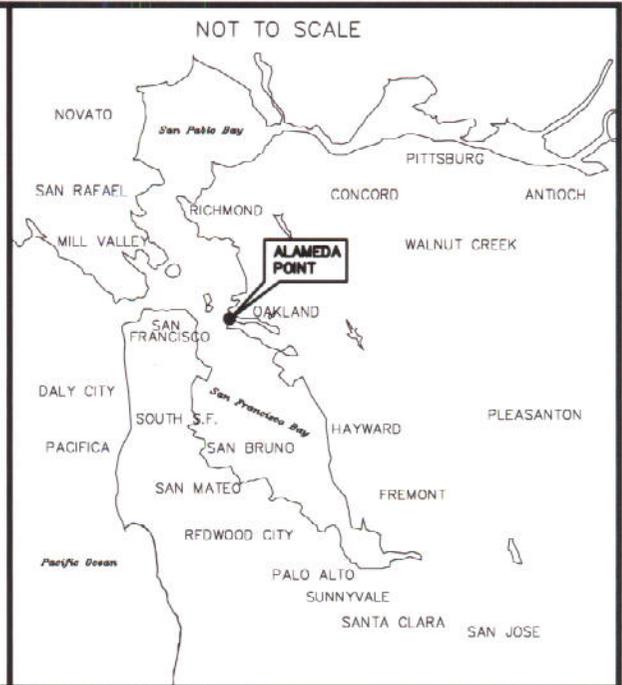
DCN: ECSD-RACIV-07-0327
CTO: #0015

APPROVED BY: AE

CHECKED BY: LH
REVISION: 0

DRAWN BY: MD
DATE: 02/07/07

P:\3210-RAC\0015\DWG\070327\07032711.DWG
PLOT/UPDATE: JAN 15 2007 16:57:13



NOTE:
THE SITE IS
CURRENTLY UNUSED.



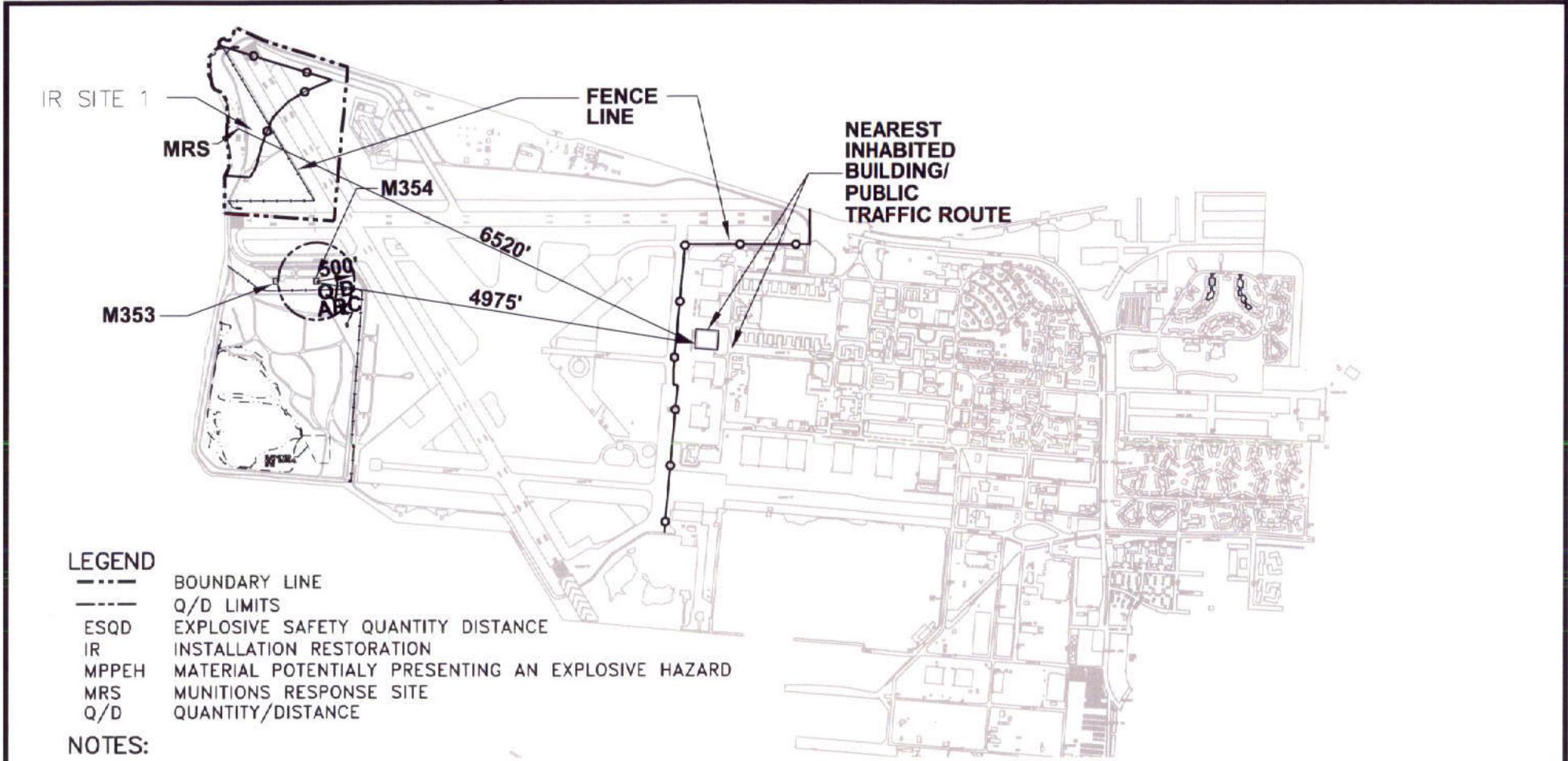
Figure 1-1
ALAMEDA POINT VICINITY MAP

IR SITE 32 AND THE SHORELINES OF IR SITES 1 AND 2
ALAMEDA POINT - ALAMEDA, CA



TETRA TECH EC, INC.

DRAWN BY: MD	CHECKED BY: LH	APPROVED BY: AE	DCN: ECSD-RACIV-07-0327	DRAWING NO:
DATE: 02/07/07	REV: REVISION 0	CTO: #0015	07032712.DWG	



LEGEND

- BOUNDARY LINE
- Q/D LIMITS
- ESQD EXPLOSIVE SAFETY QUANTITY DISTANCE
- IR INSTALLATION RESTORATION
- MPPEH MATERIAL POTENTIALLY PRESENTING AN EXPLOSIVE HAZARD
- MRS MUNITIONS RESPONSE SITE
- Q/D QUANTITY/DISTANCE

NOTES:

1. MAGAZINE M354 USED FOR MPPEH STORAGE.
2. MAGAZINE M353 USED FOR MPPEH PROCESSING.
3. MAGAZINE M354 ESQD SHOWN.

Figure 1-2
ALAMEDA POINT MUNITIONS RESPONSE SITE

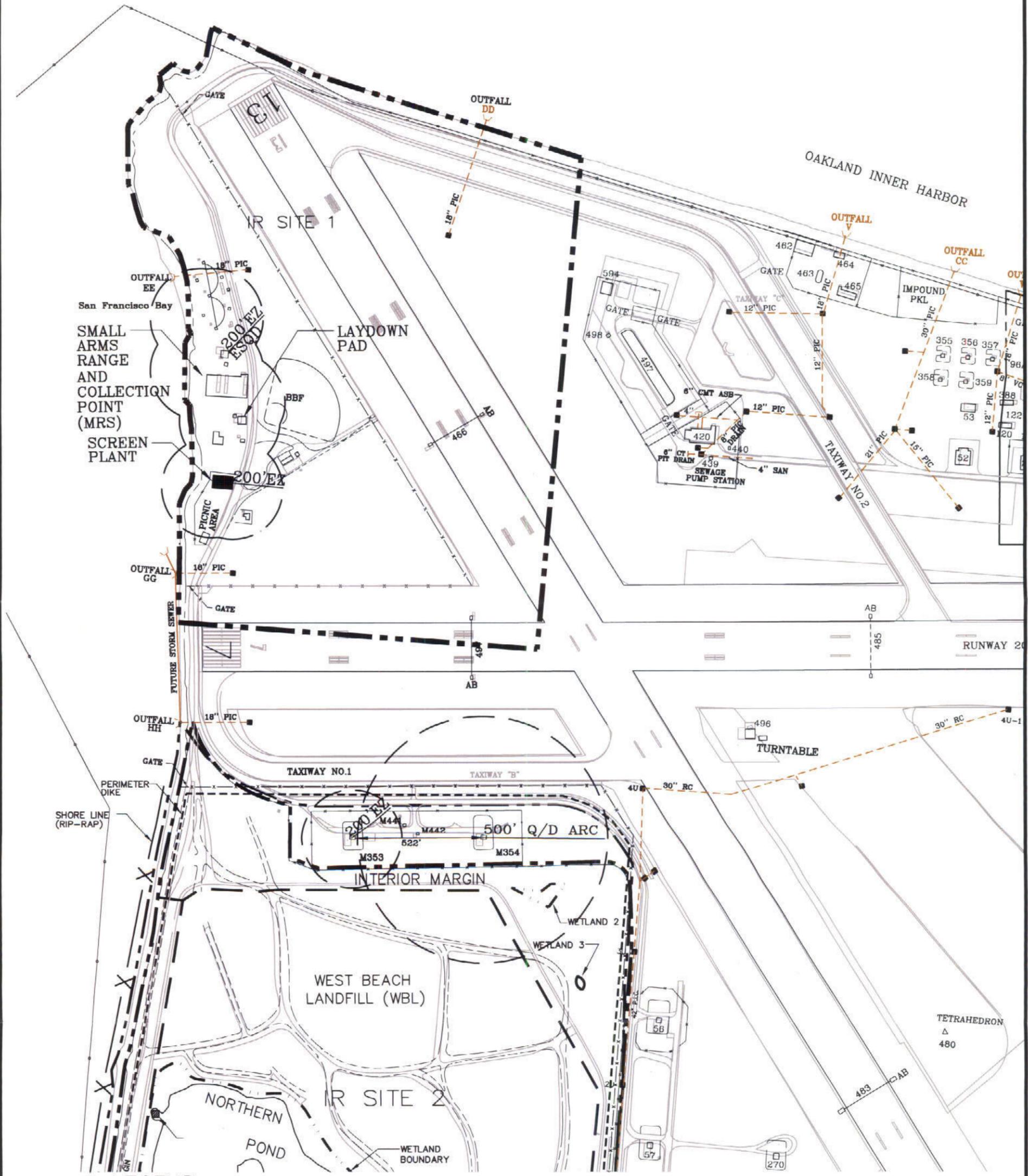
IR SITE 32 AND THE SHORELINES OF IR SITES 1 AND 2
 ALAMEDA POINT - ALAMEDA, CA



TETRA TECH EC, INC.

NOT TO SCALE

DRAWN BY: MD	CHECKED BY: LH	APPROVED BY: AE	DCN: ECSD-RACIV-07-0327	DRAWING NO:
DATE: 02/07/07	REV: REVISION 0		CTO: #0015	07032713.DWG



LEGEND

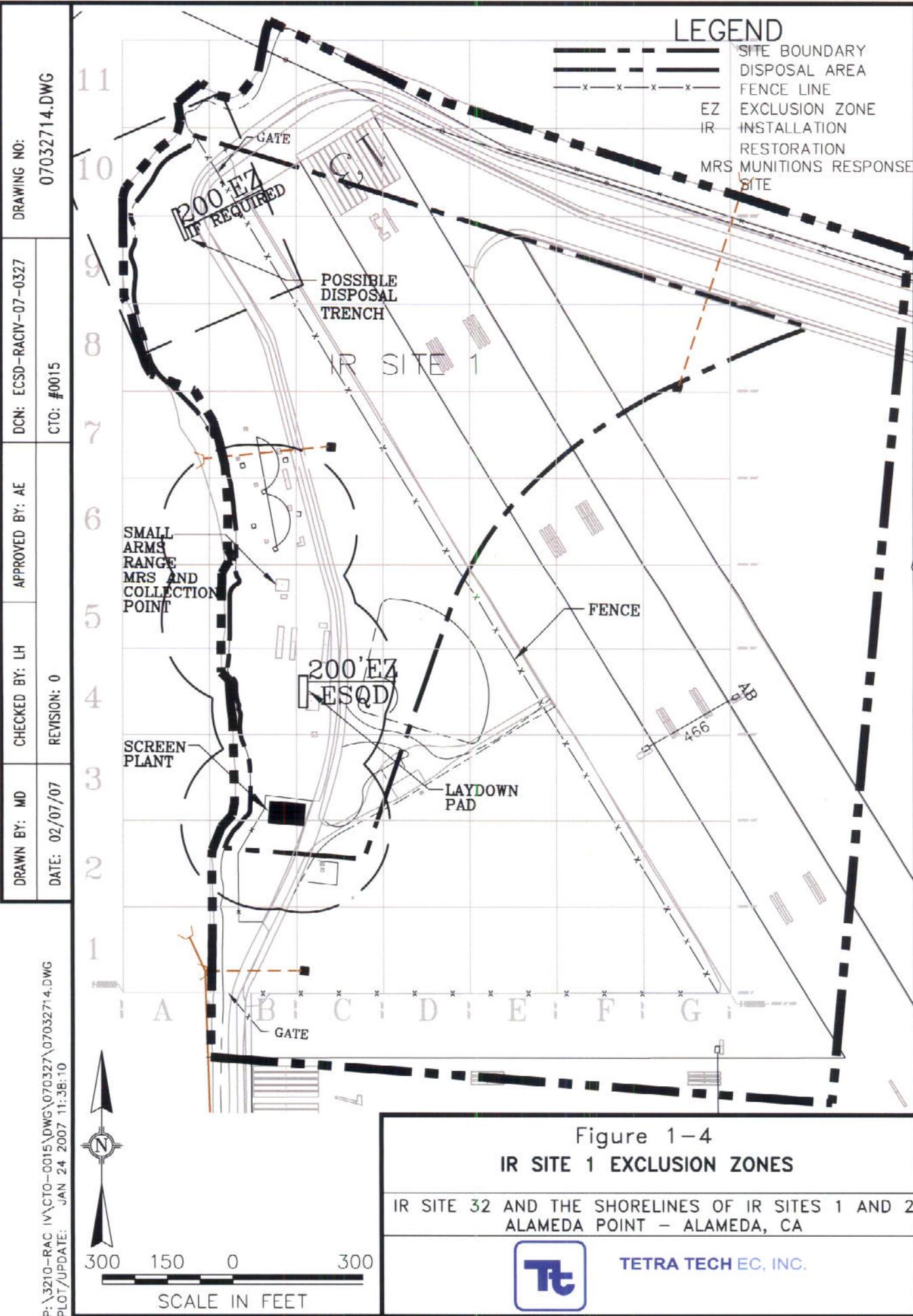
- SITE BOUNDARY
- x-x-x-x- FENCELINE
- Q/D ARC
- EZ EXCLUSION ZONE
- MRS MUNITIONS RESPONSE SITE
- Q/D QUANTITY/DISTANCE



Figure 1-3
QUANTITY/DISTANCE ARC

IR SITE 32 AND THE SHORELINES OF IR SITES 1 AND 2
ALAMEDA POINT - ALAMEDA, CA

TETRA TECH EC, INC.



DRAWING NO:
07032714.DWG

DCN: ECSD-RACIV-07-0327
CTO: #0015

APPROVED BY: AE

CHECKED BY: LH
REVISION: 0

DRAWN BY: MD
DATE: 02/07/07

P:\3210-RAC IV\CTO-0015\DWG\070327\07032714.DWG
PLOT/UPDATE: JAN 24 2007 11:38:10

LEGEND

- SITE BOUNDARY
- DISPOSAL AREA
- FENCE LINE
- EZ
- IR
- RESTORATION
- MRS
- MUNITIONS RESPONSE SITE

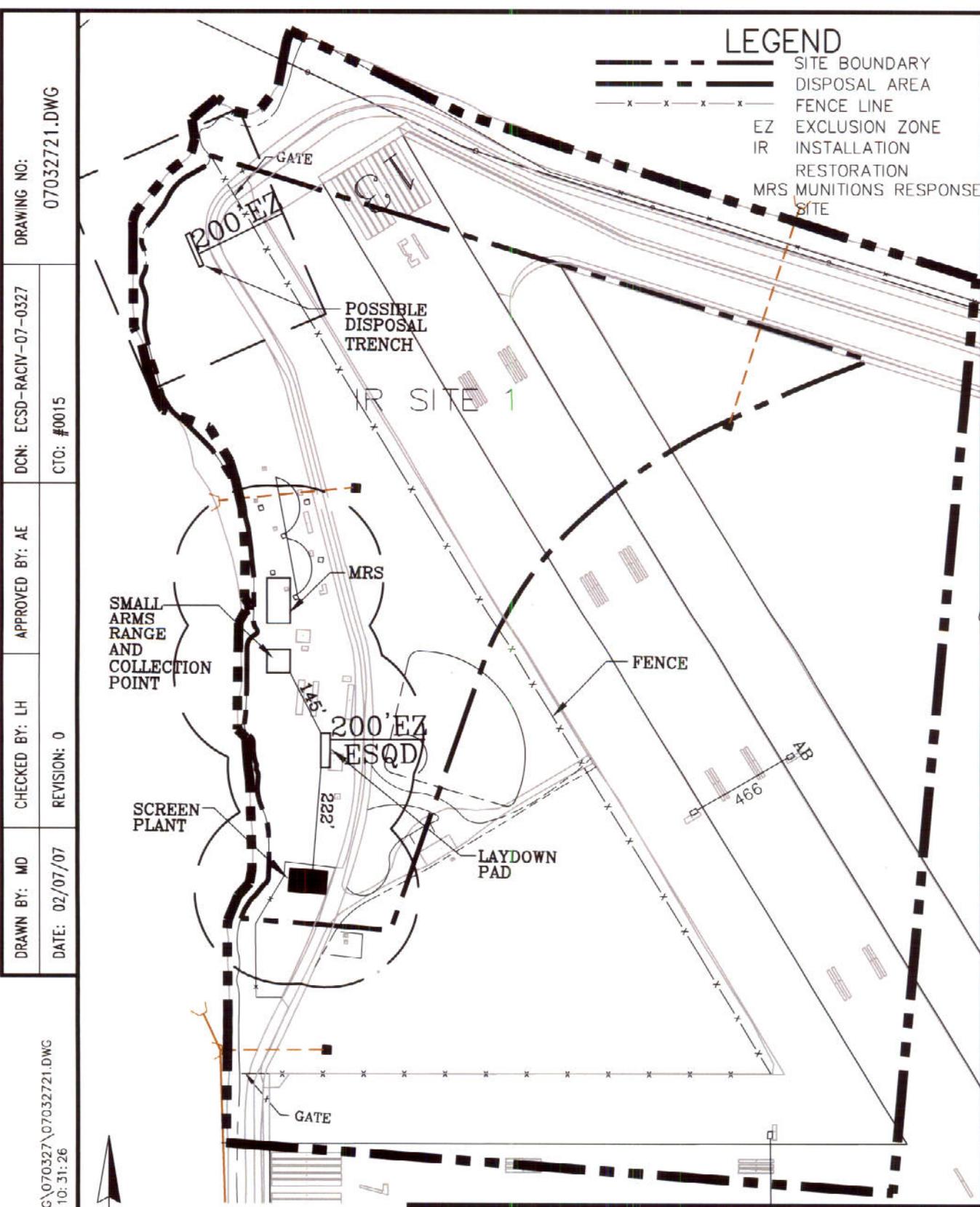
Figure 1-4
IR SITE 1 EXCLUSION ZONES

IR SITE 32 AND THE SHORELINES OF IR SITES 1 AND 2
ALAMEDA POINT - ALAMEDA, CA



TETRA TECH EC, INC.

300 150 0 300
SCALE IN FEET



DRAWING NO: 07032721.DWG
 DCN: ECSD-RACIV-07-0327
 CTO: #0015
 APPROVED BY: AE
 CHECKED BY: LH
 REVISION: 0
 DRAWN BY: MD
 DATE: 02/07/07

P:\3210-RAC-IV\CTO-0015\DWG\070327\07032721.DWG
 PLOT/UPDATE: JAN 22 2007 10:31:26

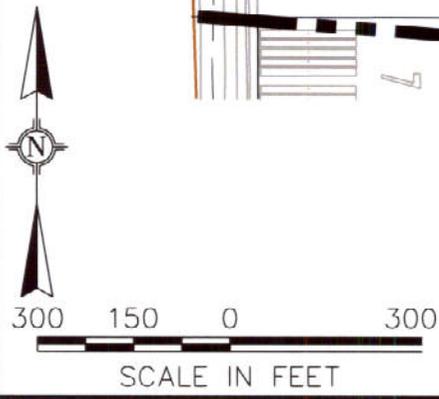
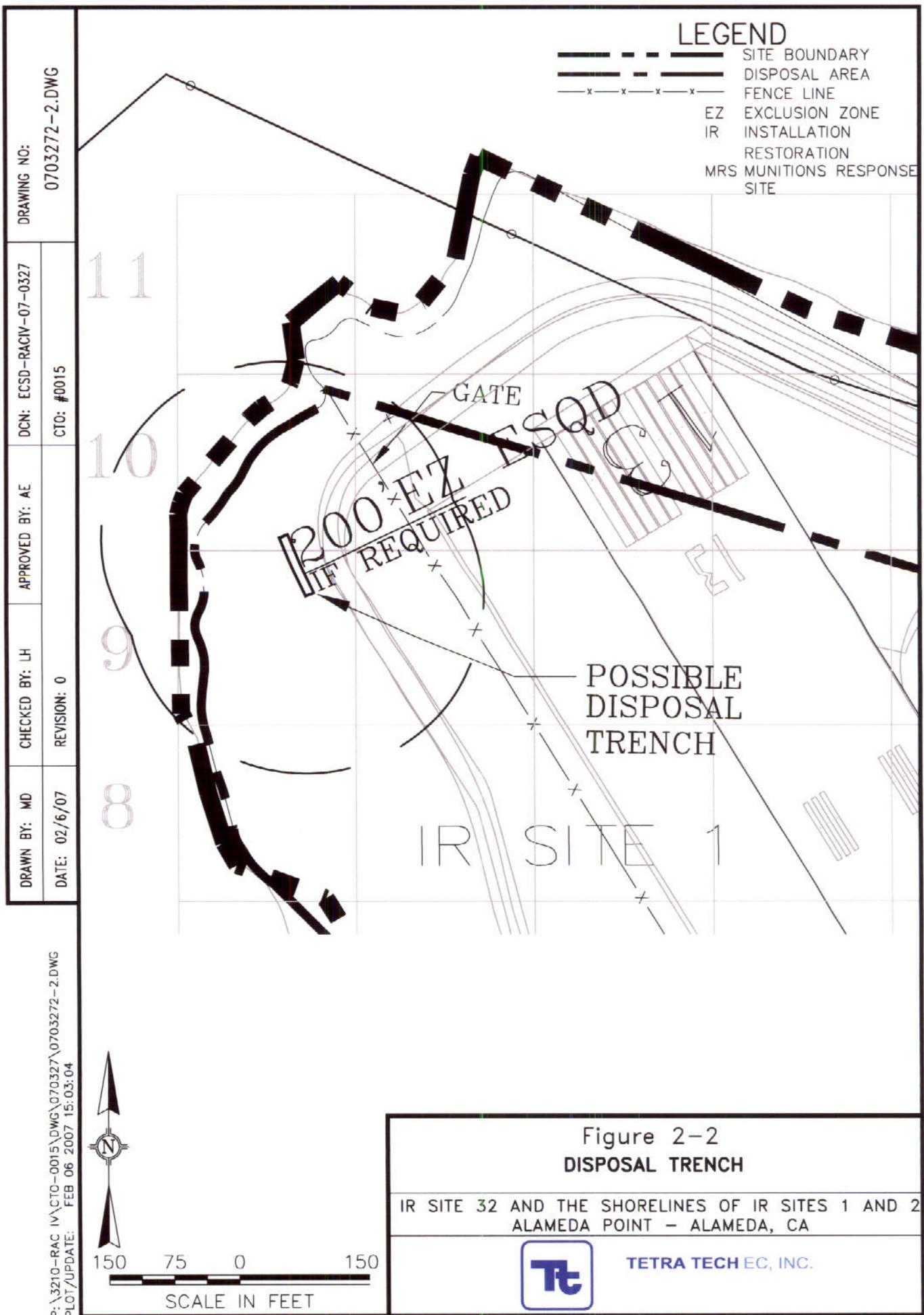


Figure 2-1
MRS CONFIGURATION
 IR SITE 32 AND THE SHORELINES OF IR SITES 1 AND 2
 ALAMEDA POINT - ALAMEDA, CA

 **TETRA TECH EC, INC.**



P:\3210-RAC\CTO-0015\DWG\070327\0703272-2.DWG
 PLOT/UPDATE: FEB 06 2007 15:03:04

DRAWING NO:
0703272-3.DWG

DCN: ECSD-RACIV-07-0327
CTO: #0015

APPROVED BY: AE

CHECKED BY: LH
REVISION: 0

DRAWN BY: MD
DATE: 02/6/07

P:\3210-RAC IV\CTO-0015\DWG\070327\0703272-3.DWG
PLOT/UPDATE: FEB 06 2007 15:00:28

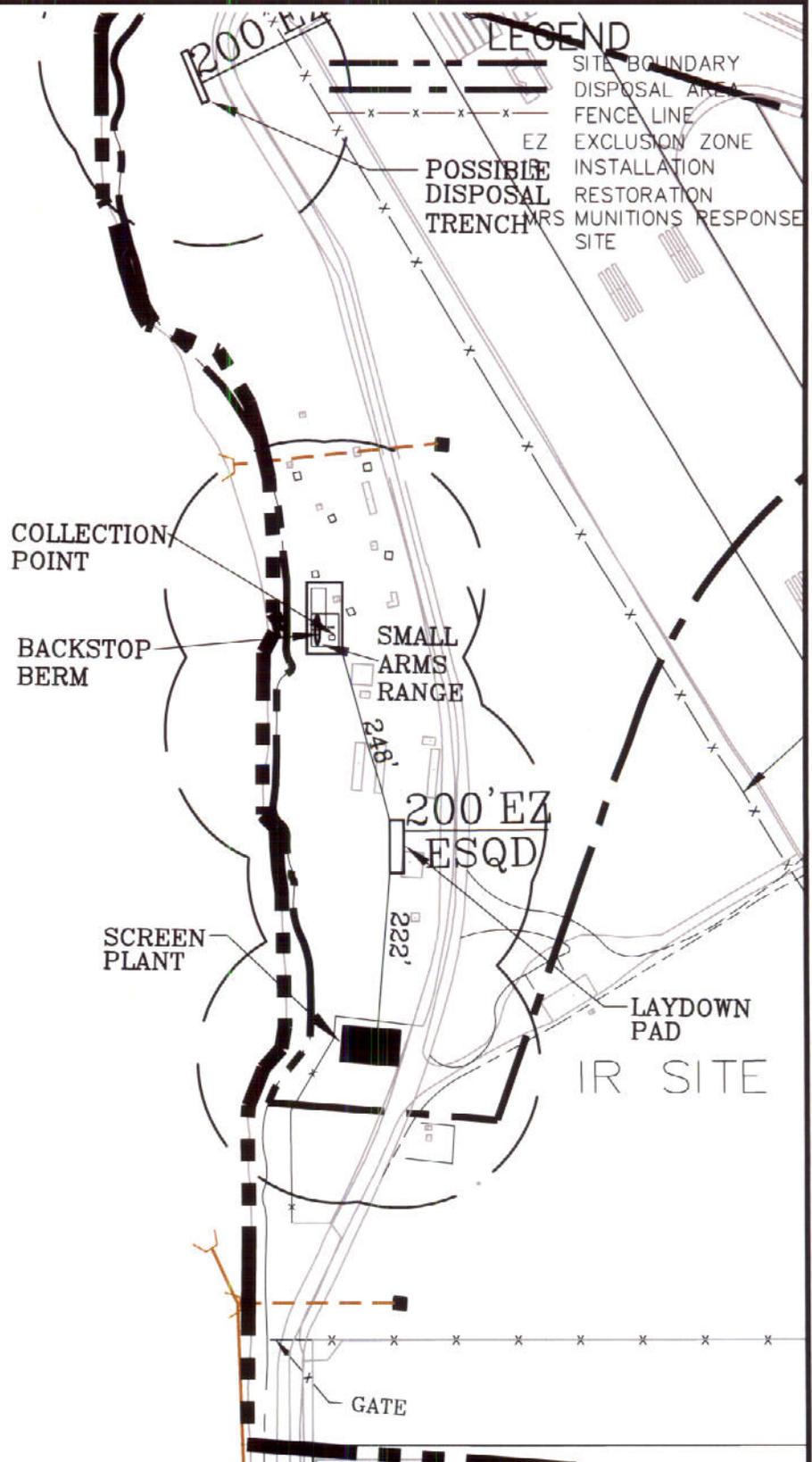


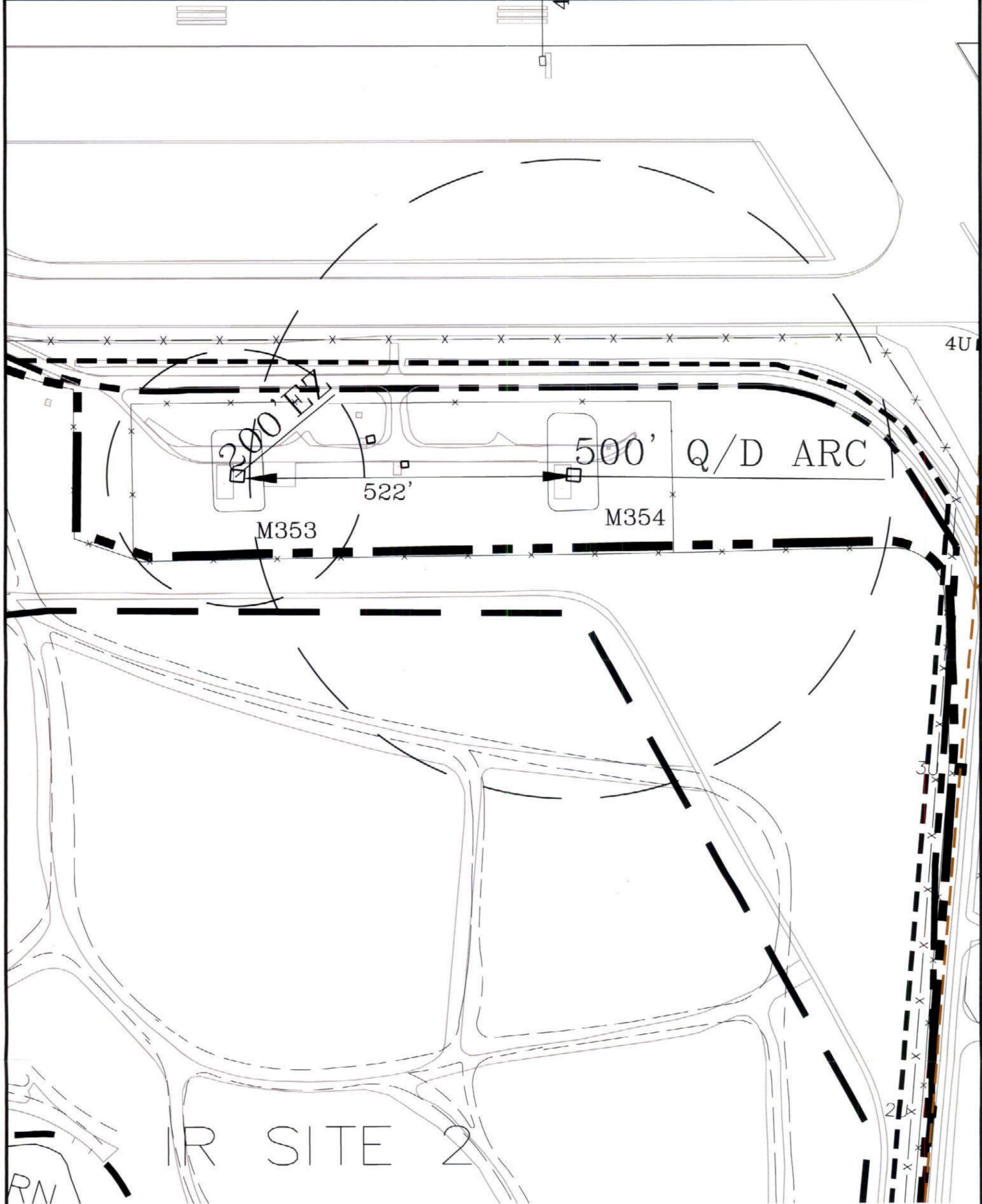
Figure 2-3
MRS SITE

IR SITE 32 AND THE SHORELINES OF IR SITES 1 AND 2
ALAMEDA POINT - ALAMEDA, CA

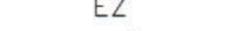


TETRA TECH EC, INC.

DRAWN BY: MD	CHECKED BY: LH	APPROVED BY: AE	DCN: ECS-D-RACIV-07-0327	DRAWING NO:
DATE: 02/07/07	REV: REVISION 0	CTO: #0015	0703272-4.DWG	



LEGEND

-  SITE BOUNDARY
-  FENCELINE
-  Q/D ARC
-  EZ
-  Q/D
- EXCLUSION ZONE
- QUANTITY/DISTANCE

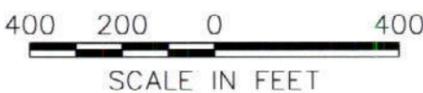


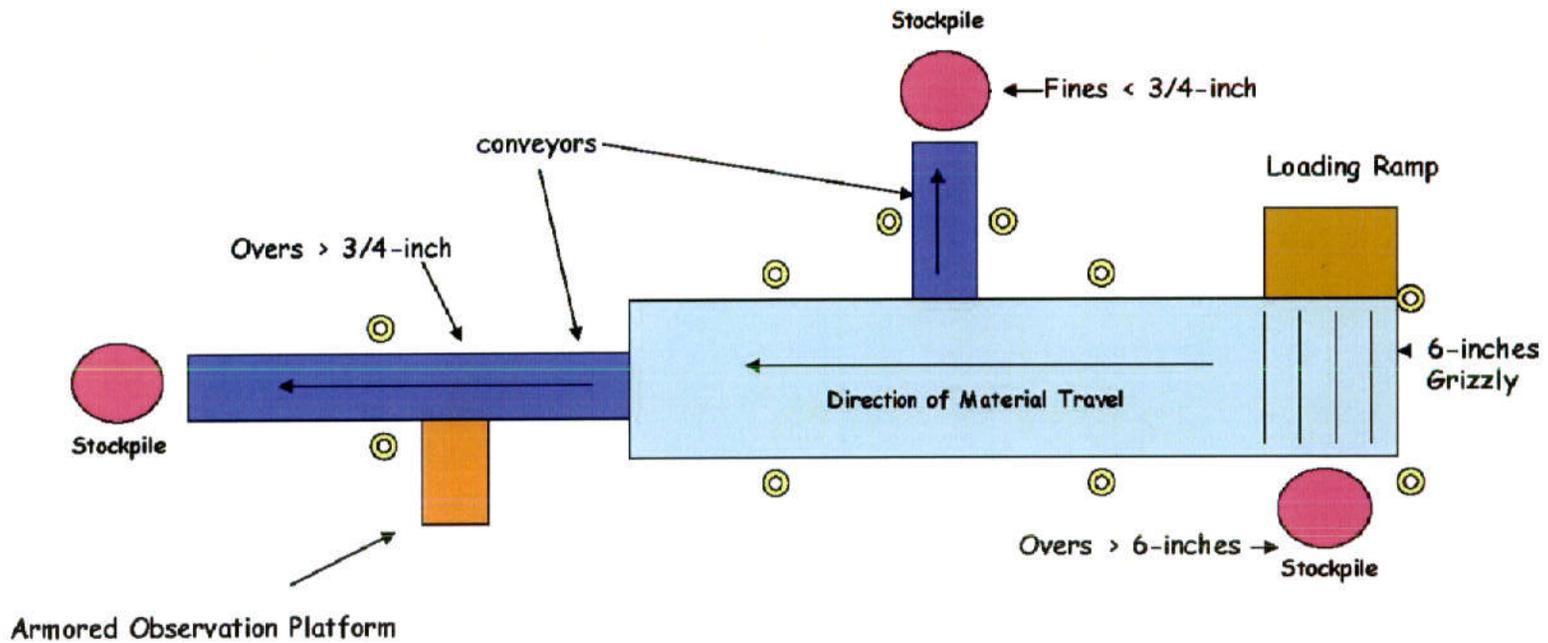
Figure 2-4
MAGAZINE COMPOUND

IR SITE 32 AND THE SHORELINES OF IR SITES 1 AND 2
 ALAMEDA POINT - ALAMEDA, CA



TETRA TECH EC, INC.

DRAWN BY: MD	CHECKED BY: LH	APPROVED BY: AE	DCN: ECSD-RACIV-07-0327	DRAWING NO: 07032725.DWG
DATE: 02/07/07	REV: REVISION 0	CTO: #0015		



⊙ = Kill Switches

NOT TO SCALE

Figure 2-5
PROPOSED SCREEN PLANT CONFIGURATION

IR SITE 32 AND THE SHORELINES OF IR SITES 1 AND 2
 ALAMEDA POINT - ALAMEDA, CA



TETRA TECH EC, INC.

ATTACHMENT 1

STANDARD OPERATING PROCEDURE

**SOP-1 MATERIAL POTENTIALLY PRESENTING
AN EXPLOSIVE HAZARD REMOVAL**

**Base Realignment and Closure
Program Management Office West
1455 Frazee Road, Suite 900
San Diego, California 92108-4310**

**CONTRACT No. N62473-06-D-2201
CTO No. 0015**

**FINAL
STANDARD OPERATING PROCEDURE SOP-1
MATERIAL POTENTIALLY PRESENTING
AN EXPLOSIVE HAZARD REMOVAL**

February 7, 2007

**INSTALLATION RESTORATION SITE 1
FORMER NAVAL AIR STATION ALAMEDA
ALAMEDA POINT, ALAMEDA, CALIFORNIA**

DCN: ECSD-RACIV-07-0327



**TETRA TECH EC, INC
1230 Columbia Street, Suite 750
San Diego, CA 92101-8536**

A handwritten signature in black ink, appearing to read 'Abram Eloskof', written over a horizontal line.

**Abram Eloskof, P.E.
Project Manager**

TABLE OF CONTENTS

	<u>PAGE</u>
LIST OF TABLES.....	iii
ATTACHMENTS.....	iii
1.0 PURPOSE.....	1-1
2.0 SCOPE.....	2-1
3.0 PERSONNEL REQUIREMENTS.....	3-1
3.1 PERSONNEL RESPONSIBILITIES.....	3-1
3.1.1 Site Superintendent.....	3-1
3.1.2 Senior UXO Supervisor.....	3-1
3.1.3 Site Health and Safety Specialist/Quality Control Representative.....	3-1
3.1.4 UXO Technician.....	3-2
3.2 MINIMUM QUALIFICATION STANDARDS.....	3-2
3.3 TRAINING REQUIREMENTS.....	3-2
4.0 MEC/MPPEH.....	4-1
4.1 MEC/MPPEH EXPLOSIVE SAFETY STATUS.....	4-1
4.2 MEC/MPPEH CONTAMINATION.....	4-1
4.3 MEC/MPPEH PROCESSING.....	4-2
4.4 MEC/MPPEH STORAGE.....	4-2
4.5 CHAIN OF CUSTODY.....	4-3
4.6 MEC/MPPEH CERTIFICATION METHODS AND REQUIREMENTS.....	4-3
4.7 MUNITION WITH THE GREATEST FRAGMENTATION DISTANCE (MGFD).....	4-5
5.0 OPERATIONAL CONSIDERATIONS.....	5-1
5.1 NOTIFICATION, SCHEDULING, AND COORDINATION.....	5-1
5.2 EQUIPMENT/MATERIAL REQUIREMENTS.....	5-2
5.3 MEC EMERGENCY RESPONSE.....	5-2
5.4 ENGINEERING CONTROLS.....	5-3
5.5 CONTINGENCY PLAN FOR LARGE MEC.....	5-3
5.6 HANDLING, TRANSPORTATION, AND STORAGE.....	5-3
5.6.1 Explosive Transport Vehicle.....	5-3
5.6.2 Packaging for Transport.....	5-4
5.6.3 MPPEH Storage and Processing.....	5-4
5.6.4 Inventory.....	5-4
5.7 DEMILITARIZATION.....	5-4
5.8 COMMUNICATIONS.....	5-5
5.9 FIRE FIGHTING AND SUPPORT.....	5-5

TABLE OF CONTENTS
(Continued)

5.10 EMERGENCY MEDICAL SUPPORT5-6

5.11 PERSONAL PROTECTIVE EQUIPMENT.....5-6

5.12 RECORDKEEPING5-6

5.13 TWO-MAN RULE.....5-6

6.0 REMOVAL PROCESS.....6-1

6.1 QUANTITY DISTANCE AND EXCLUSION ZONE6-1

6.2 MEC/MPPEH SURFACE SEARCH/SURVEY6-1

6.3 GEOPHYSICAL SURVEY6-2

6.4 REMOVAL ACTION/EXCAVATION.....6-3

6.4.1 Removal Action Methodology.....6-3

6.4.2 Disposal Trench6-4

6.4.3 Burial Pits.....6-5

6.4.4 Former Firing-Range Berm.....6-5

6.4.5 Screening.....6-6

7.0 QUALITY CONTROL7-1

7.1 SEARCH EFFECTIVENESS PROBABILITY (SEP) TEST7-1

7.2 EQUIPMENT FUNCTIONALITY.....7-1

7.3 DAILY QC.....7-1

8.0 GENERAL SAFETY PRECAUTIONS8-1

9.0 REFERENCES.....9-1

LIST OF TABLES

Table 6-1 Authorized Blast Shield Construction Materials and Thickness

ATTACHMENTS

Attachment 1 Field Supervisor Review Sheet
Attachment 2 Field Team Review Sheet
Attachment 3 MPPEH *Safe* – 5X and Demilitarization Certification/Verification Manifest
Attachment 4 MPPEH *Hazardous* – 3X/1X Manifest
Attachment 5 Daily Equipment Checklist
Attachment 6 Daily Health and Safety Equipment Checklist
Attachment 7 UXO Acquisition and Accountability Log
Attachment 8 Ordnance Accountability Inventory

ABBREVIATIONS AND ACRONYMS

AHA	activity hazard analysis
A&E	ammunition and explosives
AFB	Air Force Base
BIP	blow in place
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CRL	corporate reference library
DDESB	Department of Defense Explosives Safety Board
DGPS	differential global positioning system
DMM	discarded military munitions
DoD	Department of Defense
DON	Department of the Navy
ECM	Environmental Compliance Manager
EMM	earthmoving machinery
EOD	explosive ordnance disposal
ESS	explosives safety submission
EZ	exclusion zone
HE	high explosive
HERO	Hazards of Electromagnetic Radiation to Ordnance
IR	Installation Restoration
MC	munitions constituents
MEC	munitions and explosives of concern
MGFD	munition with the greatest fragmentation distance
MPPEH	material potentially presenting an explosive hazard
MRS	munitions response site
NAS	Naval Air Station
NEW	net explosive weight
NAVSEA	Naval Sea Systems Command
NOSSA	Naval Ordnance Safety and Security Activity
OU	Operable Unit
PES	potential explosion site
PjM	Project Manager

ABBREVIATIONS AND ACRONYMS

(Continued)

PPE	personal protective equipment
QA	quality assurance
QC	quality control
RCT	Radiological Control Technician
RPM	Remedial Project Manager
SHSP	Site Health and Safety Plan
SHSS	Site Health and Safety Specialist
SOP	Standard Operating Procedure
SUXOS	Senior UXO Supervisor
TCRA	Time-Critical Removal Action
TDEM	time domain electromagnetic
TtEC	Tetra Tech EC, Inc.
USAF	United States Air Force
UXO	unexploded ordnance

1.0 PURPOSE

The purpose of this standard operating procedure (SOP) is to establish procedures for the recovery, processing, and disposition of recovered munitions and explosives of concern (MEC)/material potentially presenting an explosive hazard (MEC/MPPEH) in support of the Time-Critical Removal Action (TCRA) at Installation Restoration (IR) Site 1, Operable Unit 3 (OU-3) of former Naval Air Station (NAS) Alameda, Alameda Point, Alameda, California, by Tetra Tech EC, Inc (TtEC). Figure 1-1 shows the location of Alameda Point in the State of California, and Figure 1-2 shows the location of IR Site 1 on Alameda Point.

Directives governing the processing of MEC/MPPEH require an approved SOP. This SOP is meant to meet that requirement, and is being submitted as an attachment to the Explosives Safety Submission (ESS) that was developed specifically for this project. All of the figures referenced in this document are found in the ESS.

The MEC/MPPEH recovery will be conducted in conjunction with the removal of radiological point sources. The primary consideration of this SOP is the protection of human health and the environment.

2.0 SCOPE

This procedure will be implemented by TtEC staff and subcontractor personnel when conducting geophysical surveying and MEC/MPPEH recovery activities. The work will consist primarily of the following components:

- Mobilization
- Establishing a 200-foot exclusion zone (EZ)
- Conducting a pre-vegetation cutting surface MEC/MPPEH survey
- Providing Unexploded Ordnance (UXO) support to laborers or equipment operators cutting vegetation
- Completing a post-vegetation cutting surface MEC/MPPEH survey
- Completing a geophysical survey of the northwestern portion of IR Site 1
- Excavating burial pits, debris fields, and disposal trenches suspected to contain MEC/MPPEH or radiological sources
- Removing the former Firing-range Berm
- Completing a geophysical survey of previously identified radiological hot spots
- Restoring the site
- Demobilization

Radiological and general construction procedures are found in the project Work Plan (TtEC, 2007a).

3.0 PERSONNEL REQUIREMENTS

All personnel involved in MEC/MPPEH removal operations will become familiar with, and follow the procedures outlined in this SOP and applicable references.

This project will use a minimum of four UXO technicians; a Senior UXO Supervisor (SUXOS), a Site Health and Safety Specialist/Quality Control Representative (SHSS/QC), and two UXO technicians. The UXO staff may be increased, if required.

3.1 PERSONNEL RESPONSIBILITIES

The personnel that will be assigned to work on this TCRA will each have responsibilities that will contribute to the successful attainment of project goals. The responsibilities of these individuals are discussed as follows:

3.1.1 Site Superintendent

TtEC's Site Superintendent is ultimately responsible for the on-site health and safety of TtEC personnel working on this project. The Site Superintendent, with the support of TtEC's SHSS, is responsible for implementation of the Work Plan, Site Health and Safety Plan (SHSP), and all on-site activities on a daily basis. Other responsibilities include, but are not limited to: (1) project planning, (2) scheduling, (3) site documentation, (4) regulatory compliance, (5) personnel assignments, (6) customer and subcontractor relations, (7) enforcing health and safety rules and SHSP requirements, and (8) conducting routine safety inspections and incident investigations. The Site Superintendent reports directly to the Project Manager (PjM).

3.1.2 Senior UXO Supervisor

For this project, The SUXOS may act as the Site Superintendent. He assists in the development of site-specific work plans, identifies personnel and equipment requirements, and directly supervises all daily activities of the field team. The SUXOS is responsible for the successful performance of the field team, the early detection and identification of potential problem areas, and instituting corrective measures. The SUXOS is also responsible for the execution of instructions received from the TtEC PjM and the Department of the Navy (DON) Remedial Project Manager (RPM), documenting site conditions, photographing MEC/MPPEH, preparing project progress reports, and identifying efforts required to accomplish the scope of work. The SUXOS is responsible for all aspects of explosive safety.

3.1.3 Site Health and Safety Specialist/Quality Control Representative

The SHSS/QC representative is UXO-qualified and is responsible for implementing the SHSP, on-site training requirements, and recommending changes to the level of personal protective

equipment (PPE) to the Certified Industrial Hygienist (CIH) as site conditions warrant. The SHSS/QC representative has Stop Work authority for safety conditions. The SHSS/QC representative evaluates and analyzes any potential safety problems, implements safety-related corrective actions, and maintains a daily safety log. The SHSS/QC representative is also responsible for the implementation of the *Project Contractor Quality Control Plan* (TtEC, 2007b).

3.1.4 UXO Technician

The UXO technician performs on-site duties including locating MEC/MPPEH, equipment operation, UXO safety, excavation, and escort duties as required. The UXO technician reports to the SUXOS.

3.2 MINIMUM QUALIFICATION STANDARDS

Department of Defense Explosives Safety Board (DDESB) Technical Paper 18 (DDESB, 2004) provides the minimum qualification standards for personnel conducting UXO-related operations. Such operations include, but are not limited to munitions responses, range clearance activities, and/or the inspection or certification of munitions debris being considered for transfer or release from Department of Defense (DoD) control. The requirements apply to all workers performing DoD operations requiring UXO technicians or UXO-qualified personnel.

The specific UXO-related position titles, tasks, duties, and responsibilities are listed in Technical Paper 18 (DDESB, 2004). The TtEC UXO Operations Manager will ensure that UXO personnel assigned to this project meet the minimum qualification standards for their assigned positions and are capable of performing the duties and responsibilities of those positions as required by Technical Paper 18 (DDESB, 2004). When assigned, the project SUXOS will review the training and qualification records of UXO personnel detailed to support the MEC/MPPEH activities on the site.

3.3 TRAINING REQUIREMENTS

All personnel assigned to the site investigation will attend a site-specific orientation. The purpose of this orientation will be to review site-specific and emergency response procedures. Orientation attendance sheets with an attached training schedule will be used to document completion of each orientation session. The topics to be covered during the orientation are provided as follows:

- Introduction
- Operation overview
- SHSP review
- Work Plan review
- SOP review

- ESS review
- Safety precautions
- Equipment training
- Quality assurance (QA)/QC training
- Emergency procedures
- Emergency response equipment review
- Talk/walk through of emergency procedures
- Emergency drill

All personnel assigned to the project are responsible for reading and understanding the Work Plan. After reading the Work Plan, the Site Supervisor/SUXOS will sign and date the Field Supervisor Review Sheet found in Attachment 1 and all other site personnel will sign and date the Field Team Review Sheet found in Attachment 2. These sheets will be kept in the project files.

4.0 MEC/MPPEH

Relatively new changes to policy governing munitions and munitions-related materials engendered new requirements for handling practice or inert ordnance, as well as scrap or debris generated from the use of munitions. MEC/MPPEH is material either known to present an explosive hazard, or NOT known with certainty to present an explosion hazard, but may contain hidden explosive material, or minor amounts of explosive material. MEC/MPPEH must be assumed to present an explosion hazard until it is visually inspected and/or processed, and certified *safe*.

Live ordnance that has functioned as designed, and unexploded ordnance detonated during clearance or cleanup operations result in a variety of MEC/MPPEH, and require inspection, certification, and disposition. Examples of MEC/MPPEH found on Alameda Point include cartridge casings, small arms rounds, expended shotgun shells, and 20mm projectiles, both live (high explosive [HE]-filled) and inert.

4.1 MEC/MPPEH EXPLOSIVE SAFETY STATUS

Safe means certified as not presenting an explosion hazard and safe for transfer or release pending the completion of demilitarization requirements. *Hazardous* means certified as known or suspected to present an explosion hazard. The term *safe* is not necessarily the same as “safed,” “safe to ship,” “inert” or “inerted.”

4.2 MEC/MPPEH CONTAMINATION

MPPEH explosive contamination falls into one of four categories: 5X, 3X, 1X, and 0X. This terminology is meant to be used in correspondence and documentation to indicate the degree of explosive hazard. Processes and procedures to attain these levels are determined locally. The definitions of these categories are provided as follows:

- **Category 5X.** Items have been completely decontaminated, are entirely safe, and may be released for general use when certain provisions (demilitarization) are met. Items can only be classified 5X by visual inspection when every surface is visible and is capable of being inspected. Visual inspection is only applicable to pieces of metal that have no holes, cavities, blind spaces or other obscured features, and probes are NOT used to inspect any blind cavities. The most effective way to ensure that material is 5X is through thermal or chemical processing. Category 5X items are not MPPEH, and have an explosive safety status of *safe*.
- **Category 3X.** Items have been visually examined and no contamination can be visually noted on accessible surfaces or in concealed housings. 3X items are expected to be free of explosives/energetic material, but not enough information is available to

certify them as safe because of inaccessible cavities, or because the items have not been 100 percent inspected, or because the certification process is not complete. When there is the slightest doubt concerning the presence of explosive material, the material shall be subjected to whatever treatment is necessary to ensure that it has an explosives safety status as safe before it is released from government control. 3X items may be treated in a variety of methods with written approval of operating procedures. 3X items are MPPEH, and have an explosive safety status of “hazardous.”

- **Category 1X.** Items are contaminated or partially decontaminated and are likely to present an explosion hazard. 1X items differ from 3X items in that it is thought 1X items are LIKELY to present an explosion hazard, while 3X materials are NOT expected to present an explosion hazard. 1X items are MEC, and have an explosive safety status of *hazardous*. Items that are certified as 1X are designated as MEC in the form of UXO, discarded military munitions (DMM), or munitions constituents (MC).
- **Category 0X.** Articles, equipment or buildings were never contaminated and do not pose an explosion hazard. 0X material is not MPPEH, and has an explosive safety status of *safe*.

4.3 MEC/MPPEH PROCESSING

MEC/MPPEH processing includes any action or operation involving MPPEH, including (but not limited to): collecting, consolidating, sorting, segregating, separating (by metal type), inspecting, storing, decontaminating, transferring, demilitarizing, and transporting. MEC/MPPEH processing is considered to be an operation involving ammunition and explosives (A&E) handling until the material is certified as *safe*. Locations used to process MPPEH must be designated as potential explosion sites (PES), they must have site approval, and they must meet established requirements for, and be designated as a “Restricted Area.” Processing MPPEH requires an approved SOP. These requirements are addressed in the ESS . The area designated for MPPEH processing is magazine M353.

4.4 MEC/MPPEH STORAGE

Storage of MPPEH is considered A&E storage, until the material is certified *safe* (5X). MEC/MPPEH must be stored in approved storage facilities (magazines) that must have site approval and must be designated as PES and “Restricted Areas”, when MPPEH has not been certified, or has been certified *hazardous*. Magazine M354 will be used to store MPPEH.

MPPEH will be stored in suitable containers on pallets in the magazine. The containers will be clearly marked as to their explosive safety status and explosive contamination category.

4.5 CHAIN OF CUSTODY

Documentation is the key to safe management of MPPEH, and allows certification, chain of custody, and explosive safety status to be tracked and known at all times. To maintain the chain of custody, the following categories of materials will not be commingled:

- MPPEH awaiting documentation of its explosive safety status (3X)
- Materials that have been certified *safe*
- Materials that have been certified *hazardous*
- 5X and 3X material

Should commingling occur, the material certified *safe* will lose its *safe* certification. To prevent commingling, a combination of controls, storage locations, gates, barriers, containers or other locally determined methods included in approved, written operating procedures will be used. Materials certified *safe* must be segregated in a location with controlled access, preferably a locked facility. Magazine M354 will be used to store 3X MPPEH while Magazine M353 will be used to process (and demilitarize) MPPEH.

4.6 MEC/MPPEH CERTIFICATION METHODS AND REQUIREMENTS

Certification as *safe* by visual inspection requires a 100 percent examination by one qualified individual, followed by an independent 100 percent re-inspection by another. This will be accomplished during the course of the project by immediately completing the certification/verification process as MEC/MPPEH items are encountered, if that effort is practical. If large quantities of MEC/MPPEH are found, time constraints may prevent the immediate certification/verification.

The SUXOS will delegate a project UXO technician as the MPPEH Certification Inspector. That individual will conduct a 100 percent visual inspection of the item(s), complete the “General” section of the *MPPEH Safe – 5X and Demilitarization Certification/Verification Manifest*, and sign and date the “TtEC UXO Technician Inspector Certification” block on the form. The SUXOS will act as the Verifying Inspector, and will conduct a second, 100 percent visual inspection of the item(s), and sign and date the “Senior UXO Supervisor Verification” portion of the form. Both personnel will also print (or type) their names on the form, and it will be retained in the project files. The item(s) will be tagged, photographed, entered into the MPPEH inventory, and stored in a suitable container (e.g., drum, case) on a pallet in Magazine M353 or M354. The container will be clearly marked as “5X Material – Do Not Commingle” (or a similar statement). An example of *safe* and *hazardous* certification/verification forms can be found in Attachments 3 and 4.

Should MPPEH items be encountered that cannot be certified/verified as 5X, but are thought to be inert with a high degree of confidence, those items will be placed in a separate container on a

pallet in Magazine M354. That container will also be suitably marked as to the hazard that maybe present, and be designated as an explosive contamination category 3X. Because the same magazine will be used to store MPPEH (3X) and munitions debris (5X) items, the containers will be clearly marked and segregated in different sections of the magazine with barricades (or other suitable structures or marking devices).

Treatment of MPPEH by technical methods requires Naval Ordnance Safety and Security Activity (NOSSA) approval and will either be thermal or chemical in nature. If MPPEH items are encountered that are 3X, and cannot be 100 percent visually inspected, they will be certified as *hazardous*, and stored in Magazine M354 until the end of the project, at which time a thermal flashing unit or remote cutting tool will be brought in to either thermally treat or gain access to the voids of the items. Certification as *safe* by technical methods (other than 100 percent visual inspection) requires a post-processing sampling inspection with one signature by an authorized person.

Certification as *hazardous* (1X) requires a 100 percent visual inspection by a qualified and authorized person and does not require a second examination. The SUXOS will make this certification. One of the two Bay area explosive ordnance disposal (EOD) Detachments will be requested to respond to items thought to contain high explosives as they are encountered. The *hazardous* certification documentation will be completed while the EOD Detachment is responding.

Documents used to certify material *safe* or *hazardous* may be standard government forms (DoD Forms 1348.1 or 2271) or locally generated. All require the signatures of the individuals performing the certification/verification directly over their typed or printed names. The SUXOS and Certifying Inspector will perform these functions.

The certification documents will accompany certified materials from the time of collection through final disposition and the chain of custody must remain intact to preserve the status of the inspected materials. The chain of custody refers to the activities and procedures taken throughout the inspection, re-inspection, and documentation process to maintain positive control of MPPEH and ensure that the explosion hazard status can be determined at any time.) Documents supporting the safety status of material and any documents associated with the inspection/re-inspection will be retained in the project files for three years, to include the MPPEH inventory and accountability log.

Detailed guidance on the management and disposition of MPPEH can be found in TtEC procedure UXO-8, *Management and Disposition of MPPEH*, which is available in the TtEC Corporate Reference Library (CRL).

4.7 MUNITION WITH THE GREATEST FRAGMENTATION DISTANCE (MGFD)

For the purpose of this project, the MEC item selected as the MGFD is the 20mm HE-filled projectile (MK 3 typical), with a maximum horizontal fragment range (case fragments) of 558 feet (Department of the Army, 2006) with a contingency MGFD based on a 40mm M406 grenade, with a maximum horizontal fragment range of 345 feet. The distance that will be used for the EZ on this project is 200 feet, which is the hazard fragment distance for both projectiles (DDESB, 2003).

5.0 OPERATIONAL CONSIDERATIONS

5.1 NOTIFICATION, SCHEDULING, AND COORDINATION

Coordination of all personnel involved in IR Site 1 MEC/MPPEH removal and the geophysical surveys of the previously identified radiological hot spots will be vital to the safe conduct of site activities. The removal effort by TtEC will help to ensure that IR Site 1 on Alameda Point will be safe for the intended use of the land. Coordination activities will begin with a meeting with all involved parties and agencies to identify shared and individual responsibilities. The community will be informed of the project schedule and the expected impacts. The coordination, notification, and verification activities are outlined below:

- **Coordination Meeting**—Before geophysical survey and MEC/MPPEH-removal operations are scheduled to begin, a coordination meeting will be conducted to address specific elements of planning and will involve representatives from the following organizations:
 - NAS Caretaker/Environmental Compliance Manager (ECM)
 - Resident Officer in Charge of Construction (ROICC)
 - Other DON representatives if necessary
 - TtEC
- **Topics** will include:
 - Explosive handling and transportation
 - Required support services, fire, medical, security, and so forth
 - Notifications
 - Community impact
 - Daily hours of operation
 - Exclusion zone procedures
 - Emergency procedures
- **Notifications**—The TtEC SUXOS will notify the appropriate personnel prior to scheduled removal activities as far in advance as possible to facilitate timely coordination arrangements for establishing the exclusion zone and closing required roads, if necessary. The SUXOS will ensure that the following activities/agencies are informed of the planned field activities:
 - Alameda Hospital (510) 522-3700
 - Concentra Medical Center (510) 465-9565
 - Alameda Fire Department (925) 447-4257
 - Alameda Police Department (510) 522-2423
 - NAS Alameda (ECM) (510) 772-8832

5.2 EQUIPMENT/MATERIAL REQUIREMENTS

The SUXOS will ensure that health and safety equipment is inspected prior to commencing operations. Two equipment checklists are provided in Attachments 5 and 6 that may be used as the basis for tailored checklists that will be developed on site by the SHSS/QC representative and/or SUXOS to ensure that a proper load-out is accomplished before departing for daily activities. It is anticipated that all tasks will be performed in Level D PPE. The following publications are required to be on site in either paper or electronic versions:

- Approved Work Plan with this SOP
- Approved ESS
- Naval Sea Systems Command (NAVSEA) OP 5 Volume 1
- DoD Instruction 6055.9-STD

5.3 MEC EMERGENCY RESPONSE

If an item is encountered that is suspected to be MEC (UXO, DMM, MC), the SUXOS will be notified to positively identify and assess the suspect item(s) to determine its condition and the associated potential hazards. If it is determined that the item encountered is MEC, and poses an immediate threat to human health, public safety, property or the environment, the United States Air Force (USAF) EOD Detachment located on Travis Air Force Base (AFB) or the U.S. Army EOD Detachment located on the former NAS Moffett will be contacted and requested to dispose of the items. The disposal actions will take place in the form of an explosives or munitions emergency response to control, mitigate, or eliminate the threat. [40 Code of Federal Regulations (CFR) 260.10] The following procedures will be used to coordinate the response:

- The SUXOS will establish an EZ of appropriate distance for the type and size of MEC encountered.
- All non-essential personnel will be directed to relocate outside the EZ.
- The site will be clearly marked (stakes, surveyor's tape, etc.).
- Gates to the site will be closed and barriers placed in front of them.
- In addition to the agencies and personnel listed in paragraph 5.1, the SUXOS will contact the following additional personnel/agencies:
 - Moffett EOD Detachment (650) 603-8301 – OR –
 - Travis AFB Command Post (707) 424-5517
 - Travis AFB EOD Detachment (707) 424-2040/3146
 - RPM (Andrew Baughman) (619) 532-0952
 - Project Manager (Abram Eloskof) (949) 756 7521
 - UXO Coordinator (Lance Humphrey) (619) 471-3519

TtEC UXO technicians will assist the Alameda ECM and the USAF EOD Detachment as required.

5.4 ENGINEERING CONTROLS

Engineering controls (tamping, wetting the soil, tarpaulin-tenting, etc.) will be used to limit/control the spread of dust and soil-borne contaminants (if present) during emergency Blow in Place (BIP) operations. TtEC UXO and EOD personnel will determine the type of controls that will be used based on the situation encountered.

5.5 CONTINGENCY PLAN FOR LARGE MEC

Should a large MEC item be encountered, the EZ will be expanded and evacuated prior to conducting BIP procedures. The SUXOS will adjust the EZ based on the size and type of MEC present. If an evacuation of a large exclusion zone (2,500 feet or greater) is required, the Alameda Fire and Police Departments will be notified and their assistance requested in conducting the evacuation. TtEC UXO personnel will assist the responding military EOD unit and the law enforcement agencies in preparing for the BIP operation and evacuating the exclusion zone. The TtEC SUXOS and EOD Commander will brief Police and Fire Department officials on the planned BIP procedures. Activities will not commence until the Alameda Police Department Watch Commander has verified the evacuation of the exclusion zone and given the EOD unit permission to proceed with the operation.

5.6 HANDLING, TRANSPORTATION, AND STORAGE

Requirements for processing (handling, transporting, storing, etc. MEC/MPPEH are derived from federal regulations and military instructions. Certain elements of these processes are discussed in the following sections.

5.6.1 Explosive Transport Vehicle

The Explosive Transport Vehicle will be a pickup truck equipped with sandbags, a non-sparking bed liner or wooden boxes to prevent MEC/MPPEH items from coming into contact with spark-producing materials. The vehicle will be inspected prior to transporting any MEC/MPPEH items to ensure that the following conditions are present during loading or unloading of the items:

- Brakes are set and the wheels chocked (sandbags may be used)
- The vehicle's engine is turned off during the loading or unloading process
- Appropriate Department of Transportation (DOT) warning placards are temporarily attached to the vehicle prior transporting explosive items
- A cellular telephone and a two-way radio are available to the driver

- Emergency warning triangles, barricade tape, a first aid kit, wheel chocks, a general purpose tool kit, and tow chain are readily available
- Two multipurpose, dry-chemical fire extinguishers or two class IA-10BC fire extinguishers are in the vehicle
- Sufficient sandbags are in place to chock the container(s) in the vehicle bed
- A fire-resistant bed cover/tarpaulin is available to cover the explosive item after it has been secured within the truck bed

5.6.2 Packaging for Transport

MEC/MPPEH items will be placed in a suitable container, placed in the truck bed, and chocked with sandbags to prevent movement.

5.6.3 MPPEH Storage and Processing

Magazine M354 was approved for use by the NOSSA and will be used for the storage of recovered MPPEH. Magazine M353 will be used for processing and demilitarizing MPPEH.

The following general magazine practices will be followed:

- All material stored in the magazines will be stowed on pallets.
- All flammable materials and vegetation will be removed from the perimeter of the magazine.
- The magazine door(s) will remain open while personnel are working inside.
- The magazines will be kept neat and orderly at all times.
- A red flag will be flown outside the magazine when personnel are working inside.
- The magazine will be locked with a high-security padlock and the fenced compound that encloses the magazine will also be padlocked. The SUXOS will maintain custody of the keys.

5.6.4 Inventory

An inventory of the recovered MPPEH will be maintained inside the storage magazines and in the project administrative structure. The Ordnance Accountability Inventory found in Attachment 6 may be used for this purpose, or another suitable method as determined by the SUXOS. The inventory will be updated each time an MPPEH item is placed in, or removed from a magazine.

5.7 DEMILITARIZATION

Although certified/verified 5X items are not considered MPPEH, the demilitarization requirements for ordnance-related material (projectiles, casings, etc.) provided in DoD

Instruction 4160.21-M-1 (DoD, 1991) are germane. The NOSSA-approved method for demilitarizing inert 20mm target practice projectiles that has been used in previous projects uses a large, hydraulically operated re-enforcing bar cutter. Each projectile is placed in the cutter jaws and the machine operator controls the function of the machine remotely behind a barricade. The planned procedures for this project will require the cutting machine to be located inside magazine M353, around the corner of the entrance, and the remote foot-switch that operates the machine to be placed outside the magazine, against the magazine wall. A sandbag barrier or suitable steel plate will be placed between the cutter and the magazine portal. The UXO technicians will place a projectile in the jaws of the cutter, relocate outside around the corner, and operate the machine.

Once demilitarized, the metal fragments are placed in a drum and sent to a landfill. An approved SOP and Activity Hazard Analysis (AHA) are available if this type of demilitarization is selected for use.

If MPPEH items other than 20mm projectiles are recovered and can be certified/verified 5X, an alternate method of demilitarization will be employed to render the items indistinguishable as ordnance. The SUXOS, PjM, and UXO Coordinator will collectively select the method to be used and the SHSS/QC representative will prepare an AHA for the operation and submit it to the program CIH for approval. The SUXOS will thoroughly brief the UXO technicians that will be performing the work before the operation begins.

5.8 COMMUNICATIONS

Communication equipment consisting of cellular telephones and hand-held radios will be available to site personnel. The radios will be used for communications on the project site and the cellular telephones will be used for emergency communications with fire and medical support activities. There are no electricity or land-line telephones on the site.

5.9 FIRE FIGHTING AND SUPPORT

No attempt will be made to extinguish a fire involving explosives until the explosives have been consumed. Some general guidelines for fires involving explosives are provided as follows:

- Do not fight any fires that involve explosives.
- Notify the Alameda Fire Department (925) 447-4257 prior to conducting BIP operations and contact them immediately upon the discovery of a fire.
- If a fire develops in the vicinity of the former Firing-range Berm, the area will be evacuated until the fire is out. Fire Department personnel will be briefed on the potential danger that live 20mm projectiles present in the fire before they enter the site.

5.10 EMERGENCY MEDICAL SUPPORT

The ambulances from Alameda Hospital or fire trucks from the Alameda Fire Department (located on the former NAS Alameda) will be the first responders for emergency medical support. They can be contacted by dialing 911. A complete first-aid kit will be maintained on site and at least two UXO technicians will be trained in CPR and first aid procedures.

5.11 PERSONAL PROTECTIVE EQUIPMENT

All TCRA operations are planned to be conducted in Level "D" PPE with safety glasses. The SHSS can direct a modification to this after conferring with the Program CIH. Geoscientists and UXO assisting them in the geophysical survey will not be required to wear hard hats.

5.12 RECORDKEEPING

Attachments 7 and 8 may be used for recordkeeping purposes, or serve as the basis for a tailored accountability/inventory form, as determined by the SUXOS. Maintaining the inventory electronically in a spreadsheet or other form is also acceptable. The type of inventory/accountability tool should contain spaces to identify the MEC/MPPEH item(s), the location found, the storage location, and the disposition. The inventory will form a part of the chain of custody for the MPPEH that will be maintained until the material is demilitarized and disposed of. The inventory must remain in project files for a period of 3 years after disposal. The forms used to certify and verify the MPPEH 5X will be filed with the inventories.

Regardless of the format used for the inventory and accountability of MPPEH, photographs of the materials must accompany the inventory. If a paper document is used for this purpose, paper photographs should be attached to the respective pages of the accountability log/inventory. If an electronic version of the log is maintained, digital photographs of the MPPEH items should be linked to each log entry.

5.13 TWO-MAN RULE

The two-man rule is a concept of fail-safe, where two knowledgeable individuals perform potentially hazardous operations in which each is the safety backup and watch person for the other. The two-man rule shall apply whenever MEC/MPPEH is handled or transported.

6.0 REMOVAL PROCESS

A geophysical survey will be conducted to locate a disposal trench where radiological material might have been buried, and to determine locations and boundaries of debris pits in the vicinity of the former Firing-range berm that are known to contain 20mm projectiles. Prior to conducting the geophysical survey, however, a surface search aided by metals detectors will be completed to remove 20mm projectiles (and other MEC/MPPEH items) on the surface of the former Firing-range Berm and the area immediately to the north of the small arms range

6.1 QUANTITY DISTANCE AND EXCLUSION ZONE

Magazine M354 will be used for storing recovered MEC/MPPEH. Although the magazine was rated for the storage of 15,000 pounds Net Explosive Weight (NEW) for hazard-division category 1.1 explosives, a NEW limit of 100 pounds of hazard-division 1.1 has been requested. (It is not anticipated that any hazard-division 1.1 items will be recovered, and the NEW limit was selected for a worst-case scenario). The quantity/distance arc for Magazine M354 will be 500 feet, as shown in Figures 1-2 and 1-3.

A 200-foot EZ will be established around the former Firing-range Berm (with the northern toe of the former Firing-range Berm as the EZ center) and screen plant, and all non-essential personnel will remain outside the EZ perimeter while the removal activities are taking place. The limits of the EZ will be clearly marked (i.e., traffic cones, caution tape, etc.). Barricades on the northern and southern peripheries of the EZ that intersect the road through IR Site 1 will be established, and the gates on either end of the site will be closed. If visitors or non-essential personnel are required to enter the EZ, the SUXOS or SHSS will order the removal operations to cease until the area is free from non-essential personnel. A 200-foot EZ will also be applied to the MPPEH processing area inside magazine M353, the collection point where MPPEH will be stored until the end of the workday, the lay-down pad where soil/debris will be sampled and the screen plant. The EZ arcs planned for use in this project can be found in Figures 1-2 and 1-3.

6.2 MEC/MPPEH SURFACE SEARCH/SURVEY

If vegetation on the site requires cutting (i.e., higher than 4 inches), the SUXOS will direct a pre-vegetation-removal surface sweep of the munitions response site (MRS) to prepare the site for the laborers/equipment operators who will cut the vegetation. The area of the surface search will be bordered by the coastline to the west, and the road to the east. The northern border of the small arms range will act as the center point for the north-south ambits of the search area; a distance of approximately 75 feet to the north and south of the northern small arms range boundary will be searched. (The SUXOS may amend this distance as site requirements dictate.) These boundaries (or amended boundaries, as required) will be marked to delineate the area to be searched.

A line or other suitable marking device will be used to mark the path of advance on the initial sweep of the area along one of the boundaries. UXO technicians will form a line abreast, perpendicular to the path of advance, spaced about 10 feet apart. The UXO technician positioned on the path marker will act as the guide and proceed in a straight line along the initial search boundary. The remaining UXO technicians will maintain spacing and distance off the UXO guide and advance across the search area, using Schonstedt (or other suitable instruments) metal detectors to provide an audible backup to the visual search being conducted. The UXO technician on the outside of the line will mark his/her starting and ending position on the boundaries, and when the sweep line reaches the opposite side of the search area, the marking line will be moved to provide the basis for the ensuing search. This process will be repeated until the entire site has been swept. The SUXOS may amend this process as conditions warrant.

When the actual vegetation cutting takes place, UXO technicians will act as escorts for the persons cutting the vegetation, in case more projectiles percolated to the surface following the surface sweep. Mechanized mowing equipment will be used to cut grass outside the MRS, and stringed trimmers will be used to cut the grass inside the MRS. When the cutting is complete and the vegetation has been removed (as required), the surface sweep will be repeated to ensure that all MEC/MPPEH items on the surface have been removed.

6.3 GEOPHYSICAL SURVEY

Following the surface MEC/MPPEH sweeps and the vegetation removal, a geophysical survey will be conducted to identify the location and boundaries of disposal pits or trenches and debris fields. In addition, geophysical surveys will be conducted at previously identified radiological hot spots prior to excavation.

Survey control will be established and used to provide precise positional data. The geophysical data collection will use a Geonics time-domain electromagnetic (TDEM) instrument (EM61) with an integrated Leica differential global positioning system (DGPS) to provide precise location coordinates for anomaly reacquisition, if required, and trench/pit boundary locations. The system is certified under the DON's Hazards of Electromagnetic Radiation to Ordnance (HERO) program.

The geophysical and DGPS data will be concatenated, processed, and a geophysical map will be generated that identifies pit and trench boundaries. The map and a DGPS receiver will be used to delineate the perimeters of pits and trenches.

The location of the burial trench is unknown, but is believed to lie in a location west of the road that traverses the site, and north of the small arms range. The geophysical survey will use these boundaries for the initial data collection (road/coastline, small arms range/fence line). If the location of the trench cannot be determined after processing and interpreting the data, the search area will be expanded eastward after consulting with the PjM.

Where accessible, the entire former Firing-range Berm will be surveyed (the steep incline of the western slope may prevent surveying activities on that part of the berm). The map produced from the trench-location survey and from the berm survey should reveal all potential burial/disposal pits where MEC/MPPEH may be concentrated.

Due to the nature of the intended geophysical survey, a geophysical prove-out to demonstrate the detection capabilities of the geophysical system will not be performed. The proposed methodology (Geonics EM61 metal detector and Leica DGPS) is historically able to detect a 105mm projectile to a depth of 4 feet. The burial pits and disposal trench are expected to contain significant amounts of metal at relatively shallow depths, and the proposed instrumentation should be able to easily detect these anomalous areas. TtEC will perform daily instrument calibration and/or functionality checks to ensure that the instrumentation is operating properly and is within specifications. The EM 61 will be run over a known target at the beginning of each file to ensure that it is operating properly.

6.4 REMOVAL ACTION/EXCAVATION

To ensure that the removal of MEC/MPPEH items is accomplished, a three-step screening process will be used during the excavation of the former Firing-range Berm, disposal trench, and debris pits. The first step in the process will be accomplished during the excavation activities, which will be effectuated with earthmoving machinery (EMM), i.e., a backhoe, excavator, or bulldozer. The EMM will be equipped with transparent armor to allow non-UXO equipment operators to operate the equipment. The construction type and thickness of the armor authorized by the U.S. Army Engineering and Support Center, Huntsville, (U.S. Army Engineering and Support Center, 2006) for the specific site MGF D will be one of 3 types shown in Table 6-1:

TABLE 6-1

AUTHORIZED BLAST SHIELD CONSTRUCTION MATERIALS AND THICKNESS

Construction Material	Required Thickness	Comments
Plexiglas (cast)	1.13 inches	Most recommended. May be layered. Available commercially off the shelf.
Lexan®	2.16 inches	Single Pane
Bullet-resistant Glass	0.83 inches	Least recommended

6.4.1 Removal Action Methodology

Three distinct areas are planned for excavation: the disposal trench(s) where radiological sources were thought to have been buried, debris pits where 20mm projectiles are known to exist, and the former Firing-range Berm, a part of which is suspected to also contain MEC/MPPEH items. MEC/MPPEH items are not anticipated to be found in the radiological disposal trench. The

potential presence of MEC/MPPEH in the disposal pits and former Firing-range Berm will require slightly different processes to protect UXO and Radiological Control Technicians (RCT) personnel.

The first step in the MEC/MPPEH and radiological source screening and removal is the manual survey of the top 6 inches of soil with hand-held radiological instruments and magnetometers. In the excavating of the radiological disposal trench, the Radiological Control Technicians (RCTs) will conduct the radiological survey. RCTs will conduct the radiological survey and UXO technicians may assist them with magnetometers (for metal sources), if required. For the areas known and suspected to contain MEC/MPPEH items, a barricade (either 0.21 inches of mild steel, 0.17 inches of hard steel, 0.47 inches of aluminum, or 1.13 inches of plexi-glass) will be installed for UXO and RCT personnel to take shelter behind when the actual excavation of the soil is taking place. The procedures are described below.

6.4.2 Disposal Trench

Prior to the start of excavation, the approximate boundaries of the trench will be installed and marked with tape, paint, lath, etc. The excavation will begin at a boundary of an excavation area and proceed inward. The top 6 inches of soil in the excavation area will be screened for radiological items, and if any are found, they will be hand excavated and placed in a storage container. When the survey of the first layer is complete, EMM will remove the top 6 inches of soil in the excavation area (this may be accomplished by scraping, excavating, etc.) and deposit it in a dump truck. When the truck is full, the excavated soil will be transported to a laydown area, spread in a 6-inch layer, and re-surveyed. When the entire layer of soil has been surveyed for radiological sources twice, the soil will be removed from the laydown pad and transported to a stockpile near a soil screening plant.

A radiological survey of the next 6 inches of soil in the excavation will then be accomplished, and when complete, EMM will remove the next 6 inches of soil, the soil will be taken to the laydown pad, spread it in another 6-inch layer, and again surveyed for radiological anomalies. This process will be repeated until the trench is completely excavated and native soil is reached.

If MEC/MPPEH is encountered during the excavation of the trench, a 200-foot EZ will be established and armored EMM will be brought in to finish the excavation. A USASCE-approved barrier (steel, concrete, etc.) located outside the swing radius of the EMM being used for the excavation will be erected and UXO and RCT personnel will then take shelter behind it during the actual removal of the soil.

6.4.3 Burial Pits

The process for excavating the burial pits will be nearly identical to that used for the disposal trench, with the additional step of the RCT personnel and UXO technicians taking shelter behind a barricade when the soil is excavated. The process will proceed as follows:

- The boundaries of the pit(s) will be marked and the entire area inside the pit perimeters will be surveyed for radiological sources that will be hand excavated and placed in a container if found. (UXO technicians may use magnetometers to assist as needed.)
- UXO and RCT personnel will then take shelter behind a USASCE-approved barrier (steel, concrete, etc.) located outside the swing radius of the EMM being used for the excavation.
- The equipment operator will remove the top 6 inches of soil within the boundary markers and place it in a dump truck.
- The UXO technician(s) will then return to the excavation and check it to see if MEC/MPPEH was unearthed. If the excavation is clear, the RCT person(s) will return, survey the next 6 inches of soil, and all will relocate behind the USASCE-approved barricade while the next 6 inches of soil is removed.

This process will be repeated until the burial pit is completely exhumed and the magnetometer indicates that nothing metallic lies beneath the floor of the pit.

6.4.4 Former Firing-Range Berm

Only the northern portion of the former Firing-range Berm is suspected to contain buried MEC/MPPEH items, and the geophysical survey of the berm should show their precise locations. The area containing buried debris will be marked on the ground surface (lath, stakes, caution tape, etc.) and this area will be excavated last.

The excavation of the berm will be conducted in a manner similar to the trench and pit excavation. The vegetation on the berm will be cut as near to the ground as possible. Beginning at the southern end of the berm, RCT personnel will survey the top 6 inches of soil on the top of the berm for radiological sources and hand excavate them if found. EMM will remove the top 6 inches of the berm and place it in a dump truck. The next six inches of soil will be surveyed, and that layer of soil removed. This process will be repeated until the southern portion of the berm is removed.

On the portion of the berm suspected to contain buried debris, the procedures used for the disposal pit excavation will be used.

All of the soil will be transported to the lay-down pad, layered, and surveyed again for radiological sources. After the screening on the lay-down pad, the soil will be transported to the screening plant stockpile. This process will be repeated until the berm has been removed.

6.4.5 Screening

The soil and debris from the debris fields, disposal trenches, and the former Firing Range Berm will be processed through a screening plant anticipated to be a Trommel fitted with a 6-inch grizzly and a rotating drum (approximately 6 feet in diameter and 25 feet long) fitted with $\frac{3}{4}$ -inch screens. A Trommel screening plant with 2 screen drums may be used if one can be located. The excavated soil/debris will be processed as follows:

- A loader will place the soil atop the feed hopper grizzly. All soil clumps and objects larger than 6 inches will drop off the back of the grizzly, while soil and debris smaller than 6 inches in size will drop into the feed hopper, where it will be transported, via a conveyor, to the Trommel.
- Soil and debris larger than $\frac{3}{4}$ -inch will be transported out of one end of the Trommel drum. A conveyor will move the material to a stockpile. A UXO technician will monitor the oversized materials from the Trommel plant for MEC/MPPEH items at a point on the conveyor that is at least 8 feet from the Trommel.
- Soil and objects smaller than $\frac{3}{4}$ inches (the “fines”) will pass through the Trommel screen and be carried by conveyor to another stockpile.

The UXO technician(s) monitoring the oversized materials from the Trommel will be stationed on an observation platform equipped with Lexan[®], or Plexi-glass shields, and a “kill switch” to halt the screen plant if MEC/MPPEH items are observed. Figure 2-1 provides a drawing of the screen plant configuration.

A loader may be used to return soil clumps and other debris that do not break down in the Trommel to the feed hopper for re-processing. Items that do not break down after several passes through the screen plant will be inspected with radiological instruments and metal detectors to determine if MEC/MPPEH or radiological items might be present inside the clumps. Those clumps that test positive for metal and/or radiation will be mechanically disassembled with armored EMM by cutting them with the bucket or crushing them with tracks/buckets.

7.0 QUALITY CONTROL

QC is performed to ensure that encountered MEC/MPPEH is recovered, handled, transported, processed, and stored in accordance with applicable regulations and directives. Detailed QC procedures are found in the Project Quality Control Plan (TtEC, 2007b).

7.1 SEARCH EFFECTIVENESS PROBABILITY (SEP) TEST

Prior to beginning the characterization activities, the Surface Characterization Team will be certified in a QC test grid using the Search Effectiveness Probability Test. The test grid will be seeded with 34 target items that are representative of the MGF. The Surface Characterization Team will form a line abreast and conduct a sweep of the grid following procedures described previously. Each team member will use a Schonstedt GA-52 CX metal locator with an audible detection alarm to aid in the visual search of the grid. To gain certification to conduct characterization operations, the team must demonstrate the ability to achieve an 85 percent Probability of Detection (PD) with a 90 percent Confidence Level (CL) of removal of target items, which will require locating 32 of the 34 seeded targets. If less than 32 items are located, the team must continue training until they can achieve the 85 percent PD at a 90 percent CL. When (if) new team members that have not previously been certified in surface clearance operations are added to a team, the entire team must proceed through the surface clearance test grid and demonstrate the ability to achieve an 85 percent PD at a 90 percent CL before conducting field operations. Establishing the test grid and processing the team through the test grid is a QC function and must remain separate and independent from operations.

7.2 EQUIPMENT FUNCTIONALITY

A magnetometer test grid will be established and seeded with a pre-determined amount of 20mm target practice rounds buried at depths of up to 9 inches. Prior to commencing daily excavation activities, the UXO technicians will pass their magnetometers over the test grid to ensure that the equipment is functional. All of the buried rounds must be detected for the equipment to be used on the project. The project QA/QC representative will record the functionality tests of the magnetometers on a daily basis.

7.3 DAILY QC

The SUXOS and SSSS/QC will ensure that procedures are implemented as listed below:

- Ensure that functionality checks of magnetometers and geophysical instruments are conducted on a daily basis and recorded in the SUXOS log and daily QC report, as described in the CQC Plan.
- Perform follow-up QC for on-site packaging, transportation, processing, and storage.

- Perform the certification, verification, and *safe or hazardous* determination. Ensure that the certification/verification form is completely filled out and that the appropriate information is present.
- Complete data entry for the Acquisition/Accountability log and/or Inventory (in the format chosen).
- Ensure that photographs of MEC/MPPEH items accompany the inventory entries.
- Ensure that commingling of the different hazard classes (1X, 3X, and 5X) does not occur.
- Ensure that the chain of custody is maintained from discovery through disposal.

Lot Acceptance and Rejection Criteria

Three debris streams will emerge from the Trommel, specifically:

- Objects larger than 6 inches that will accumulate below the grizzly
- Objects larger than $\frac{3}{4}$ inches that will leave the Trommel at the end opposite the feed hopper
- Objects smaller than $\frac{3}{4}$ inches (fines) that will leave the Trommel via a conveyor emerging from the side of the Trommel

The fines should not contain MEC/MPPEH items because of the size of the Trommel screens. The other debris streams (“overs”) may contain MEC/MPPEH items of 20mm projectile size and larger. The conveyor carrying the smaller overs stream ($>\frac{3}{4}$ inch) will be monitored by UXO technicians for MEC/MPPEH items. (The observation platform will be at least 8 feet from the screen plant and protected by Lexan 2.25 inches or plexiglass 1.25 inches thick.) The $>\frac{3}{4}$ inch overs will agglomerate in a stockpile at the end of a conveyor, and the overs stream > 6 inches will be form a stockpile at the base of the grizzly.

Both of the overs piles will be sampled for MEC items. Front-end loaders with 2-cubic-yard buckets and dump trucks with 20-cubic-yard boxes (10 buckets per truck) will be used to move the overs stockpiles. The unit of production for this sampling plan will be the bucket, and a number of these will make up a lot. A lot size of 40 buckets (4 dump trucks) is recommended for this project. This will provide a more economical level of rework if a sample fails inspection and the entire lot has to be re-screened.

When the overs stockpiles grow to approximately 20 cubic yards, they will be loaded into dump trucks, transported to the lay-down pad, and deposited there in separate stockpiles (>6 inches and $>\frac{3}{4}$ inches). When four dump truck loads have been added to each of the piles, they will be sampled for MEC/MPPEH. An armored front-end loader will remove 2 buckets (4 cubic yards, 10 percent of the accumulated soil and debris) from random locations in each stockpile and spread it in a 6-inch layer on the lay-down pad. UXO technicians and RCT(s) will manually

screen the layer for radiological sources and MEC/MPPEH. If neither are found, the lot is accepted and the entire stockpile may be relocated from the lay-down pad to “clean” stockpiles. If a MEC/MPPEH item is found, the lot is rejected and the entire stockpile must be re-processed through the Trommel. If a radiological source is found, the lot is also rejected, and the entire stockpile must be placed in a 6-inch layer on the lay-down pad, manually surveyed with radiological instruments, and sampled again.

8.0 GENERAL SAFETY PRECAUTIONS

This section provides the following general safety precautions for explosive disposal operations:

- Know and observe federal, state, and local laws and regulations that apply to the transportation, storage, and usage of explosives.
- Do not permit metal (except the approved explosive vehicle) to contact explosive containers.
- Do not transport metal, flammables, or corrosive substances with explosives.
- Do not allow smoking, or the presence of unauthorized or unnecessary persons, in vehicles containing explosives.
- Do not store any sparking metal or sparking metal tools in an explosive magazine.
- Do not permit smoking, matches, or any source of fire or flame in or near an explosive magazine.
- Do not allow leaves, grass, brush, or debris to accumulate within 50 feet of an explosive magazine.
- Do not permit the discharge of firearms in the vicinity of an explosive magazine.
- Do not place MEC/MPPEH where they may be exposed to flame, excessive heat, sparks, or impact.
- Do not expose 3X MEC/MPPEH to the direct rays of the sun. Such exposure increases sensitivity and deterioration.
- Ensure that 3X MEC/MPPEH are stored in proper containers and the containers are closed after use.
- Do not carry MEC/MPPEH items or explosive components in pockets or elsewhere on the body.
- Carefully load and unload MEC/MPPEH from vehicles. Never throw or drop MEC/MPPEH from a vehicle.
- Do not drive vehicles containing MEC/MPPEH through cities, towns, or villages, or park them near such places as restaurants, garages, and filling stations, unless absolutely necessary.
- Store MEC/MPPEH only in a magazine that is clean, dry, well-ventilated, reasonably cool, properly located, substantially constructed, bullet and fire resistant, and securely locked.
- Ensure that the Exclusion Area is clear of any unauthorized personnel before beginning investigative activities.
- Do not handle, use, or remain near MEC/MPPEH during the approach or progress of an electrical storm.

- Do not transmit on a radio within the HERO distance of that radio. If the exact distance for the radio is not known, do not transmit on the radio within 10 feet of MEC or suspected MEC. Additionally, do not turn on the cellular telephone within 10 feet of MEC.

The two-person rule will apply whenever MEC/MPPEH is handled or transported and during disposal operations on or off the range.

9.0 REFERENCES

- Department of the Army. 2006. Letter correspondence. Subject: Safety Alert 01-06, 20mm Minimum Separation Distance (MSD) Change. November 28.
- Department of Defense (DOD). 2004. *DOD Ammunition and Explosives Safety Standards*. (DOD Instruction 6055.9-STD). Alexandria, VA.
- Department of Defense (DOD). 1991. *DOD Defense Demilitarization Manual*. (DOD Instruction 4160-21-1). Alexandria, VA.
- Department of Defense Explosive Safety Board (DDESB). 2003. *Methodologies for Calculating Primary Fragment Characteristics*. Technical Paper No. 16, Revision 1. Alexandria, Va. December 1.
- _____. 2004. *Minimum Qualifications for Unexploded Ordnance (UXO) Technicians and Personnel*. Technical Paper 18. Alexandria, Va.
- Naval Sea Systems Command (NAVSEA). 2006. Ammunition and Explosives, Safety Ashore, Regulations for Handling, Storing, Production, Renovation, and Shipping. U.S. Navy Manual, NAVSEA OP-5, Volume 1, Revision 8, Change 5. June 1.
- TetraTech, EC, Inc., (TtEC). 2007a. *Draft Final Time Critical Removal Action Work Plan for Installation Restoration Sites 1, 2 and 32. Alameda Point, Alameda, California*. San Diego, California.
- _____. 2007b. *Draft Final Project Contractor Quality Control Plan for Installation Restoration Sites 1, 2 and 32. Alameda Point, Alameda, California*. San Diego, California.
- U.S. Army Engineering and Support Center. 2006. Fragmentation Data Review Form. Huntsville, Al. December.

ATTACHMENT 1
FIELD SUPERVISOR REVIEW SHEET

ATTACHMENT 1

FIELD SUPERVISOR REVIEW SHEET

I have read the Project Work Plan and the Standard Operating Procedure 1 (SOP-1) for MEC/MPPEH/UXO Disposal Disposition. I understand it. To the best of my knowledge the processes described in the Work Plan and this SOP-1 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 understand the requirements of the Work Plan and SOP-1, and have signed the worker's statement for this process. If necessary, I will conduct an annual review of the Work Plan and SOP-1. If deviations from this SOP-1 are necessary, I will ensure that project activities are stopped until the SOP-1 is revised and approved. If unexpected safety, health, or environmental hazards are found, I will ensure that project activities are stopped until the hazards have been eliminated.

SUPERVISOR'S NAME	SIGNATURE/DATE

ATTACHMENT 2
FIELD TEAM REVIEW SHEET

ATTACHMENT 2

FIELD TEAM REVIEW SHEET

Each field team member shall sign this section after site-specific training is completed and before being permitted to work on site.

I have read the Project Work Plan and Standard Operating Procedure 1 (SOP-1) for MEC/MPPEH/UXO Disposal Disposition and I have received the hazard control briefing. I understand them. I will follow the Work Plan and SOP-1 unless I identify a hazard not addressed in it or encounter an operation I do not understand. If that occurs, I will stop site activities and notify my immediate supervisor of the problem.

WORKER'S NAME	SIGNATURE/ DATE	SUPERVISOR'S NAME	SIGNATURE/ DATE

ATTACHMENT 3

**MPPEH *SAFE* - 5X AND DEMILITARIZATION
CERTIFICATION/VERIFICATION MANIFEST**

MPPEH Safe - 5X and Demilitarization Certification/Verification Manifest						
GENERAL	1. Generator's Name and Mailing Address				1.a Generator's Ph # ()	
	2. Project Location				2.a Project Ph # ()	
	3. MPPEH Contractor Name and Mailing Address				3.a MPPEH Contractor Ph # ()	
	4. Government Assigned Verification Name and Mailing Address				4.a Certifier Ph # ()	
	5. Transporter 1 Name and Mailing Address				5.a Transporter 1 Ph # ()	
	6. Transporter 2 Name and Mailing Address				6.a Transporter 2 Ph # ()	
	7. Recycler Name and Mailing Address				7.a Recycler Ph # ()	
MEC Contractors and Government Certifier	8. Security Seal #	9. Gross Wt. (Lbs)	10. Tare Wt (Lbs)	11. Net Wt. (Lbs)	12. Weight Ticket #	
	13. Description		14. Material		15. Quantity	16. Unit (Wt., Vol)
	SAFE - 5X CERTIFICATION					
	This certifies that the Material Potentially Presenting an Explosive Hazard items listed has been 100 percent inspected and to the best of our knowledge and belief, is inert and/or free of explosives or related materials.					
	17. TtEC UXO Technician Inspector Certification					
	Signature		Address		Date	
	Printed/Typed Name				Phone	
	18. Senior UXO Supervisor Verification					
Signature		Address		Date		
Printed/Typed Name				Phone		
Transporters	19. Transporter 1 Acknowledgment of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)					
	Signature		Address		Date	
	Printed/Typed Name				Phone	
	20. TtEC Acknowledgment of Receipt of Materials (Signature Verifies that Container was Received with Seal Intact and Contents Loaded to Transporter 1)					
	Signature		Address		Date	
	Printed/Typed Name				Phone	
	21. Transporter 2 Acknowledgment of Receipt of Materials (Receiving Signature Verifies that Drums were Received with Seals Intact)					
	Signature		Address		Date	
	Printed/Typed Name				Phone	
	22. Discrepancy Indication Space					
Signature		Address		Date		
Printed/Typed Name				Phone		
Demil / Recycle Facility	23. Recycler Acknowledgment of Receipt of Materials (Receiving Signature Verifies that Drums were Received with Seal Intact)					
	Signature		Address		Date	
	Printed/Typed Name				Phone	
	DEMILITARIZATION CONFIRMATION					
	This certifies and verifies that each item or items contained have been demilitarized to the minimum requirements of DOD 4160-M-1, Defense Department Demilitarization Trade Security Control Manual.					
	24. Recycler					
	Signature		Signature		Signature	
	Printed/Typed Name		Printed/Typed Name		Printed/Typed Name	
	25. TtEC UXO Technician Inspector Certification					
	Signature		Signature		Signature	
Printed/Typed Name		Printed/Typed Name		Printed/Typed Name		
26. Senior UXO Supervisor Verification						
Signature		Signature		Signature		
Printed/Typed Name		Printed/Typed Name		Printed/Typed Name		
27. Final Disposition						

ATTACHMENT 4
MPPEH *HAZARDOUS*-3X/1X MANIFEST

GENERAL	MPPEH Hazardous – 3X/1X Certification Manifest				
	1. Generator's Name and Mailing Address			1.a Generator's Ph # ()	
	2. Project Location			2.a Project Ph # ()	
	3. MPPEH Contractor Name and Mailing Address			3.a MPPEH Contractor Ph # ()	
	4. Government Assigned Verification Name and Mailing Address			4.a Certifier Ph # ()	
	5. Transporter 1 Name and Mailing Address			5.a Transporter 1 Ph # ()	
	6. Transporter 2 Name and Mailing Address			6.a Transporter 2 Ph # ()	
7. Recycler Name and Mailing Address			7.a Recycler Ph # ()		
MEC Contractors and Government Certifier	8. Security Seal #	9. Gross Wt. (Lbs)	10. Tare Wt (Lbs)	11. Net Wt. (Lbs)	12. Weight Ticket #
	13. Description		14. Material		15. Quantity
					16. Unit (Wt., Vol)
	HAZARDOUS - 1X/3X CERTIFICATION This certifies that the Material Potentially Presenting an Explosive Hazard listed has been 100 percent properly inspected and to the best of my knowledge and belief, presents an explosion hazard				
	17. Senior UXO Supervisor Verification				
	Signature		Address		Date
	Printed/Typed Name				Phone
	18. TtEC UXO Technician Inspector Certification				
	Signature		Address		Date
Printed/Typed Name				Phone	
Transporters	19. Transporter 1 Acknowledgment of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)				
	Signature		Address		Date
	Printed/Typed Name				Phone
	20. TtEC Acknowledgment of Receipt of Materials (Signature Verifies that Container was Received with Seal Intact and Contents Loaded to Transporter 1)				
	Signature		Address		Date
	Printed/Typed Name				Phone
	21. Transporter 2 Acknowledgment of Receipt of Materials (Receiving Signature Verifies that Drums were Received with Seals Intact)				
	Signature		Address		Date
	Printed/Typed Name				Phone
	22. Discrepancy Indication Space				
Signature		Address		Date	
Printed/Typed Name				Phone	
Demil / Recycle Facility	23. Recycler Acknowledgment of Receipt of Materials (Receiving Signature Verifies that Drums were Received with Seal Intact)				
	Signature		Address		Date
	Printed/Typed Name				Phone
	DEMILITARIZATION CONFIRMATION This certifies and verifies that each item or items contained have been demilitarized to the minimum requirements of DOD 4160-M-1, Defense Department Demilitarization Trade Security Control Manual.				
	24. Recycler				
	Signature		Signature		Signature
	Printed/Typed Name		Printed/Typed Name		Printed/Typed Name
	25. TtEC UXO Technician Inspector Certification				
	Signature		Signature		Signature
	Printed/Typed Name		Printed/Typed Name		Printed/Typed Name
26. Senior UXO Supervisor Verification					
Signature		Signature		Signature	
Printed/Typed Name		Printed/Typed Name		Printed/Typed Name	
27. Final Disposition					

ATTACHMENT 5
DAILY EQUIPMENT CHECKLIST

ATTACHMENT 5

DAILY EQUIPMENT CHECKLIST

Date: _____

Disposal Supervisor: _____

Equipment	Quantity	Comments
Explosive vehicle	3	
Personnel vehicle	1	
Camcorder/digital camera	1	
Air horn	4	
Bravo Flag (Red)	2	
Hand-held radios	2	
Ruler, 24-inch	1	
Schonstedt locator	1	
Shovel, round point, long handle	1	
Shovel, round point, short handle	1	
Tape, duct	6	
Tape, measuring, 50- or 100-meter	3	
Tape, plastic	6	
Toolbox, general hand tools	1	
Knife	1	

Note: This list is intended to be revised to reflect on-site requirements

ATTACHMENT 6

**DAILY HEALTH AND SAFETY
EQUIPMENT CHECKLIST**

ATTACHMENT 6

DAILY HEALTH AND SAFETY EQUIPMENT CHECKLIST (As Required)

Date: _____ Disposal Supervisor: _____

Equipment	Quantity	Comments
Air horn, emergency	1	
Booties, rubber slip-on (1 pair per person)	1	
Burn gel	2	
Burn kit	1	
Compress, 18 x 36 inches	2	
Compress, 8 x 10 inches	2	
CPR kit	1	
Decontamination sprayer	2	
Emergency eye wash	1	
Eye wash, 15-minute	1	
Fire blanket	1	
Fire extinguisher, 10-pound	1	
First aid kit, 10-person	1	
Gauze pads, 3 x 3 inches	12	
Gloves, latex	12	
Gloves, leather	12	
Gloves, nitrile	5	
Goggles	5	
Hard hat	5	
Radios, hand held	3	
Rain suit	5	
Safety vest	5	
Stretcher	1	
Tape	6	
Triangular bandages	6	
Voltage detector	1	
Water, 5-gallon bottle (emergency shower)	2	
Water, drinking 1 liter per person	6	

Note: This list is intended to be revised to reflect on-site requirements.

ATTACHMENT 7

**UXO ACQUISITION
AND ACCOUNTABILITY LOG**

ATTACHMENT 7

UXO ACQUISITION AND ACCOUNTABILITY LOG

Delivery Order No.: _____

Report No.: _____

UXO TEAM: _____

Date: _____

ACQUISITION DATA

Grid Number	
Ordnance length (inches)	
Ordnance diameter (inches)	
Weight (lbs/oz)	
Ordnance type (bomb, rocket, projectile, hand grenade, mortar, rifle grenade, pyrotechnics, small arms, and so forth)	
Photo roll number/disk number	
Photo exposure number/digital file number	
Video marker – Start	
Video marker – Stop	
Ordnance description	

UXO DISPOSITION

SAFE HOLDING AREA	DATE	INITIAL	TRANSFERRED TO	DATE	SIGNATURE

DESTROYED BY	DATE	SIGNATURE

Comments: _____

Senior UXO Supervisor _____

ATTACHMENT 8
ORDNANCE ACCOUNTABILITY INVENTORY

ATTACHMENT 2
CORRESPONDENCE



DEPARTMENT OF THE NAVY
NAVAL ORDNANCE CENTER
FARRAGUT HALL BLDG D-323
23 STRAUSS AVENUE
INDIAN HEAD MD 20640-5555

8020
Ser N7112/720
6 NOV 98

From: Commander, Naval Ordnance Center
To: Supervisor of Shipbuilding, Conversion, and Repair,
USN, Portsmouth, VA, Director, SSPORTS Environmental
Detachment, Vallejo, CA (Code 120UXO)

Subj: TEMPORARY MAGAZINE SITING AT FORMER NAVAL AIR STATION,
ALAMEDA, CA

Ref: (a) SSPORTS ENV DET Vallejo ltr 5090 Ser 120/198
of 23 Oct 98
(b) NAVSEA OP 5, Volume 1
(c) NAVSEA OP 2165, Volume 1
(d) OPNAVINST 8027.1D
(e) NAVSEAINST 8023.11
(f) OPNAVINST 8023.2C
(g) NAVSEAINST 8020.9A
(h) Title 49, U. S. Code of Federal Regulations
(i) MIL STD 1320
(j) Title 40, U. S. Code of Federal Regulations

1. In reply to reference (a), temporary storage of recovered unexploded ordnance (UXO) is authorized in Magazine M354 at the former Naval Air Station, Alameda. This magazine must comply with the quantity-distance, fire hazard placard, and other explosives safety requirements of reference (b). Serviceable ordnance must not be stored in the same magazine with recovered UXO. Storage must not exceed the 15,000 pounds Net Explosive Weight (NEW) previously approved for this magazine. Storage of any UXO items must not exceed 90 days unless the rationale for specific circumstances is submitted in writing to Naval Ordnance Center (N71) for review and approval.

2. Current Navy safety regulations and requirements for shore station operations involving on-station transportation of UXO and other ammunition, explosives or other hazardous materials are contained in Chapter 12 of reference (b). Current Navy safety regulations and requirements for off-station transportation of UXO and other ammunition, explosives or other hazardous materials are contained in Chapter 4 of reference (c).

Subj: TEMPORARY MAGAZINE SITING AT FORMER NAVAL AIR STATION,
ALAMEDA, CA

3. In accordance with reference (d), the EOD community develops and implements Emergency Response Procedures governing access to, recovery of, rendering safe and final disposal of ordnance under emergency conditions. Emergency conditions are considered terminated when EOD trained personnel have rendered safe the ordnance and the EOD incident response has been terminated with the completion of DA Form 3265-R. Any subsequent operations, involving rendered safe UXO, must be accomplished using Standard Operating Procedures prepared in accordance with references (b) and (e).

4. In accordance with references (f) and (g), all ordnance personnel (including EOD personnel when involved in non-EOD related functions) must be qualified and certified to those tasks.

5. It is Navy policy to comply with federal, state and local environmental regulations for shipment of rendered safe UXO. Emergency EOD operations are exempt from these requirements.

6. Routine UXO transportation requirements include the following:

a. UXO must be stored as unserviceable ammunition and must be examined by EOD qualified personnel before routine transportation from a storage site. The EOD unit must attempt to identify the ordnance and must affirm in writing that the material is safe for transport.

b. All UXO that lack approved hazard classifications or cannot be identified must be transported as Hazard Division 1.1 in accordance with Section 173.56(e) of reference (h).

c. Reference (i) provides technical guidance for truck loading. The local storage activity must support the EOD unit by determining the appropriate packaging, blocking and bracing, marking and labeling, and any special handling requirements for routine shipment of rendered safe UXO over public transportation routes. These procedures will include the amount and compatibility group of the material to be shipped per vehicle. Documentation to this effect and DD Form 836 will accompany each shipment.

Subj: TEMPORARY MAGAZINE SITING AT FORMER NAVAL AIR STATION,
ALAMEDA, CA

d. Routine transportation of UXO must be accompanied by EPA Form 8700-22 or 8700-22A, as applicable, prepared in accordance with paragraph 262.20 of reference (j).

e. These requirements do not apply to the emergency response mission of EOD units, or to the handling of nuclear, biological or toxic chemical agents, which are never routine operations.

7. Naval Ordnance Center point of contact is Mr. Edward Klinghoffer, P.E. (N7112), at DSN 354-6081 or commercial 301-743-6081.


RICHARD T. ADAMS
By direction

Copy to:
NAVORDCEN ESSOPAC (N712P)
ENGFLDACT West (Code 703)



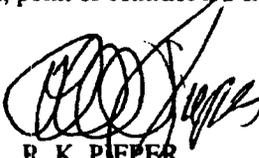
DEPARTMENT OF THE NAVY
SUPERVISOR OF SHIPBUILDING, CONVERSION AND REPAIR, PORTSMOUTH, VIRGINIA
SSPORTS ENVIRONMENTAL DETACHMENT VALLEJO
PO BOX 2136
VALLEJO, CALIFORNIA 94592-0136

IN REPLY REFER TO:

5090
Ser 120/198
23 Oct 98

From: Supervisor of Shipbuilding, Conversion, and Repair, USN, Portsmouth, VA
Director, SSPORTS Environmental Detachment, Vallejo, CA
To: Commanding Officer, Naval Ordnance Center (N7112)
Subj: REQUEST FOR TEMPORARY MAGAZINE SITING AT FORMER NAVAL AIR STATION,
ALAMEDA, CA
Ref: (a) NAVSEA OP-5, Volume 1
(b) Phonecon between NOC N7112 (Mr. E. Klinghoffer) and SSPORTS Env Det (Mr. L. Maggini, Code 120UXO) of 14 Oct 98

1. A number of fired 20mm projectiles were recently discovered while conducting a survey for radium contamination in a landfill area of the former Naval Air Station, Alameda, CA. At least one of the recovered items was confirmed to be a live high explosive projectile.
2. SSPORTS Environmental Detachment, Vallejo, CA, plans to accomplish an ordnance clearance of the landfill area to support the safe completion of the radiological survey and removal operation. The use of an on-site magazine is necessary to safely store recovered hazardous ordnance material pending disposal. Magazine M354 is located near the landfill and was previously sited for the storage of Class 1 Division 1 material prior to base closure.
3. Request concurrence to use Magazine M354 for the temporary storage of recovered UXO material in accordance with the requirements of Section 12.2.2.1 of reference (a). This letter confirms reference (b). SSPORTS Environmental Detachment, Vallejo, CA, point of contact is Mr. John Randell, Code 120UXO, at 707 562-3308.


R. K. PIEPER
By direction

#49

ATTACHMENT 3
SITE APPROVAL REQUEST

REQUEST FOR PROJECT SITE APPROVAL/EXPLOSIVES SAFETY CERTIFICATION NAVFAC 11010/31 (REV. 5-2001)

PART I

INSTRUCTIONS IN NAVFACINST 11010.45

SECTION A – INSTALLATION SUBMISSION

1. To: Naval Ordnance Safety and Security Activity (N54)			2. From: Naval Facility Engineering Command, Southwest		
3. Program Year: 2007	4. Cost (\$000): 5,000	5. Type Funding: ER,N-MRP	6. Activity UIC: None	7. Date: 08 Dec 06	
8. Category Code and Project Title: N/A				9. Project Number: N/A	
10. Type of Project: <input type="checkbox"/> New Construction <input type="checkbox"/> Change Use <input type="checkbox"/> Addition to Existing Facility <input type="checkbox"/> Major Modification to Existing Facility			<input type="checkbox"/> Relocation of Structure <input type="checkbox"/> Maintenance and/or Repairs <input type="checkbox"/> Repair by Replacement <input type="checkbox"/> Demolition		
			11. Type of Request: <input type="checkbox"/> Airfield Safety Site Approval <input checked="" type="checkbox"/> Explosives Site/Safety Certification <input type="checkbox"/> EMR Site Approval <input type="checkbox"/> Resubmittal or Standard Site Approval (No Safety Criteria Involved)		
12. Project Description: The project is a Time Critical Removal Action (TCRA) to mitigate the potential risk posed by munitions and explosives of concern (MEC) and material potentially presenting an explosive hazard (MPPEH) and radioactive contamination at IR Site 1 on the former Naval Air Station Alameda, Alameda Point, California. The project is requesting the siting of: Magazine M354 (MPPEH storage), Magazine M353 (MPPEH processing), a screening plant, a lay-down pad and a collection point. This request for project site approval is submitted as an attachment to the Explosives Safety Submission (ESS) that was written for the project. One of two Bay area EOD detachments will be called if MEC is encountered so no live ordnance is anticipated, but 3X MPPEH (not processed) must be considered to contain explosives and must be handled, processed, and stored accordingly.					
13. 2 Set of Project Maps Attached	14. 2 Sets Part II Division(s) A Attached				

SECTION B – EFD REVIEW

1. Name/Code/Phone No. of Reviewer/E-Mail Address:			2. Date Received:		
3. Evaluation:					
4. Safety Review Requested: (check appropriate box(es)) <input type="checkbox"/> NOSSA <input type="checkbox"/> DDESB <input type="checkbox"/> SPAWAR <input type="checkbox"/> NAVAIR <input type="checkbox"/> CNO <input type="checkbox"/> OTHER					5. Date Forwarded:
6. Date of Safety Certification: <u>NOSSA</u> <u>DDESB</u> <u>SPAWAR</u> <u>NAVAIR</u> <u>CNO</u> <u>OTHER</u>					

SECTION C – FINAL APPROVAL ACTION

1. Approvals: <input type="checkbox"/> Site Approval <input type="checkbox"/> Site Disapproval <input type="checkbox"/> Deferred/Returned <input type="checkbox"/> Explosive Safety Certification Approved <input type="checkbox"/> Explosive Safety Certification DISAPPROVAL <input type="checkbox"/> Interim Construction Wavier Approval		2. Certification Identification:	
		3. Remarks:	
4. Other Approvals Required <input type="checkbox"/> Airfield Safety Waiver Required <input type="checkbox"/> Final Explosive Safety Review Required	5. Approving Official:		6. Date:

REQUEST FOR PROJECT SITE APPROVAL/EXPLOSIVES SAFETY CERTIFICATION NAVFAC 11010/31 (REV. 5-2001)
PART II DIVISION A – EXPLOSIVES SAFETY
INSTRUCTIONS IN NAVFACINST 11010.45

1. NEW/Class/Division/ESQD arcs of Project:

Request Site Approval for:

- 1 Barricaded undefined Earth Covered Magazine (M354) @ 100 pounds C/D 1.1/MPPEH storage/IBD 4975 feet (actual), IBD 500 feet front, 250 feet side and rear (required)/ PTR 4975 feet (actual), 300 feet front, 150 feet side and rear (required). IM 46 feet in front (required), no magazines in front or back (actual), 522 feet side (actual), 32 feet (required). IL 522 feet (actual), 84 feet (required).

- 1 Barricaded undefined Earth Covered Magazine (M353) @ < 0.3 pounds C/D 1.1/MPPEH processing and demilitarization/ IBD 5497 feet (actual), IBD 200 feet (required)/PTR 5497 feet (actual), 120 feet (required). IL 522 feet (actual), 17 feet (required).

- 1 remote controlled mechanized earth screening facility be site approved for MEC based on one 20mm M456A4 projectile or 0.03 pounds NEW of C/D 1.1 material based on the following ESQD arcs: IL K24 distances of 8 feet; PTR distance of 120 feet based on 60 percent of hazardous fragment distance (HFD); and IBD of 200 feet based on the HFD.

- 1 manual earth surveying area (lay-down pad) be site approved for MEC based on an accumulation of 20mm M456A4 projectiles equivalent to 10 pounds of NEW of C/D 1.1 material based on the following ESQD arcs: IL K24 distances of 52 feet; PTR distance of 120 feet based on 60% of hazardous fragment distance (HFD); and IBD of 200 feet based on the HFD.

- 1 temporary storage/collection point be site approved for MEC based on an accumulation of 1000 20mm M456A4 projectiles (0.03 pounds NEW each) equivalent to 30 pounds of NEW of C/D 1.1 material based on the following ESQD arcs: IL K18 distances of 56 feet; PTR distance of 120 feet based on 60% of hazardous fragment distance (HFD); and IBD of 200 feet based on the HFD.

2. CNO Waivers and Exemptions:

N/A

3. Personnel: (numbers)

Four contractor personnel will be exposed during storage of MPPEH

Four contractor personnel will be exposed during MPPEH processing and demilitarization

	Proposed	Existing
Military:		
Civilian:	4	
Other:		
Total:	4	

4. Facility Number/Type

Personnel

NEW

Class/Division

Distance*

Actual/Required

The nearest inhabited building is over 4000 feet away

N/A

N/A

N/A

4000+ ft/320 ft

5. Siting Rationale:

It is anticipated that MEC/MPPEH in the form of 20 mm projectiles (HE and TP) will be encountered during the TCRA that will take place on the former Naval Air Station Alameda. The site's description and history, reasons for suspected MEC/MPPEH and suspected type and amount of MEC/MPPEH contamination are found in Section 1 of the ESS. The MGF and contingency MGF are discussed in Section 3 of the ESS as are the procedures to be followed in the event a MEC item with a greater fragment distance than the contingency MGF is encountered. Section 6 contains the various procedures and processes that will be employed during the course of this project, and quality control. Quantity/Distances that are applied to Magazine M354 and the various ES/PES that will be used during the TCRA. Environmental concerns, off-site disposal, technical support, land use restrictions and public involvement are found in the remainder of the ESS.

See additional sheet for continuation.

*Distance from project. Specify IB, (Inhabited Building); IL, (Intraline); IM, (Intermagazine); PTR, (Public Transportation Route); B (Barricade); UB (Unbarricade)

6. Signature of Public Works/Base Civil Engineer (Name/Code) Incl. E-Mail Address

9. Signature of Explosive Safety Officer/Installation Safety Officer Incl. E-Mail Address

7. Telephone
()
DSN

8. Date:

10. Telephone
()
DSN

11. Date: