

Southwest Division
Naval Facilities Engineering Command
Contracts Department
1220 Pacific Highway, Building 127, Room 112
San Diego, CA 92132-5190

CONTRACT No. N44255-95-D-6030
DO No. 0095

FINAL
FOCUSED REMEDIAL INVESTIGATION (RI)
WORK PLAN
Revision 0
February 8, 2002

**ORDNANCE AND EXPLOSIVES WASTE CHARACTERIZATION,
TIME-CRITICAL REMOVAL ACTION, AND
GEOTECHNICAL AND SEISMIC EVALUATIONS
AT INSTALLATION RESTORATION SITE 2
ALAMEDA POINT
ALAMEDA, CALIFORNIA**

DCN: FWSD-RACII-02-0132

Prepared by:



FOSTER WHEELER ENVIRONMENTAL CORPORATION

1230 Columbia Street, Suite 640
San Diego, CA 92101

Lance Humphrey
Senior UXO Supervisor

Abid Loan, P.E.
Project Manager

**RESPONSE TO COMMENTS
 DRAFT FOCUSED REMEDIAL INVESTIGATION WORK PLAN
 ORDNANCE AND EXPLOSIVES WASTE CHARACTERIZATION,
 AND GEOTECHNICAL AND SEISMIC EVALUATIONS
 AT INSTALLATION RESTORATION SITE 2
 ALAMEDA POINT
 ALAMEDA, CALIFORNIA**

DCN: FWSD-RACII-02-0132

February 6, 2002

Comments by:
 EPA
 Received 02/04/02

Responses by:
 Foster Wheeler Environmental Corporation
 1940 E. Deere Avenue, Suite 200
 Santa Ana, CA 92705

General Comments on Draft Focused Remedial Action Work Plan

Comment 1. The response to this comment appears to be adequate.

Response 1. Comment noted.

Comment 2. The response appears to be adequate. The Navy performed a recent wetland delineation in December 2001 and it appears that the Navy intends to comply with the substantive requirements of Section 404 of the Clean Water Act. However, it does not appear that the Navy has consulted natural resource trustees regarding this work (i.e., U.S. Fish and Wildlife Service and California Department of Fish and Game are not included on the distribution list for this work plan). It appears that the Navy plans to notify these agencies prior to commencing work at the site; please state whether the agencies have been involved in review of this work plan.

Response 2. Comment noted. U.S. Fish and Wildlife Service (USFWS) has reviewed this Work Plan and will be contacted before any new activity commences on the site. The California Department of Fish and Game has not been consulted because they do not have a representative identified to monitor this project due to funding constraints.

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Comment 3. The response is partially adequate. However, the response states, "if investigation or remediation activities are required in wetland areas, [the work will be performed] in accordance with applicable regulations and established procedures." Please expand the response to briefly discuss the applicable regulations and established procedures or state whether an additional document discussing the regulations and procedures will be submitted.

Response 3. Compliance with the following regulatory legislation is required if investigation or remediation activities become necessary in delineated wetland areas:

- Migratory Bird Treaty Act of 1918,
- California Fish and Game Codes,
- Federal Endangered Species Act of 1973,
- California Endangered Species Act,
- Section 404 of the Clean Water Act,
- and the National Wildlife Refuge System Administration Act..

At the present time the proponent does not intend to conduct remedial activities within the boundaries of any wetland areas. On 26 December 2001 qualified Foster Wheeler biologists accurately delineated the wetland boundaries at the site (staking and pin flagging wetland boundaries). The staking and flagging was established so that all site personnel would be able to visually identify wetland areas, and avoid adverse impacts to the maximum extent possible.

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February 6, 2002

Comment 3. (Continued).

Response 3. (Continued). If investigation or remediation activities are required within wetland boundaries, potential impacts will be minimized to the maximum extent possible, and all wetland intrusion will be quantified so that impacts can be mitigated in accordance with applicable regulations. A 'no net loss' to wetlands approach will be implemented. The approach will comply with the intent of Section 404 of the Clean water Act by compensating for all wetland areas impacted by investigation or remediation activities. Wetland areas impacted during investigation or remediation activities will be documented, and additional wetland areas will be created at a 1.5: 1 mitigation to impact ratio. Until the investigation portion of the project is complete, it cannot be determined if the proposed action will involve altering vegetation in wetland areas.

Created wetland habitat will of the same or higher quality than the impacted wetland acreage and will serve to offset wetland losses. Wetland habitat creation will seek to create a self-sustaining system that does not require active management or supplemental water once the establishment phase is complete. Wetland habitat creation will be focused on the area adjacent to existing wetlands to the maximum extent feasible. Vegetation will be established in the created wetland through a combination of natural re-vegetation, salvage of seed bank and vegetation materials from any impacted wetland areas, and if necessary through the collection and application of seed material followed by hand planting of vegetation to mimic natural patterns.

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Comment 3. (Continued).

Response 3.

Wetland preservation will be considered successful when a dominance of the created wetland acreage exhibits positive field indicators of wetland vegetation, soils, and hydrology (i.e. are functioning as wetlands); and species composition in the created wetland is similar to that of the original impacted habitat to the maximum extent possible.

A dominance of the created wetland acreage exhibits positive field indicators of wetland vegetation, soils, and hydrology (i.e. are functioning as wetlands); and species composition in the created wetland is similar to that of the original impacted habitat to the maximum extent possible.

Specific Comments on Draft Focused Remedial Action Work Plan

Comment 11. The response is incorrect insofar as it states that “procedures for dealing with encountered OEW will be discussed in Step 6,” when this information is discussed in Step 5.

Response 11. Comment noted. The information has been incorporated into Step 6.

Comment 12. The response appears to be adequate but the information that “OEW will be counted and logged” is not included in Step 7 as stated.

Response 12. Comment noted. The information has been incorporated into Step 7.

Comment 13. The response is partially adequate. The response states that the “possible OEW Burial Site...will also be shown on Figure 2-1.” Figure 2-1 does not include the “possible OEW Burial Site.” Please revise the response, or include the “possible OEW Burial Site” on Figure 2-1.

Response 13. Comment noted. The Possible OEW Burial Site has been incorporated into Figure 2-1.

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Comment 18. The response to this comment is partially adequate. Procedures for UXO avoidance for soil borings are not specified in the text, nor is there any reference in the text of Section 4.6.1 that indicates where this information can be found. Section 4.2.4 is titled "UXO Avoidance Procedures," but the text in this section refers the reader to Section 4.5.3, which contains information on UXO avoidance during test pit excavation, and to Standard Operating Procedures 2 and 3, which are found in Appendix B. UXO avoidance procedures are discussed in the text for every other activity, so it is not clear why these procedures were not included in the text of Section 4.6.1. Please include the UXO avoidance procedures in Section 4.6.1.

Response 18. Comment noted. UXO avoidance procedures have been incorporated into Section 4.6.1 for drilling and in Section 4.6.2 for test pit excavation.

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Comment 19. The response is not clear. The response states that a wetland delineation was performed in October 1993. However, the response to General Comment 2 states that a delineation was performed in December 2001. Please revise the responses to consistently report the date of the most recently completed wetland delineation.

Additionally, the response states, "until the investigation portion of the project is completed, it cannot be determined if the proposed action involves significantly altering... wetland areas." Please briefly discuss the steps that would be taken following the investigation portion of the project if it was determined that the action would involve significantly altering wetland vegetation (e.g., notification of U.S. Army Corps and other natural resource trustees). For example, the response to Specific Comment 23 states that any action must be authorized by the U.S. Fish and Wildlife Service.

Response 19. The Habitat Restoration Group (HRG) conducted a wetland delineation of the West Beach Landfill Wetland for the Department of the Navy in October of 1993. On 26 December 2001, qualified Foster Wheeler biologists accurately delineated the wetland boundaries again in accordance with the standards described in the 1987 Corps Wetland Delineation Manual.

If investigation or remediation activities are required within wetland boundaries potential impacts will be minimized to the maximum extent possible, and all wetland intrusion will be quantified so that impacts can be mitigated in accordance with applicable regulations. Field personnel will determine whether an action is acceptable with regard to the level of disturbance to wildlife and plants during investigation or remediation activities by utilizing the following criteria outlined in the Environmental Protection Plan:

1. The action must be authorized by the USFWS, and the qualified FWENC biologist overseeing the field activities.
2. To the maximum extent feasible the proponent will minimize the use of heavy equipment, and off - road intrusion in areas with sensitive biological resources (wetlands, wildlife foraging areas, etc.).

PAGE 7
RESPONSE TO COMMENTS

FINAL FOCUSED REMEDIAL INVESTIGATION (RI)
WORK PLAN - ORDNANCE & EXPLOSIVES WASTE
CHARACTERIZATION, TIME-CRITICAL REMOVAL
ACTION, & GEOTECHNICAL & SEISMIC
EVALUATIONS, REV. 0

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DIANE C. SILVA
RECORDS MANAGEMENT SPECIALIST
NAVAL FACILITIES ENGINEERING COMMAND
SOUTHWEST
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92132

TELEPHONE: (619) 532-3676

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Comment 19. (Continued).

Response 19. .

Wetland creation will involve excavating adjacent to wetland areas impacted by investigation or remediation activities and tie into an existing hydrologic system. A low bench will be excavated adjacent to the existing wetland features at the site, to the greatest extent possible. This low bench will be planted with 24 inches of native wetland soil to encourage natural revegetation and prevent erosion.

Wetland creation will be accomplished using minor site grading to create a seasonally wet depression in an upland area, and by excavating a low bench to allow the establishment of wetland vegetation. The depression excavated in an upland area will take advantage of the water holding capacity of existing heavy clay soils and flow from the surrounding watershed to pond water. These surface conditions will promote growth of vegetation with native species through natural colonization or active plantings as needed.

Wetland creation will be considered successful when:

- A dominance of the created wetland acreage exhibits positive field indicators of wetland vegetation, soils, and hydrology (that is, are functioning as wetlands); and
- Species composition in the created wetland is similar to that of the original impacted habitat (i.e., created wetlands will have dominance of the same dominant species as the original wetland – marsh pickleweed, Bermudagrass, saltgrass, and curly dock).

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Comment 19. (Continued).

Response 19.

The DON will initiate annual vegetation monitoring following the creation activities described above. Annual vegetation monitoring will begin in the first spring following these activities and will continue annually for a period of three years. The results of spring vegetation monitoring will be used to assess progress toward meeting the established success criteria.

The overall objective of annual vegetation monitoring will be to characterize the species composition, and vegetative cover of the created habitat. This data will assist the DON in assessing site changes, determining progress towards success criteria, and detecting trends in vegetation patterns over time that may require attention or redemption.

The DON will monitor created wetland hydrologic function during the first wet-season following wetland construction. Created wetland hydrologic function will be monitored through direct observation of soil saturation or ponding during the wet season. Observations will be conducted at two week intervals following substantial rainfall in the late fall months (i.e., October and November) and continue until the initiation of vegetation monitoring. Hydrologic monitoring is only proposed for the first year to troubleshoot potential erosion or other hydrologic function problems. In future monitoring years, hydrologic monitoring will not be conducted because wetland vegetation success is intrinsically tied to the creation sites' hydrologic function. Namely, the success of wetland vegetation will serve as a surrogate for wetland hydrology.

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February 6, 2002

Comment 19. (Continued).

Response 19.

Annual vegetation monitoring data documentation will be initiated in spring following the completion of site work and will continue annually for a period of three years. Work to be performed will include:

- Conducting photographic documentation at permanently established photo documentation sites for the created wetland. Photographic documentation is intended to show created wetland progress over time.
- Gathering vegetation composition and cover data along permanently marked sampling transects. Each species observed within the transect will be recorded and relative vegetation cover documented as a percent of all plant species present. Additionally, overall absolute vegetative cover of the created wetland will be visually estimated. Plot and absolute cover data is intended to document annual changes and to detect trends in species dominance patterns over time.

In the event that annual monitoring reveals that the created site is not meeting the success criteria or is developing other undesirable attributes such as changes in hydrological function or colonization by an invasive non-native species. The DON will implement the following types of remedial actions as needed to help ensure success criteria are met:

- Supplemental Seeding and/or Planting. To be implemented if the vegetative cover of native hydrophytic species does not meet the specified success criteria.

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Comment 19. (Continued).

Response 19.

- Active Management of Enhancement Plantings. This management action includes hand, mechanical, or chemical weeding (using an appropriate herbicide, such as glyphosate) to reduce non-native species competition immediately around plantings, watering during plant establishment, and applications of fertilizers or mulch. These actions are to be implemented if seeds or plantings do not successfully establish in a timely fashion.
- Non-native Species Control. This action is to be implemented if unanticipated problems arise with non-native species. Depending on the species of concern, site-specific, and species-specific remedial actions will be described in detail in the annual monitoring reports, and reviewed by the Corps prior to implementation.
- Regrading and Re-contouring Sites. This action will be undertaken if created habitats fail to exhibit positive indicators of wetland hydrology in a timely manner, or if undesirable hydrology develops (for example, too much open water habitat or the wrong amount of a specific type of a wetland habitat).

Comment 25. The response indicates that procedures for CPT tests will be incorporated in Appendix A, but this information is not included in Appendix A. There do not appear to be any quality control procedures for field activities in Appendix A. Please revise Appendix A to include procedures for Cone Penetrometer (CPT) tests and quality control procedures for other field activities.

Response 25. Comment noted. Some quality control procedures for cone penetrometer tests (CPTs) were located in Section 5.5.2 in Appendix A. They have been expanded to be more comprehensive and are located in the same section.

FOSTER WHEELER

FOSTER WHEELER ENVIRONMENTAL CORPORATION

TRANSMITTAL/DELIVERABLE RECEIPT

Contract No. **N44255-95-D-6030 (RAC II)**

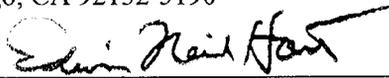
Document Control No. 02-0132 Rev. 0

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TO: Contracting Officer
 Naval Facilities Engineering Command
 Southwest Division
 Mr. Richard Selby, 02R1
 1220 Pacific Highway
 San Diego, CA 92132-5190

DATE: 02/13/02
 DO: 0095
 LOCATION: NAS Alameda

FROM:


 Neil Hart, Program Manager

DESCRIPTION: Final Focused Remedial Investigation (RI) Work Plan, Ordnance and Explosives Waste Characterization, Time-Critical Removal Action, and Geotechnical and Seismic Evaluations at Installation Restoration Site 2, Rev. 0, 02/08/02

TYPE: Contract/Deliverable DO Deliverable Notification
 Other

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 (e.g. Draft, Draft Final, Final, etc.)

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TABLE OF CONTENTS

	<u>PAGE</u>
LIST OF TABLES	v
LIST OF FIGURES	vi
ABBREVIATIONS AND ACRONYMS	vii
EXECUTIVE SUMMARY	ES-1
1.0 INTRODUCTION	1-1
1.1 PURPOSE AND OBJECTIVES	1-1
1.1.1 Task 1: Review Background Information and Initiate Focused RI Work Plan	1-1
1.1.2 Task 2: Prepare Field Investigation Documentation and Perform Fieldwork	1-1
1.1.3 Task 3: Prepare Action Memorandum, Explosives Safety Submission, and Perform Ordnance and Explosives Waste Time- Critical Removal Action	1-3
1.1.4 Task 4: Geographic Information System Update	1-3
1.1.5 Task 5: Prepare Report of Findings	1-3
1.1.6 Task 6: Aid in the Preparation of Feasibility Study Report	1-3
1.1.7 Scope of Work	1-4
1.1.8 OEW Investigation	1-4
1.1.9 Geotechnical Evaluation	1-5
1.1.10 Seismic Evaluation	1-6
1.1.11 Issues	1-7
1.1.12 Document Preparation	1-10
2.0 SITE DESCRIPTION	2-1
2.1 DESCRIPTION AND CONSTRUCTION HISTORY	2-1
2.2 PREVIOUS INVESTIGATIONS	2-3
2.2.1 Site Characterization Activities	2-3
2.2.1.1 Chemical Contamination	2-3
2.2.1.2 Endangered Species	2-3
2.2.1.3 Geophysical Survey	2-4
3.0 PROJECT MANAGEMENT	3-1
3.1 PROJECT ORGANIZATION	3-1
3.1.1 Project Personnel	3-1
3.1.1.1 Project Manager	3-1
3.1.1.2 Site Superintendent	3-5
3.1.1.3 Senior UXO Supervisor	3-5
3.1.1.4 Site Health and Safety Specialist	3-5
3.1.1.5 UXO QC Representative	3-5

TABLE OF CONTENTS

(Continued)

	<u>PAGE</u>
3.1.1.6 Geotechnical Engineer	3-6
3.1.1.7 UXO Specialist	3-6
3.1.1.8 Equipment Operators	3-6
3.2 PROJECT SCHEDULE	3-6
3.3 PROJECT COMMUNICATIONS AND REPORTING	3-6
3.3.1 Progress Reports	3-6
3.4 PROJECT DELIVERABLES	3-14
3.5 MANAGEMENT OF FIELD OPERATIONS	3-14
3.5.1 Site Access and Control	3-14
3.5.2 Field Office/Command Post	3-15
3.5.3 Traffic Control/Parking	3-15
4.0 PROJECT EXECUTION	4-1
4.1 PRE-MOBILIZATION	4-1
4.1.1 Notification and Permits	4-1
4.1.2 Pre-Mobilization Conference	4-1
4.1.3 Mobilization of Equipment and Personnel	4-2
4.1.4 Operating Procedures	4-3
4.1.5 Temporary Support Facilities	4-3
4.2 SURVEYING AND SITE CONTROL	4-3
4.2.1 Exclusion Zones	4-4
4.2.2 Exclusion Zone Marking and Control	4-4
4.2.3 Communications	4-4
4.2.4 UXO Avoidance Procedures	4-6
4.2.5 Bathymetric Survey	4-6
4.2.6 Topographic Survey	4-6
4.3 OEW INVESTIGATION	4-7
4.4 OEW ACCOUNTABILITY AND RECORDS MANAGEMENT	4-9
4.5 OEW REMOVAL ACTION	4-10
4.5.1 Equipment	4-10
4.5.2 Mapping Grid System	4-11
4.5.3 Removal Action Excavation	4-11
4.6 GEOTECHNICAL INVESTIGATION	4-12
4.6.1 Soil Boring Activities	4-14
4.6.2 Test Pit Activities	4-16
4.6.3 Exploration Termination Before Reaching Planned Depth	4-17
4.6.4 Sampling Procedures	4-17
4.6.5 Sample Documentation and Labeling	4-19
4.6.5.1 Sample Identification	4-19
4.6.5.2 Sample Containers	4-20

TABLE OF CONTENTS

(Continued)

	<u>PAGE</u>
4.6.6 Field Documentation.....	4-20
4.6.6.1 Chain-of-Custody.....	4-20
4.6.6.2 Field Logbooks.....	4-21
4.6.6.3 Document Correction.....	4-22
4.6.7 Geotechnical Testing.....	4-22
4.6.8 Seismic Field Evaluation.....	4-23
4.7 SUBCONTRACTOR MANAGEMENT.....	4-24
5.0 REGULATORY FRAMEWORK.....	5-1
5.1 REGULATORY PROCESS.....	5-1
5.2 REGULATED SITE ACTIVITIES.....	5-1
5.2.1 Anticipated Waste Streams.....	5-1
5.3 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS.....	5-2
5.3.1 Potential Location-Specific ARARs.....	5-4
5.3.2 Potential Action-Specific ARARs.....	5-7
5.3.3 Potential Chemical-Specific ARARs.....	5-8
5.4 COMMUNITY RELATIONS ACTIVITIES.....	5-9
5.4.1 Public Information.....	5-10
5.4.2 Public Participation.....	5-10
5.5 AGENCY NOTIFICATION.....	5-10
6.0 ENVIRONMENTAL PROTECTION PLAN.....	6-1
6.1 INTRODUCTION.....	6-1
6.2 ENVIRONMENTAL ISSUES AND CONCERNS.....	6-2
6.2.1 Wetlands.....	6-2
6.2.2 Wildlife.....	6-2
6.3 POTENTIAL IMPACTS OF CHARACTERIZATION/SURVEY OPERATIONS.....	6-3
6.4 IMPACT MINIMIZATION MEASURES.....	6-3
6.4.1 Worker Education Briefing.....	6-3
6.4.2 Mitigation by Avoidance.....	6-4
6.4.3 Wetlands Protection.....	6-4
6.4.4 Wildlife Protection.....	6-5
6.4.5 Plant Community Protection.....	6-5
6.5 MONITORING.....	6-5
7.0 WASTE MANAGEMENT PLAN.....	7-1
7.1 REGULATORY REQUIREMENTS.....	7-1
7.2 WASTE MINIMIZATION.....	7-2
7.3 PROJECT WASTE DESCRIPTIONS.....	7-2

TABLE OF CONTENTS

(Continued)

	<u>PAGE</u>
7.4 WASTE MANAGEMENT ACTIVITIES	7-2
7.4.1 Waste Characterization/Classification	7-2
7.4.2 Hazardous Waste Management.....	7-3
7.4.3 Waste Containerization and Storage	7-4
7.4.4 Wastewater and Waste Fluids	7-5
7.4.5 OEW (RCRA Hazardous).....	7-5
7.4.6 OEW Scrap	7-6
7.4.7 Used PPE and Other Debris.....	7-6
7.4.8 Waste Accumulation Areas.....	7-6
7.5 REPORTING SPILLS AND RELEASES	7-7
7.6 TRAINING/CERTIFICATION REQUIREMENTS	7-7
7.7 DOCUMENTATION AND RECORDS RETENTION	7-7
7.7.1 Documentation	7-7
7.7.2 Transportation	7-8
7.7.3 Hazardous Waste Manifests and LDR Certification.....	7-8
7.7.4 RCRA Records Retention	7-9
8.0 REFERENCES.....	8-1

APPENDICES

Appendix A	Project Contractor Quality Control Plan
Appendix B	Standard Operating Procedures
	SOP-1 Ordnance and Explosives Waste/ Unexploded Ordnance Disposal Disposition
	SOP-2 Drilling, Geotechnical Sampling, and Testing
	SOP-3 Cone Penetrometer Testing
	SOP-4 Geotechnical Laboratory Testing
	SOP-5 Seismic Evaluation
Appendix C	Jurisdictional Delineation Report for West Beach Wetlands (Appendix to Section 6.0)

LIST OF TABLES

	<u>PAGE</u>
Table 1-1	Data Quality Objectives for Geotechnical Concerns..... 1-8
Table 1-2	Data Quality Objectives for Ordnance and Explosives Concerns 1-9
Table 3-1	List of Contacts Involved in the Project 3-3
Table 4-1	Laboratory Testing and Test Methods..... 4-22

LIST OF FIGURES

	<u>PAGE</u>
Figure 1-1	Alameda Point Vicinity Map 1-2
Figure 2-1	IR Site 2 Location Plan 2-2
Figure 3-1	Project Organization Chart 3-2
Figure 3-2	Project Schedule 3-7
Figure 4-1	IR Site 2 OEW Exclusion Zone 4-5
Figure 4-2	IR Site 2 Exploration Area 4-3 4-2a
Figure 4-3	Schematic Geologic Cross-Section Showing Approximate Expected Depths of Borings 4-8

ABBREVIATIONS AND ACRONYMS

AFB	Air Force Base
AOC	area of contamination
AM	Action Memorandum
ARAR	applicable or relevant and appropriate requirements
ASTM	American Society for Testing and Materials
BCT	BRAC Closure Team
bgs	below ground surface
BIP	blown in place
BMP	Best Management Practice
BRAC	Base Realignment and Closure
BWHSP	Base-Wide Health and Safety Plan
Cal/EPA	California Environmental Protection Agency
CCR	California Code of Regulations
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
COC	chain-of-custody
CPT	cone penetrometer test
CQC	Contractor Quality Control
DDESB	Department of Defense Explosive Safety Board
DERP	Defense Environmental Restoration Program
DGPS	digital global positioning system
DO	Delivery Order
DoD	Department of Defense
DON	United States Department of the Navy
DOT	Department of Transportation
DPM	Deputy Program Manager
DQO	data quality objective
DTSC	Department of Toxic Substances Control
E&E	Ecology and Environment, Inc.
ECM	Environmental Compliance Manager
EFA	Engineering Field Activities
EFANW	Engineering Field Activities Northwest

ABBREVIATIONS AND ACRONYMS

(Continued)

EOD	Explosive Ordnance Disposal
EPA	United States Environmental Protection Agency
EPP	Environmental Protection Plan
ESA	Endangered Species Act
ESS	Explosives Safety Submission
EZ	exclusion zone
FCZMA	Federal Coastal Zone Management Act
FS	Feasibility Study
FWENC	Foster Wheeler Environmental Corporation
GIS	Geographical Information System
HRG	Habitat Restoration Group
HSA	hollow-stem auger
HSP	Health and Safety Plan
IR	Installation Restoration
IRP	Installation Restoration Program
kW	kilowatt
LDR	land disposal restriction
MMR	Military Munitions Rule
MPM	most probable munition
msl	mean sea level
NAS	Naval Air Station
NAVSEA	Naval Sea Systems Command
N&C	Neptune and Company, Inc.
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEDTS	Navy Environmental Data Transfer Standards
NOSSA	Naval Ordnance Safety and Security Activity
NWRSA	National Wildlife Refuge System Administration Act
OEW	ordnance and explosives waste
OU	Operable Unit
OVA	organic vapor analyzer
PCB	polychlorinated biphenyl

ABBREVIATIONS AND ACRONYMS

(Continued)

PjM	Project Manager
PPE	personal protective equipment
PQCM	Project Quality Control Manager
PVC	polyvinyl chloride
QA	quality assurance
QC	quality control
RAB	Restoration Advisory Board
RAC	Remedial Action Contract
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RI Work Plan	Focused Remedial Investigation Work Plan
ROICC	Resident Officer in Charge of Construction
RPM	Remedial Project Manager
RWQCB	Regional Water Quality Control Board
SASW	spectral analysis of surface wave
SEP	Search Effectiveness Probability
SHSP	Site-Specific Health and Safety Plan
SHSS	Site Health and Safety Specialist
SOP	Standard Operating Procedure
SPT	standard penetration test
SSPORTS	Supervisor of Shipbuilding, Conversion and Repair, Portsmouth
SUXOS	Senior Unexploded Ordnance Supervisor
SWDIV	Southwest Division Naval Facilities Engineering Command
TBC	to be considered
TCLP	Toxicity Characteristic Leaching Procedure
TCRA	Time-Critical Removal Action
TSDF	treatment, storage, and disposal facility
TtEMI	Tetra Tech EM, Inc.
TTLC	total threshold limit concentration
USACE	United States Army Corps of Engineers
USC	United States Code
USCS	Uniform Soil Classification System
USFWS	United States Fish and Wildlife Service

ABBREVIATIONS AND ACRONYMS (Continued)

UXO	unexploded ordnance
WMM	waste military munitions
WMP	Waste Management Plan

EXECUTIVE SUMMARY

This Focused Remedial Investigation (RI) Work Plan (RI Work Plan) describes the scope of an ordnance and explosives waste (OEW) characterization, Time-Critical Removal Action (TCRA) for OEW, and geotechnical and seismic evaluations at Installation Restoration (IR) Site 2, Operable Unit (OU) 4A of former Naval Air Station (NAS) Alameda, Alameda Point, Alameda, California. The term "characterization" has been used in accordance with requirements established in Department of Defense (DoD) 6055.9-STD, which will involve a surface investigation of IR Site 2 to locate and identify OEW. The United States Department of the Navy (DON), Southwest Division Naval Facilities Engineering Command (SWDIV), directs these actions in accordance with requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). Foster Wheeler Environmental Corporation (FWENC), as the general contractor, is responsible for conducting this work for the remedial system that will be recommended in the subsequent Feasibility Study Report. The proposed investigation/evaluation does not address chemical contamination in soil, sediment, or groundwater. The DON has initiated the planned investigation at IR Site 2 to substantially eliminate, prevent, or abate any potential hazards associated with OEW items. For purpose of this Focused RI Work Plan, OEW is waste military munitions or munitions fragments derived from such military munitions as defined in the *Policy to Implement the EPA's Military Munition Rule* (DoD, 1998). The OEW may be used or unused, and may potentially be unexploded ordnance (UXO). It is anticipated that no further OEW-related action will be required at this site after completing the planned activities.

IR Site 2 is located on the western coastline of Alameda Point, Alameda, California, and includes the West Beach Landfill (the landfill), the West Beach Landfill Wetland (the wetland), and the associated interior and coastal margins. The landfill is sited on approximately 77 acres in the extreme southwestern end of Alameda Point. It was used as the main disposal area for the former NAS Alameda from approximately 1952 through 1978. An estimated 1.6 million tons of waste were deposited there [Ecology and Environment, Inc. (E&E), 1983]. The wastes included municipal solid waste, waste chemical drums (contents unknown), solvents, oily waste and sludge, paint waste, plating wastes, industrial strippers and cleaners, acids, mercury, polychlorinated biphenyl (PCB)-containing liquids, batteries, low-level radiological waste from radium dials and dial painting, scrap metal, inert ordnance, asbestos, several pesticides (solid and liquid), tear gas agent, biological waste from the Oak Knoll Naval Hospital, creosote, dredge spoils, waste medicines, and reagents (E&E, 1983). OEW may have also been deposited in the 2.3-acre (approximate) Possible OEW Burial Site located in the southern part of the landfill. A seawall was constructed along the southern and western edges of the site and a 36-inch culvert was installed in the seawall to hydraulically connect San Francisco Bay to waters within the

seawall. A substantial (10- to 15-foot) dike was installed around the perimeter of the site when disposal operations ceased.

The wetlands cover about 30 acres and are bounded by the landfill to the north and east and by the coastal margin adjacent to the San Francisco Bay on the south and west. The wetlands contain two perennial ponds. The northern pond is connected to the bay by the culvert and the southern pond was created by the removal of dredged materials for use as landfill cover. Fresh water has since filled the excavation area and created the pond. The only known material known to have been deposited in the wetland is scrap metal (E&E, 1983).

The coastal margin is the thin strip of land between the landfill or wetland and the bay. It acts as a buffer for the landfill and the wetland and is composed of the perimeter dike and a rip-rap seawall. Materials in the coastal margin differ from those in the landfill and wetlands. The interior margin is the area of IR Site 2 that lies outside the landfill and wetlands, to the north and east. It also contains part of the perimeter dike and includes all areas outside the dike to the north and east. It is a geographic definition used primarily for classifying sampling locations. Mustard and thistles are the dominant vegetation of the upland areas while bermuda grass, and pickleweed inhabit the wetlands [FWENC, 2001a; U.S. Fish and Wildlife Service (USFWS), 1998]. The site is currently used as a bird and wildlife sanctuary and will be transferred to the USFWS for use as a National Wildlife refuge.

The DON is conducting a remedial investigation on IR Site 2 with oversight from the United States Environmental Protection Agency (EPA), the California Department of Toxic Substances Control (DTSC), and the California Regional Water Quality Control Board (RWQCB) for the San Francisco Region. Preliminary results indicated that there is no existence of soil or groundwater chemical contamination that exceeded the total threshold limit concentration (TTLC) hazard levels. Several known contaminants have been buried in the landfill and the threat of explosion due to contact with buried OEW does exist.

Wildlife species that are federally listed as endangered or threatened could potentially occur on IR Site 2, 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 IR Site 2, and they should not be affected by planned activities on the site. The open water area adjacent to IR Site 2 is a wintering area for migratory birds and provides a resting and feeding habitat for over 1,000 ducks during the winter (USFWS, 1998). Activities planned for IR Site 2 should not affect any of the migratory waterfowl or waterbirds found offshore.

Terrestrial wildlife species most susceptible to project activities include shorebirds, small mammals, and ground-dwelling birds. These species may be adversely affected by the mowing of existing vegetation to a 4-inch height. To minimize impacts to these species, clearing will not occur during the normal nesting season (April 1 through August 31).

Planned activities on the site include an accurate upland topographic survey, cutting the vegetation to a height of 4 inches, a surface OEW sweep, excavation of the Possible OEW Burial Site to a depth of 1 foot, and seismic and geotechnical evaluations. These activities will be performed in accordance with applicable federal and state regulations, including those standards that provide protection of air, water, land, human health, and cultural and biological resources.

The geotechnical evaluation will be conducted to identify characteristics important for site remediation and also for analysis of future uses at IR Site 2. The field investigations conducted to collect this data will involve cone penetrometer tests, soil borings using a hollow-stem auger (HSA) and test pits. Representative, disturbed, and undisturbed soil samples will be retrieved for geotechnical analyses. Chemical analyses will not be performed. For perimeter dike stability evaluation, offshore boring information will be collected. An offshore bathymetric survey will be performed to United States Army Corps of Engineers Class 1 hydrographic survey standards. Soil conditions change rapidly in near-shore marine environments; therefore, actual soil data will be retrieved. The seismic evaluation will include a review of all existing site information to determine data gaps needed to allow evaluation of seismic hazard.

1.0 INTRODUCTION

The Southwest Division Naval Facilities Engineering Command (SWDIV) has authorized Foster Wheeler Environmental Corporation (FWENC) to perform an ordnance and explosives waste (OEW) characterization, Time-Critical Removal Action (TCRA), and geotechnical and seismic evaluations of the former solid waste disposal site identified as Installation Restoration (IR) Site 2, Operable Unit (OU) 4A of the former Naval Air Station (NAS) Alameda, Alameda Point, Alameda, California (see Figure 1-1). The authorization for this work is issued under Engineering Field Activities Northwest (EFANW) Remedial Action Contract (RAC) II No. N44255-95-D-6030, Delivery Order (DO) No. 0095, and is being performed under the Defense Environmental Restoration Program (DERP) for Base Realignment and Closure (BRAC). These actions are a critical component of the United States Department of the Navy's (DON's) Remedial Investigation/Feasibility Study (RI/FS) of the sites under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), more widely known as "Superfund".

1.1 PURPOSE AND OBJECTIVES

The objective of this action is to complete a surface OEW characterization of IR Site 2, perform a TCRA for OEW that could occur in the Possible OEW Burial Site and to complete geotechnical and seismic evaluations of the site. Findings of the characterization, TCRA, and evaluations will be incorporated into the RI and FS Reports for IR Site 2. The tasks involved in the completion of this DO for IR Site 2 are summarized below.

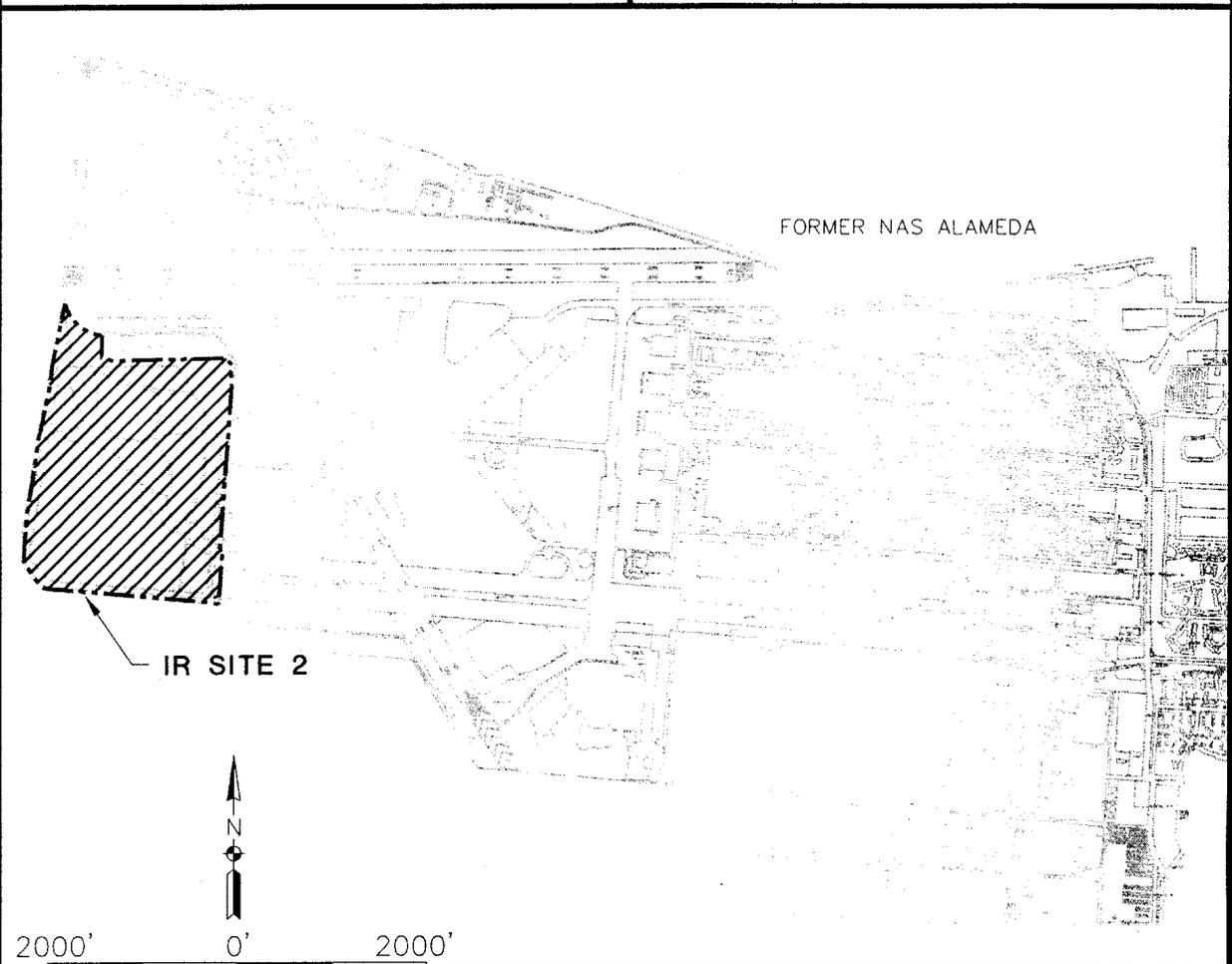
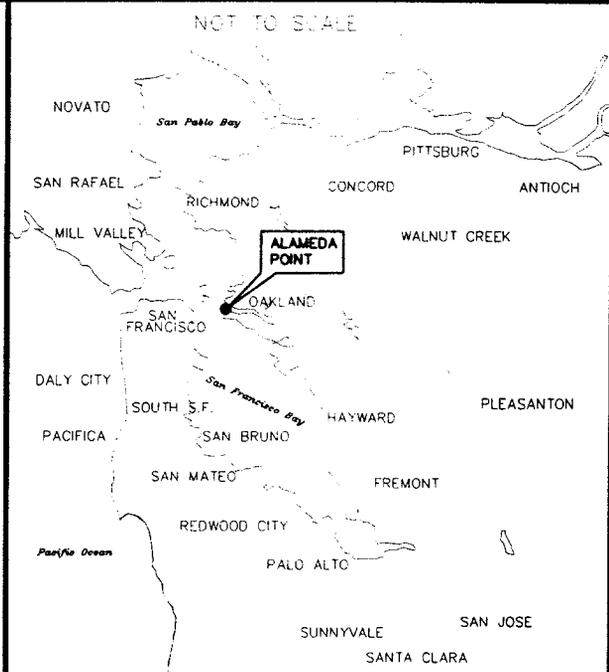
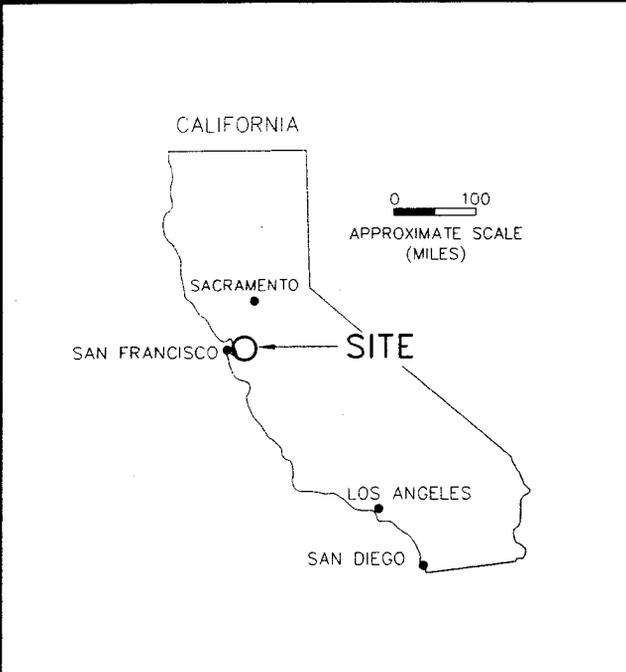
1.1.1 Task 1: Review Background Information and Initiate Focused RI Work Plan

The review of existing site information will include available data and results of previous investigations performed at IR Site 2. Potential federal and state applicable or relevant and appropriate requirements (ARARs) and initial data quality objectives (DQOs) for the work described in the Statement of Work will also be identified as part of the review.

1.1.2 Task 2: Prepare Field Investigation Documentation and Perform Fieldwork

Documents necessary to perform field investigation work will include preparation of a Focused RI Work Plan, Health and Safety Plans (HSPs), Project Contractor Quality Control (CQC) Plan, procedures for geotechnical and seismic sample and analysis, and development of Standard Operating Procedures (SOPs). The fieldwork will be performed in accordance with the requirements of these documents, sample analyses will be performed by a geotechnical laboratory, and investigative derived wastes will be disposed.

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 DCN: FWSD-RAC II -02-0132
 D.O.# 0095
 APPROVED BY: AL
 CHECKED BY: LH
 REVISION: 0
 DRAWN BY: MD
 DATE: 02/08/02



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Figure 1-1
 ALAMEDA POINT VICINITY MAP
 ALAMEDA, CA
 Southwest Division
 Naval Facilities Engineering Command
 FOSTER WHEELER
 ENVIRONMENTAL CORPORATION

1.1.3 Task 3: Prepare Action Memorandum, Explosives Safety Submission, and Perform Ordnance and Explosives Waste Time-Critical Removal Action

An Action Memorandum for the TCRA and an Explosives Safety Submission (ESS) document for OEW clearance within the 2.5-acre Possible OEW Burial Site at IR Site 2 will be prepared. The Action Memorandum will be submitted in draft form for DON review. After incorporation of DON comments, the Action Memorandum will be submitted to regulatory agencies and the Administrative Record for a 30-day review period. Comments received will be responded to, with the responses submitted to the Administrative Record. The ESS document will be submitted to the DON in draft form for review and along with response to comments. After incorporation of DON comments, the ESS document will be submitted to the Naval Ordnance Safety and Security Activity (NOSSA) and to the Department of Defense Explosives Safety Board (DDESB) for review. Comments received, if any, will be responded to, and a Final ESS document will be submitted to DDESB for approval.

The TCRA for OEW will involve removal, screening and replacement of the top 1-foot layer of soil/landfill cover material in the Possible OEW Burial Site at IR Site 2. A public notice inviting review of the Action Memorandum will be published within 60 days of the initiation of the removal action.

1.1.4 Task 4: Geographic Information System Update

All new data will be loaded into the existing site-specific Geographical Information System (GIS)/database.

1.1.5 Task 5: Prepare Report of Findings

The results of the OEW characterization, the OEW removal action, the seismic evaluations, and the geotechnical evaluations will be included in the Report of Findings. The OEW characterization findings will be incorporated into the RI Report for IR Site 2, either directly or as an addendum to the existing document.

The seismic hazard evaluations and the geotechnical characterization data shall be incorporated into the FS Report to be prepared for the site.

1.1.6 Task 6: Aid in the Preparation of Feasibility Study Report

The FS Report will include the development and screening of alternatives and a detailed analysis of alternatives for seismic and/or geotechnical hazards. Responses to DON and agency comments will also be provided.

1.1.7 Scope of Work

The scope of work planned for the surface OEW characterization, TCRA, and geotechnical and seismic evaluations at IR Site 2 consist of the following main categories of activities:

- Surface OEW Investigation
- Time-Critical Removal Action
- Geotechnical Evaluation
- Seismic Evaluation
- Document Preparation

Brief descriptions of these activities are presented below.

1.1.8 OEW Investigation

Existing archival site information will be reviewed to conservatively estimate the most probable munition (MPM) likely to be encountered during investigative activities and assess the hazards and safety precautions that will be involved. An upland topographic survey for the site will be performed to establish a grid network for conducting surface OEW clearance operations and will provide spot elevations and associated horizontal coordinates for significant features within the limits of the site. Prior to conducting any field activities, a visual reconnaissance/surface sweep of all support zones, staging areas, and access roads required to support site mobilization, land surveys, and geotechnical and seismic investigations will be conducted by unexploded ordnance (UXO) personnel to remove metallic debris and any potentially dangerous OEW from the ground surface (FWENC, 1998a). Vegetation on the site will be cut to a height of no more than 4 inches to facilitate a surface OEW investigation of the site and provide access for soil sampling activities and test pit excavation. A UXO Technician with a magnetometer will proceed in front of each piece of grass-cutting equipment to screen for OEW that might be located on the landfill surface. Depending on the height of the grass and vegetation at the time of mobilization, the cuttings will be left in place (short growth) or removed, and stockpiled on site (tall growth). A biologist will observe the vegetation removal activities to ensure that the mowing does not affect nesting sites, indigenous landbirds, or waterfowl. The topographical features of the site will be evaluated to determine if planned activities require modification. An OEW investigation of the site surface will be conducted, and OEW encountered will either be stored in a nearby magazine for later disposal if it is safe to transport or blown in place (BIP) by a military Explosive Ordnance Disposal (EOD) unit if considered unsafe. A TCRA of the Possible OEW Burial Site will be performed and will consist of the removal of the top 1 foot of topsoil from the 2.5-acre (approximate) area site, sifting it, and returning it to the excavation. UXO avoidance procedures will be followed and the soil will be removed in 6-inch lifts. Any OEW encountered will be treated in accordance with procedures established in SOP-1.

1.1.9 Geotechnical Evaluation

Geotechnical characteristics that are considered important factors in the geotechnical evaluation are provided as follows:

- Hydraulic performance of existing soil cover over the landfills
- Settlements of existing cover soil and new fill material placed over the landfills
- Static and dynamic stability of perimeter dikes along the shoreline, including resistance to wave erosion
- Integration of future land use over the landfills with the requirement for landfill caps to control site drainage and infiltration

The data collected to evaluate these characteristics will generally include:

- Thickness and physical properties of existing soil cover over the landfills
- Groundwater elevations
- Physical properties of perimeter dikes and offshore sediment parallel to the dikes, including parameters needed for static and seismic stability analyses
- Accurate topographic survey including existing mudline elevations in the wetlands areas
- Accurate bathymetric survey data along the shoreline out to a distance of potential sliding or lateral spreading of perimeter dikes
- Tide, wind, and wave data for dike erosion protection design

The field investigations conducted to collect this data will involve drilling soil borings using a hollow-stem auger (HSA) and excavating test pits. A total of 12 soil borings, 18 CPTs, and 16 test pits are proposed for IR Site 2. Representative, disturbed, and undisturbed soil samples will be retrieved for geotechnical analyses. Chemical analyses will not be performed.

The shoreline survey will extend from the high water line to 500 feet offshore. Survey lines will be performed approximately perpendicular to the general shoreline orientation at 50-foot intervals. These shore-perpendicular survey lines will extend from the shoreline to the offshore limit. Tie lines will be performed in a direction to intersect the shore-perpendicular lines. Tie lines will be performed at approximately 100-foot spacing from the shoreline to the offshore limit of the survey area.

For perimeter dike stability evaluation, offshore boring information will be collected. Soil conditions change rapidly in near-shore marine environments; therefore, actual soil data will be retrieved. Five offshore borings will be drilled using a drill rig on a barge with a tug.

Groundwater will be allowed 1 day to recover from drilling before depths to groundwater are measured. In the upland wells, piezometers will be installed in the borings to allow more accurate measurements of groundwater elevations. The piezometers will not be used for groundwater sampling, therefore, these will be 1-inch diameter plastic/polyvinyl chloride (PVC) piping installed inside the HSA.

1.1.10 Seismic Evaluation

The seismic evaluation will be done in multiple phases. The first phase will consist of a site-specific seismic hazard analysis to estimate site “design earthquake” ground motions and an engineering assessment of seismic hazards (slope instability and liquefaction) using traditional limit equilibrium slope stability analysis methods (for example, PCSTABL 5M or UTEXAS3 computer programs) and empirical procedures for liquefaction evaluation (Seed and Idriss, 1971; Robertson and Wride, 1997). Phase 1 shall start with field testing to determine static and dynamic soil parameters. Soil types and strength shall be measured by drilling boreholes and sampling, cone penetrometer tests (CPTs), and laboratory tests. If existing data such as CPTs provide the data necessary, then additional testing will be minimized to a few confirmatory tests. Velocities of sound waves shall be measured using seismic refraction surveys (for example, non-intrusive spectral analysis of surface wave (SASW) method, CPT seismic cone, or down-hole and cross-hole methods).

The assessment will address both liquefaction potential and slope stability due to seismic forces along the entire length of waterfront dike system. The most critical slopes for analysis will be determined based on the slope geometry, and subsurface soil, and groundwater conditions. In general, steeper slopes have more potential for deformation during an earthquake. Existing information on past slope movements (such as creep) and historical ground and slope deformations due to liquefaction at the site will be used to evaluate areas of highest potential for liquefaction. The results of Phase 1 will be identification and listing of areas where there is low or high potential for ground movement during earthquakes. Further seismic evaluations will not be recommended in areas of low potential for ground movement. In areas of high potential for movement (that is, areas with marginal factors of safety against slope failure), a Phase 2 evaluation shall be required.

Phase 2 evaluations, if needed, will use Newmark-type deformation analysis methods (that is, Makdisi and Seed, 1978) to estimate seismically induced slope deformations. Slopes with estimated large deformations may be identified for further deformation analyses by more rigorous methods.

The site “design earthquake” is selected based on design criteria from the DON and historical earthquake ground motion measurements in the site area. Phase 2 calculations shall include quantifying potential liquefaction-induced ground surface subsidence and lateral spreading. Alternatives for mitigation of the identified seismic hazard impacts will be developed for

implementation along with other site closure alternatives. An analysis of each of the identified alternatives will be performed in sufficient detail to support the FS and select a preferred alternative.

1.1.11 Issues

The 7-step DQO process was used to examine the scientific data collection elements of the project. All phases of the project, the surface OEW characterization, TCRA, and the geotechnical and seismic evaluations were analyzed with the DQO process and the summaries of the objectives can be found in Tables 1-1 and 1-2.

The issues identified for the OEW characterization phase are provided as follows:

- How the cartesian coordinate grid will be established
- How the nesting seasons of listed and endangered species may affect project mobilization and duration
- How the surface investigation will be conducted
- How the removal action will be conducted
- Establish quality assurance/quality control (QA/QC) procedures for both the surface OEW characterization and the TCRA
- OEW is not expected to be encountered, but if it is, the following issues must be considered:
 - The OEW will be considered investigative-derived waste
 - What actions will be taken if the OEW is considered unsafe to move
 - What actions will be taken if the OEW is considered safe to move

The issues identified for the geophysical and seismic evaluation phase are provided as follows:

- How potential seismic-induced slope deformations and soil liquefaction will affect performance of the site perimeter dikes
- Determine type, quantity, and locations of field investigation tests
- Determine representative soil samples for laboratory testing and select type and quantity of the tests
- Provide estimates of site design earthquake ground motions
- Evaluate site liquefaction potential
- Analyze static and seismic stability (seismic deformations) of the perimeter dike slopes
- Assess impacts of the site liquefaction and large slope deformations on performance of the dikes and recommend mitigation alternatives

TABLE 1-1

DATA QUALITY OBJECTIVES FOR GEOTECHNICAL CONCERNS

STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	STEP 6	STEP 7
Statement of Problem	Decisions	Input to the Decisions	Boundaries of the Study	Decision Rules	Limits on Decision Errors	Optimizing the Design
<p>IR Site 2 contains a 77-acre, unlined landfill and a 33-acre wetlands area. No maintenance has been performed.</p> <p>Waste depth is unknown. No contamination of soil or groundwater exceeds the TTLC hazardous levels</p> <p>OEW/UXO could have been buried in the landfill.</p> <p>Engineered soil cover to be constructed over landfill, future reuse designated as a game refuge.</p> <p>Seismic and geotechnical evaluation is needed to determine the potential for slope failure into the San Francisco Bay.</p>	<p>What number of soil samples and tests are needed to characterize geotechnical parameters for the entire site?</p> <p>What are the existing data gaps that are needed to allow evaluation of seismic hazard exposure?</p>	<p>Historical document review will provide input for planning field testing program (number of CPTs, boreholes, locations, depths, sample types, sampling interval, sampling procedures, and etc.)</p> <p>Field results (SPT blow counts, vane shear and CPT test results) and laboratory tests will aid in evaluating the soil liquefaction potential and stability of perimeter dikes. Loading conditions will determine if UU, CD, or CU laboratory tests with pore water measurements will be performed.</p> <p>Data will include soil-strength characteristics and various loading conditions.</p>	<p>Roads/paved runways north and east of the site – S.F. Bay to south and west. (see Figure 4-2). Approximate area of investigation is described in Section 2.0 of this Work Plan.</p> <p>Tentative schedule for the fieldwork begins December 2001.</p> <p>Project closeout is tentatively scheduled for 2003.</p>	<p>If the historic document review indicates that no data gaps exist, then FWENC will use available data.</p> <p>If not, FWENC shall proceed according to the Work Plan and the results of historical document review.</p> <p>If critical slopes require additional stability and deformation analyses, then Phase 2 evaluation using Newmark-type deformation analysis methods will be used.</p>	<p>Due to judgmental sampling design, decision errors will not be established.</p> <p>The sampling plan criteria are based on a preliminary historical document review and past knowledge of the Bay Area geology and seismicity.</p> <p>Judgmental seismic interpretation can also occur in the field using the CPT and other seismic equipment and in analyzing field data (slope stability analyses).</p>	<p>Upland samples will be collected to a minimum of a 20-foot depth.</p> <p>Samples will be collected every 5 to 10 feet or at any change of formation based on the historical CPT results and field geologist/engineer observations.</p> <p>Similarly, the sample quantity for testing and laboratory testing program will be refined based on the past field test results.</p> <p>Locations of the analysis sections, initially selected based on the site topography (slope geometry), will be refined using the field and laboratory test data. Transect locations at 300-foot intervals were determined from past landfill field activity experience. Select interval locations will provide a continuous representation of the soil profile and in situ properties.</p>

Notes: CPT – cone penetrometer test
 FWENC – Foster Wheeler Environmental Corporation
 IR – Installation Restoration
 OEW – Ordnance and explosives waste

SPT – standard penetration test
 TTLC – total threshold limit concentration
 UXO – unexploded ordnance

TABLE 1-2

DATA QUALITY OBJECTIVES FOR ORDNANCE AND EXPLOSIVES CONCERNS

STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	STEP 6	STEP 7
Statement of Problem	Decisions	Input to the Decisions	Boundaries of the Study	Decision Rules	Limits on Decision Errors	Optimizing the Design
<p>OEW/UXO may have been buried in the landfill portion of IR Site 2.</p> <p>OEW was found on adjacent IR Site 1 during a previous survey.</p> <p>Site must be investigated to determine if OEW contamination exists.</p> <p>Site must be clear prior to land transfer.</p> <p>IR Site 2 was once a landfill where metal debris was buried.</p> <p>No OEW is expected to be encountered.</p>	<p>Is surface and subsurface OEW contamination likely?</p> <p>What procedures will be used for OEW that is not safe to move?</p> <p>What procedures will be used for OEW that can be shipped?</p>	<p>UXO Site Investigation by SSPORTS (1999).</p> <p><i>IR Site 2 Remedial Investigation Report, Draft</i> (N&C, 2000).</p> <p><i>Initial Assessment Study of Naval Air Station, Alameda, California, Final Report</i> (E&E, 1983).</p> <p>Results of the planned surface sweep.</p> <p>OEW safety, packaging, and shipping publications.</p> <p>Search Effectiveness Probability (SEP) test parameters as described in SOP-1 in the Work Plan.</p>	<p>Site IR-2, OU-4A of the former NAS Alameda.</p> <p>Surface sweep of entire site, excavation of Possible OEW Burial Site.</p> <p>Area of surface sweep is described in Figure 2-1 in the Work Plan.</p> <p>Nesting season of listed species may affect de-mobilization date.</p> <p>Federal and state regulations affect the packing, transportation and treatment of OEW.</p> <p>CQC Plan (SEP procedures) affect and quantify sweep procedures.</p>	<p>If no OEW is encountered during the surface and subsurface investigation, then no further action concerning OEW will be taken. If OEW is encountered, it will be considered investigation-derived waste and treated according to its status (safe, unsafe).</p>	<p>SEP tests will ensure 90 percent confidence level for sweep effectiveness.</p> <p>SEP tests will measure detection probability. If SEP tests results fall below 85 percent, then corrective measures outlined in CQC plan will be taken.</p> <p>OEW encountered will be evaluated as follows:</p> <ul style="list-style-type: none"> - If unsafe to ship, a military EOD unit will respond. - If safe to ship, OEW will be packed and shipped in accordance with existing regulations and procedures. 	<p>Surveyors will establish control for the installation of a Cartesian Coordinate Search Grid.</p> <p>UXO Technicians will complete surface sweep and the subsurface excavation.</p> <p>Process for packing, certifying, and shipping OEW optimized.</p> <p>Process for certifying UXO sweep team in place.</p> <p>All OEW will be counted, photographed, and logged.</p>

Notes: CQC – Contractor Quality Control
E&E – Ecology and Environmental, Inc.
EOD – explosive ordnance disposal
NAS – Naval Air Station
OEW – ordnance and explosives waste

OU – Operable Unit
SEP – Search Effectiveness Probability
SSPORTS – Supervisor of Shipbuilding, Conservation and Repair, Portsmouth
UXO – unexploded ordnance

1.1.12 Document Preparation

The documents to be prepared will include the following:

- Base-Wide Health and Safety Plan (BWHSP)
- Site-Specific Health and Safety Plan (SHSP)
- Focused RI Work Plan for OEW Characterization, TCRA, and Geotechnical and Seismic Evaluations which includes Project CQC Plan and associated SOPs
- Action Memorandum for a TCRA
- ESS
- Report of Findings
- FS Report Attachment (information yielded from the investigative effort)

The Focused RI Work Plan, Action Memorandum, and FS Report Attachment will require Internal Draft (Pre-Draft), Draft, Draft Final, and Final Versions. The BWHSP, SHSP, ESS, and Report of Findings will require draft and final versions.

2.0 SITE DESCRIPTION

2.1 DESCRIPTION AND CONSTRUCTION HISTORY

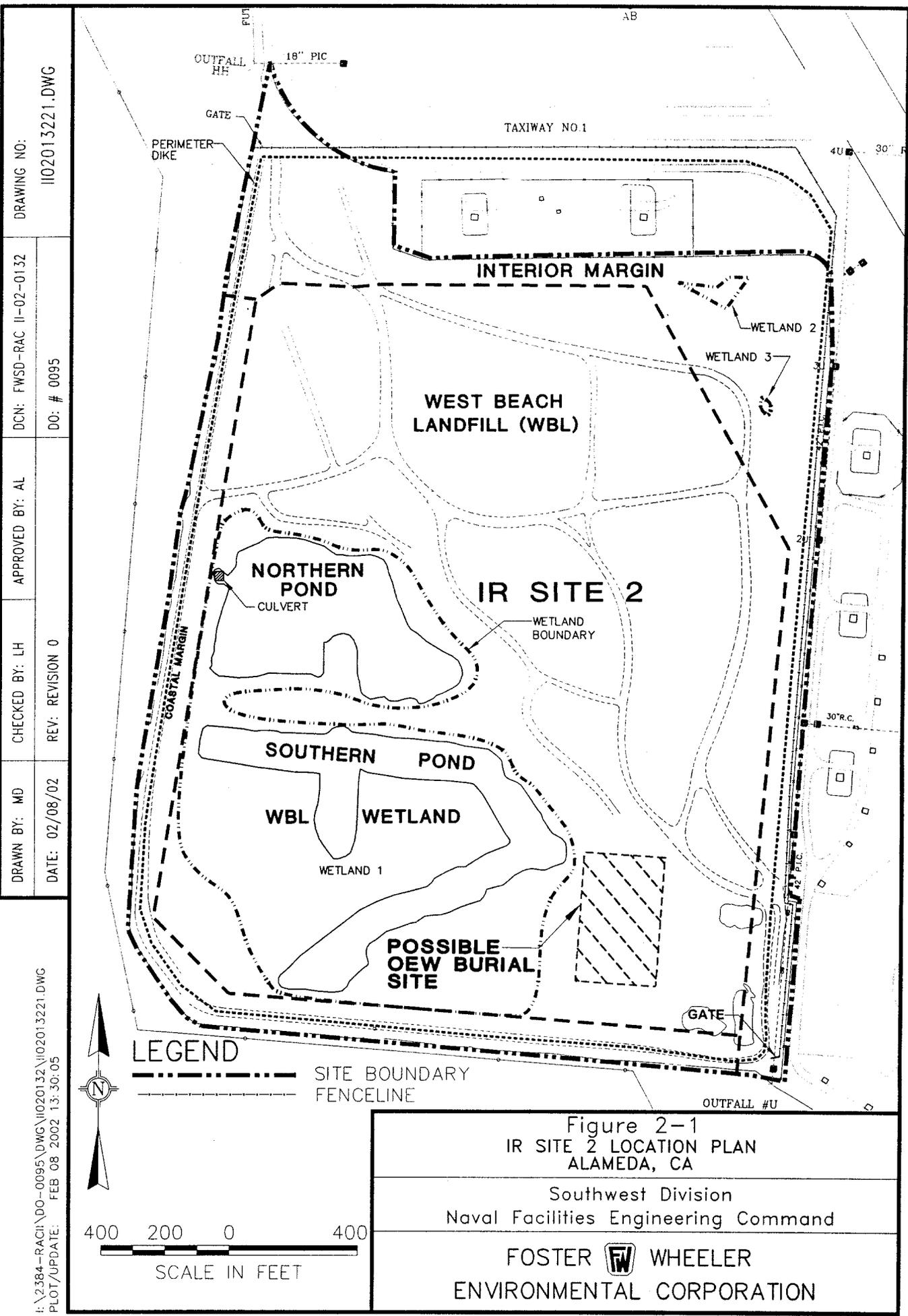
IR Site 2 is located on the western coastline of Alameda Point, Alameda, California, and includes the West Beach Landfill (the landfill), the West Beach Landfill Wetland (the wetland), and the associated interior and coastal margins (Figure 2-1).

The landfill is sited on approximately 77 acres in the extreme southwestern end of Alameda Point. It was used as the main disposal area for the former NAS Alameda from approximately 1952 through 1978. An estimated 1.6 million tons of waste were deposited there [Ecology and Environment, Inc. (E&E), 1983]. The wastes included municipal solid waste, waste chemical drums (contents unknown), solvents, oily waste and sludge, paint waste, plating wastes, industrial strippers and cleaners, acids, mercury, polychlorinated biphenyl (PCB)-containing liquids, batteries, low-level radiological waste from radium dials and dial painting, scrap metal, inert ordnance, asbestos, several pesticides (solid and liquid), tear gas agent, biological waste from the Oak Knoll Naval Hospital, creosote, dredge spoils, and waste medicines and reagents (E&E, 1983). OEW may have also been deposited in the 2.5-acre (approximate) Possible OEW Burial Site located in the southern part of the landfill. A seawall was constructed along the southern and western edges of the site and a 36-inch culvert was installed in the seawall to hydraulically connect San Francisco Bay to waters within the seawall. A substantial (10- to 15-foot) dike was installed around the perimeter of the site when disposal operations ceased.

The wetlands cover about 30 acres and are bounded by the landfill to the north and east and by the coastal margin adjacent to the San Francisco Bay on the south and west. The wetlands contain two perennial ponds. The northern pond is connected to the bay by the culvert and the southern pond was created by the removal of dredged materials for use as landfill cover. Fresh water has since filled the excavation area and created the pond. The only known material known to have been deposited in the wetland is scrap metal (E&E, 1983).

The coastal margin is the thin strip of land between the landfill or wetland, and the bay. It acts as a buffer for the landfill and the wetland and is composed of the perimeter dike and rip-rap seawall. Materials in the coastal margin differ from those in the landfill and wetlands.

The interior margin is the area of IR Site 2 that lies outside the landfill and wetlands, to the north and east. It also contains part of the perimeter dike and includes all areas outside the dike to the north and east. It is a geographic definition used primarily for classifying sampling locations. Grasses and thistles are the dominant vegetation of the upland areas while seaside trefoil, brass buttons, and pickleweed inhabit the wetlands [United States Fish and Wildlife Service (USFWS), 1998].



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Figure 2-1
 IR SITE 2 LOCATION PLAN
 ALAMEDA, CA

Southwest Division
 Naval Facilities Engineering Command

FOSTER WHEELER
 ENVIRONMENTAL CORPORATION

The site is currently used as a bird and wildlife sanctuary and will be transferred to the USFWS for use as a National Wildlife refuge.

2.2 PREVIOUS INVESTIGATIONS

The DON is conducting a RI with oversight from the United States Environmental Protection Agency (EPA), California Department of Toxic Substances Control (DTSC), and the California Regional Water Quality Control Board (RWQCB) for the San Francisco Bay Region in accordance with the CERCLA.

2.2.1 Site Characterization Activities

Surface and subsurface sampling of soil, groundwater, sediment, pore and surface water, and plant and animal tissues were conducted to characterize the vegetation, wildlife, and ecological risk on IR Site 2 as follows:

- Solid waste assessment test, Phases 1, 2A, 5, and 6 (1990 and 1991)
- Ecological assessment (1993)
- Wetland delineation and wetland evaluation technique analyses (1993)
- Ecological assessment field activities (1994 and 1995)
- Threatened and endangered species surveys (1996 to 1997)
- Follow-up ecological investigation (1996 and 1997)
- Groundwater monitoring (1991 to 1998)
- Biological sampling (1998)
- Geophysical survey of the Possible OEW Burial Site (1998)

2.2.1.1 Chemical Contamination

Despite the hazardous chemicals suspected to have been disposed of in the landfill, the absence of obvious chemical contamination in the landfill or wetland suggests that the amount of chemicals disposed of was far lower than suspected or that they have already migrated from the site [Neptune and Company, Inc. (N&C), 2000].

2.2.1.2 Endangered Species

A literature review conducted by the USFWS (USFWS, 1998) identified several threatened or endangered species of plants and animals that could occur on IR Site 2 given their presence on similar sites in the area, but none of them are known to currently inhabit IR Site 2. Threatened or endangered bird species that have been observed near the wetlands on Alameda Point (or flying over them) include the American peregrine falcon, western snowy plover, California least tern, salt marsh common yellowthroat, Alameda song sparrow, and California brown pelican.

All of these birds (except the pelican) could potentially occur on IR Site 2, but none of them have been observed there in recent years. (USFWS, 1998)

2.2.1.3 Geophysical Survey

A 2.5-acre (approximate) area, the Possible OEW Burial Site, in the southeast corner of the West Beach Landfill at IR Site 2 was identified by Supervisor of Shipbuilding, Conversion and Repair, Portsmouth (SSPORTS) UXO personnel as a possible ordnance burial site. The identification of this site was based on the results of a geophysical survey of the area, the previous use of the site, and interviews conducted with former NAS Alameda Weapons Department personnel. Attempts to discriminate several large, subsurface masses and anomalies as ordnance or construction debris/waste were unsuccessful due to the high background noise of the area and the large amount of debris present. Information from survey results, personnel interviews, and archive data indicate the area was once used as a burial site for inert ordnance and that buried OEW/UXO may be present at the site (SSPORTS, 1999).

3.0 PROJECT MANAGEMENT

The project management team will be responsible for all technical and administrative aspects of the surface OEW characterization, TCRA, and geotechnical and seismic evaluations. Included among the team's responsibilities are the project schedule, staffing, data management, document control, project meetings, and reporting.

3.1 PROJECT ORGANIZATION

The project organization consists of FWENC and DON personnel who will conduct technical and administrative functions to ensure effective execution of the different tasks. A description of these key personnel and their responsibilities are provided below. A Project Organization Chart is presented in Figure 3-1.

3.1.1 Project Personnel

The DON Remedial Project Manager (RPM) for this project is Mr. Rick Weissenborn, who is responsible for managing the project, monitoring the budget, maintaining the schedule, and interacting with regulatory agencies and community members. Mr. Doug DeLong is the Environmental Compliance Manager (ECM) and caretaker for Alameda Point and will be responsible for coordinating field activities and ensuring that operations conducted on the site are in compliance with Base-specific rules and regulations. Ms. Shirley Ng is the Resident Officer in Charge of Construction (ROICC) and is responsible for QC and technical oversight of the field activities. A list of contacts involved in this project are found in Table 3-1.

The key FWENC personnel involved in the performance of this DO include the Project Manager (PjM), Senior Unexploded Ordnance Supervisor (SUXOS), Certified Industrial Hygienist (CIH), Site Health and Safety Specialist (SHSS), Project UXO QC Representative, geotechnical engineer, and UXO Specialists. In addition to these individuals, the project will be supported by a multi-disciplinary team of specialists who will lead or coordinate the various project subtasks, as required, under the direction of the PjM.

3.1.1.1 Project Manager

The PjM will be the main point of contact with the DON for all project-related matters, and he will be responsible for the overall conduct and performance of the project. The FWENC PjM will interface directly with the DON RPM. The PjM is primarily responsible for the development and implementation of the Focused RI Work Plan, which includes coordination among the task leads and support staff, acquisition of engineering or specialized technical support, and all other aspects of the day-to-day activities associated with the project. The PjM identifies staff requirements, directs and monitors project progress, ensures implementation of quality procedures and compliance with applicable codes and regulations, and is responsible for performance within the established budget and schedule.

Figure 3-1

Project Organization Chart

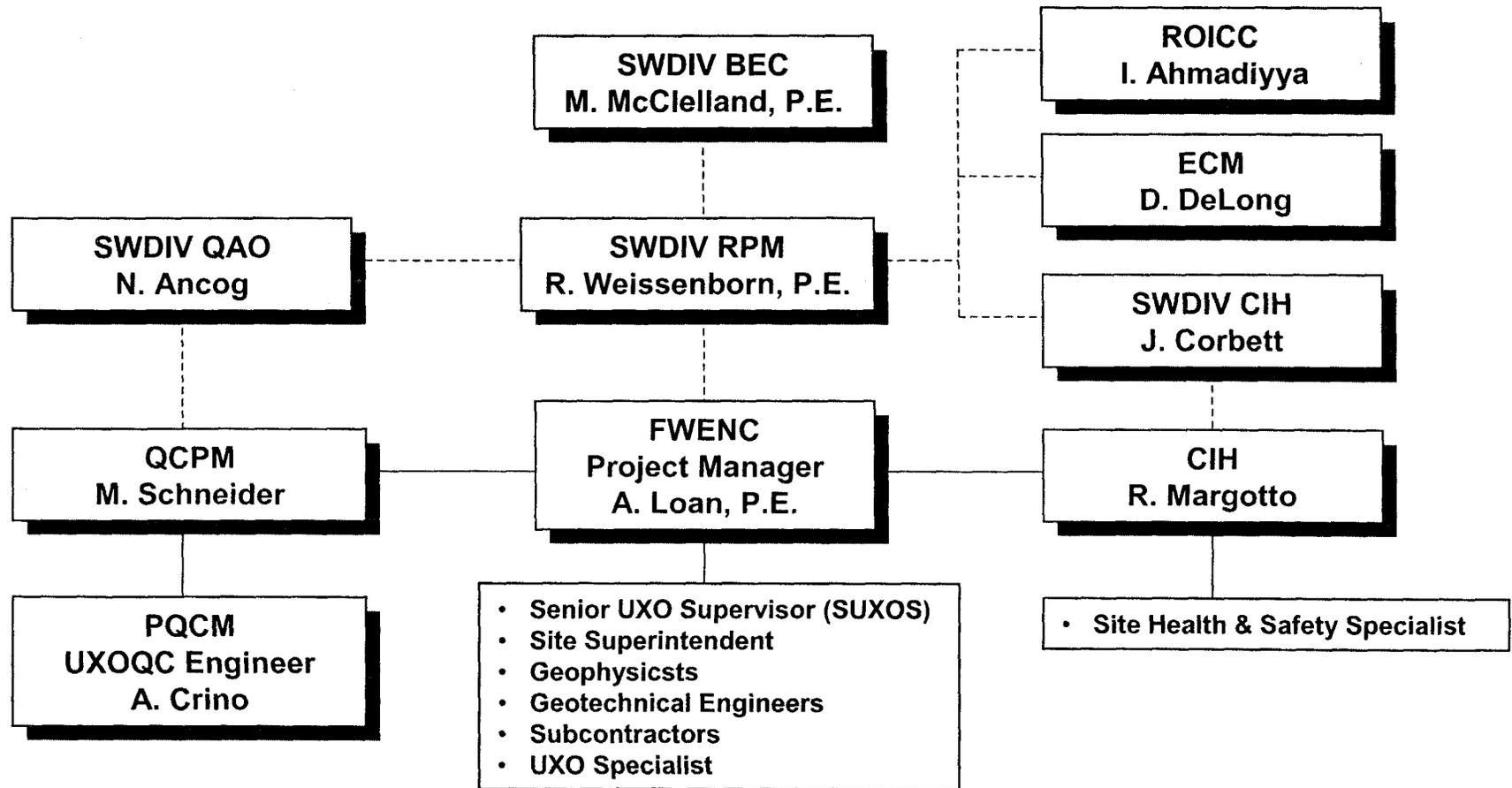


TABLE 3-1

LIST OF CONTACTS INVOLVED IN THE PROJECT

Agency	Contact	Project Title
Naval Facilities Engineering Command Southwest Division BRAC Operations 1230 Columbia St., Suite 1100 San Diego, CA 92101	Mr. Rick Weissenborn (619) 532-0952	RPM
Naval Facilities Engineering Command Southwest Division BRAC Operations 1230 Columbia St., Suite 1100 San Diego, CA 92101	Mr. Mike McClellan (619) 532-0965	BRAC Environmental Coordinator
Naval Facilities Engineering Command Southwest Division Caretaker Site Office -- San Francisco Bay Area 410 Palm Ave., Building 1, Suite 161 San Francisco, CA 94130-1802	Mr. Doug DeLong (415) 743-4718	ECM
Naval Facilities Engineering Command Southwest Division 1230 Columbia St., Suite 1100 San Diego, CA 92101	Mr. Rick Lovering (619) 532-0763	Contracting Officer
Naval Facilities Engineering Command Southwest Division 1220 Pacific Highway San Diego, CA 92132-5187	Mr. Narcisco Ancog (619) 532-2540	Quality Assurance Officer
Naval Facilities Engineering Command Southwest Division 1220 Pacific Highway San Diego, CA 92132-5187	Ms. Joyce Howell-Payne (619) 532-0978	Contract Specialist
Naval Facilities Engineering Command Southwest Division 2450 Saratoga Street, Building 110, Suite 200 Alameda Point, Alameda, CA 94501	Mr. Izzat Ahmadiyya (510) 749-5947	ROICC
U.S. Fish and Wildlife Service P.O. Box 524 Newark, CA 94560	Ms. Marge Kolar (510) 792-0222	USFWS Representative
U.S. Environmental Protection Agency 75 Hawthorne St. (SFD-8-2) San Francisco, CA 94105-3901	Ms. Anna-Marie Cook (415) 744-2367	EPA-RPM
California Environmental Protection Agency Department of Toxic Substances Control 700 Heinz Avenue, Suite 200 Berkeley, CA 94710	Mr. Daniel Murphy (510) 540-3772	DTSC-RPM

Agency	Contact	Project Title
California Regional Water Quality Control Board 1515 Clay Street, Suite 400 Oakland, CA 94612,	Mr. Dennis Mishek (510) 622-2390	RWQCB-RPM
FWENC NAVWPNSTA Seal Beach PMO Site Trailer Industrial & Gardeners Road 800 Seal Beach Boulevard Seal Beach, CA 90740	Mr. Jamshid Sadeghipour (562) 598-6150 Ext. 5880	Deputy Program Manager (DPM)
FWENC 1940 East Deere Avenue, Suite 200 Santa Ana, CA 92705	Mr. Abid Loan (949) 756-7514	PjM
FWENC NAVWPNSTA Seal Beach PMO Site Trailer Industrial & Gardeners Road 800 Seal Beach Boulevard Seal Beach, CA 90740	Ms. Mary Schneider (562) 936-5881	Program Quality Control (QC) Manager
FWENC 1230 Columbia St., Suite 640 San Diego, CA 92101	Mr. Jim Cocchiola (973) 452-1458	Project Superintendent/ Senior UXO Supervisor
FWENC 1230 Columbia St., Suite 640 San Diego, CA 92101	Mr. Tony Crino (619) 206-3344	UXOQC Engineer/Site Health and Safety Specialist (SHSS)
FWENC 1230 Columbia St., Suite 640 San Diego, CA 92101	Mr. Lance Humphrey (619) 234-8696 Ext. 237	Associate PjM
Alameda Fire Department (Dispatch) 1555 Oak Street Alameda, CA 94501	Dispatch (510) 522-2423	
Alameda Police Department (Dispatch) 1555 Oak Street Alameda, CA 94501	Dispatch (510) 522-2423	

3.1.1.2 Site Superintendent

The Site Superintendent is responsible for effective execution of the field activities in accordance with the proposed plan and the regulatory requirements. The Site Superintendent, with the support of FWENC's SHSS, are responsible for health and safety of the field personnel. 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 PjM.

3.1.1.3 Senior UXO Supervisor

The SUXOS will be directly responsible for all aspects of explosive safety for the project and will act as the Site Superintendent. The SUXOS 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 execution of instructions received from the FWENC PjM and the DON's RPM, documentation of site conditions, photographing UXO recovery and disposal operations, preparation of all project reports, and identifying any effort required to accomplish the scope of work.

3.1.1.4 Site Health and Safety Specialist

The SHSS is UXO-qualified and is responsible for the implementation of the BWHSP, SHSP, on-site training requirements, and recommending changes to level of personal protective equipment (PPE) to the CIH as site conditions warrant. The SHSS has Stop Work authority for safety conditions. The SHSS evaluates and analyzes any potential safety problems, implements safety-related corrective actions, and maintains a daily safety log.

3.1.1.5 UXO QC Representative

The UXO QC Representative will be responsible for QC activity related to all OEW and OEW-related work. The SHSS will perform the duties of the UXO QC Representative for this project. The duties of UXO QC Representative include:

- Implement UXO Surface Clearance Team certification procedures prescribed in the CQC Plan as directed by the Project Quality Control Manager (PQCM).
- Conduct Surface Clearance Effective Tests defined in the CQC Plan as directed by the PQCM.
- Conduct surveillance activity of encountered OEW (if any).

- Conduct other inspection/audit activity as directed by the PQCM.
- Complete reports and other documentation as directed by the PQCM.

3.1.1.6 Geotechnical Engineer

The geotechnical engineer is responsible for the implementation of the geotechnical and seismic evaluations.

3.1.1.7 UXO Specialist

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

3.1.1.8 Equipment Operators

The equipment operators are trained in the use of specific equipment for clearing, drilling and excavation techniques. These individuals report to the assigned SUXOS.

Note: The PjM, and equipment operator are not required to be UXO-trained. Each will have received training on UXO safety precautions and basic ordnance recognition features, but are **NOT** permitted to excavate or handle suspected or known OEW.

Table 3-1 is a list of contact names and telephone numbers for DON, FWENC, and other key personnel involved in this project:

3.2 PROJECT SCHEDULE

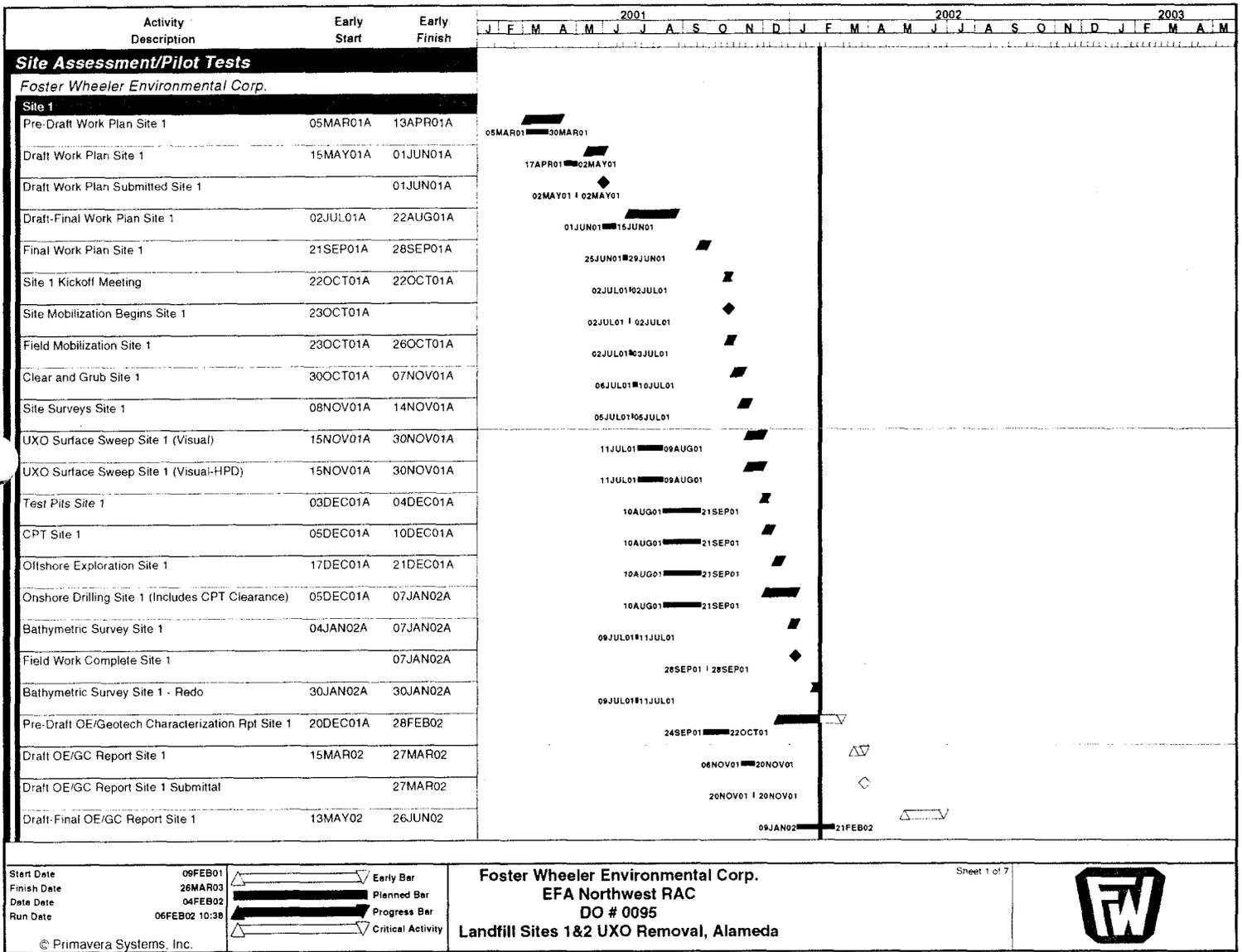
The project schedule is shown in Figure 3-2.

3.3 PROJECT COMMUNICATIONS AND REPORTING

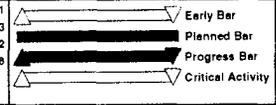
The FWENC PjM will work in close communication with the DON RPM to keep him informed of any technical or administrative issues that may impact the project schedule or budget and to ensure that all of the DON's project requirements are met. Any communication that has the potential to impact the project's scope of work, schedule, or budget will be confirmed via written correspondence between the PjM and the RPM.

3.3.1 Progress Reports

FWENC will provide monthly progress reports to the DON for the DO. These reports will document activities completed during the previous month, activities in progress, and activities scheduled for the upcoming month. Work breakdown structure, cost account, and manpower reports will also be included in the monthly progress report. These reports will reveal any actual or potential variances in the project schedule or budget. The monthly progress report will also discuss what actions, if any, will be needed to correct such variations.



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 Date Date 04FEB02
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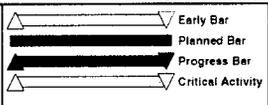
Foster Wheeler Environmental Corp.
EFA Northwest RAC
DO # 0095
Landfill Sites 1&2 UXO Removal, Alameda

Sheet 1 of 7



Activity Description	Early Start	Early Finish	2001												2002												2003				
			J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M
NAVFAC Southwest Division																															
Site 1																															
Site Assessment Completion Site 1		26MAR03													12JUL02 # 12JUL02																◇
Site 2																															
Completion Site 2		14JAN03													12JUL02 # 12JUL02																◇

Start Date 09FEB01
 Finish Date 26MAR03
 Date Date 04FEB02
 Run Date 06FEB02 10:38



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 EFA Northwest RAC
 DO # 0095
 Landfill Sites 1&2 UXO Removal, Alameda

Sheet 7 of 7



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3.4 PROJECT DELIVERABLES

The major project deliverables for the IR Site 2 OEW characterization, TCRA, and seismic and geotechnical evaluations are provided as follows:

- BWHSP (Draft and Final)
- SHSP (Draft and Final)
- Focused RI Work Plan (Internal Draft, Draft, Draft Final, and Final)
- Action Memorandum for TCRA (Internal Draft, Draft, Draft Final, and Final)
- ESS (Draft and Final)
- Field Books, Sketches, Computation Sheets, and Tabulation Sheets (if required)
- RI Report Addendum, Volume III (Internal Draft, Draft, Draft Final, and Final)
- FS Report Attachment (Internal Draft, Draft, Draft Final, and Final)
- Monthly Reports
- Meeting Minutes [internal meetings only – not BRAC Closure Team (BCT) or other public meetings]

3.5 MANAGEMENT OF FIELD OPERATIONS

This section describes the management of field operations during the OEW characterization, TCRA, and geotechnical and seismic evaluations at IR Site 2.

3.5.1 Site Access and Control

The IR Site 2 is not readily accessible to the public. Two gated fences exist between public roadways and the site, and a third fence surrounds the remaining site boundary. The ECM maintains keys to the gates and all visitors must register with the ECM to gain access to the site. An escort is required for visitors to access to the site. Base staff and contractors do not require escorts. Minimal changes to the current accessibility of the site during investigation and removal operations will be required.

Site access and control measures implemented by FWENC will involve the following:

- One office trailer and a storage container for equipment will be mobilized to the site and secured.
- Access to areas being used for investigation/surveys will be restricted through use of caution tape to ensure the activities are not disturbed.

- Temporary barricades and warning signs will be used to prevent access to any areas that pose an immediate risk to health and safety if any OEW is found during the characterization or TCRA; FWENC UXO personnel will erect the barricades and assist the ECM with road closures, if necessary. All barricades will be removed immediately after completion of OEW investigative/removal operations.
- Exclusion zones (EZs) that will restrict access to areas on the site will be established during certain operations and coordinated through the ECM. The size of the exclusion zones may vary depending on requirements and will be determined by the SUXOS. Security measures will be established to keep nonessential personnel out of the affected area(s).

3.5.2 Field Office/Command Post

FWENC personnel will maintain an office trailer/command post and a storage container just inside the southern gate of IR Site 1 (immediately adjacent to IR Site 2) for the duration of the field operations and will coordinate and install the necessary utilities (to include cellular telephone and electrical supplies). Bottled water for drinking and hand washing will be maintained at the site office trailer. The trailers will be locked at the end of each workday. The final location of the trailer will be approved by the ECM.

3.5.3 Traffic Control/Parking

Parking will be restricted to a site adjacent to the site office trailer and areas where characterization/evaluation operations are underway. As needed, vehicles may need to travel off existing roads to move equipment and/or personnel.

4.0 PROJECT EXECUTION

This section provides an overview of FWENC's approach to performance of the OEW characterization, TCRA, and geotechnical and seismic evaluations at IR Site 2. A brief description of safety requirements and procedures to be followed during performance of the work are also provided.

4.1 PRE-MOBILIZATION

The following individual agencies will be notified at least 30 days prior to the start of any operations on IR Site 2:

USFWS – Ms. Marge Kolar

EPAs – Ms. Anna-Marie Cook

RWQCB – Mr. Dennis Mishek

SWDIV BRAC Operations – Mr. Mike McClellan/BRAC Environmental Coordinator

Pre-mobilization activity will involve notifications to appropriate agencies/personnel, kickoff meetings, mobilization of equipment, and set-up of temporary support facilities. A brief description of these activities is presented below.

4.1.1 Notification and Permits

The work will be performed on federal land within the confines of the former NAS Alameda. The Engineering Field Activities (EFA) West Alameda Point Caretaker/Environmental Compliance Officer will be notified and a project schedule will be provided. Any changes in the schedule will be forwarded to the ECM and RPM. In addition, both will be notified of mobilization dates and all schedule changes.

4.1.2 Pre-Mobilization Conference

Prior to commencing field activities, a pre-mobilization conference will be held by the FWENC PjM with the DON RPM, DON ROICC, and former NAS Alameda personnel. The meeting will be held to discuss and develop an understanding of the planned field activities including the fieldwork schedule, the health and safety program, field documentation, and project submittals. Subcontractors identified to perform part of the geotechnical and excavation work will also attend. Appropriate notifications required to commence work will be verified with the ROICC. Former NAS Alameda site-specific protocol, as applicable to the field execution, will be discussed and verified.

4.1.3 Mobilization of Equipment and Personnel

Upon final approval of the Focused RI Work Plan and receipt of authorization to proceed, the field personnel, equipment, and material will be mobilized for field activities. The survey, OEW characterization, TRCA, and geotechnical and seismic evaluations will consist of the following personnel:

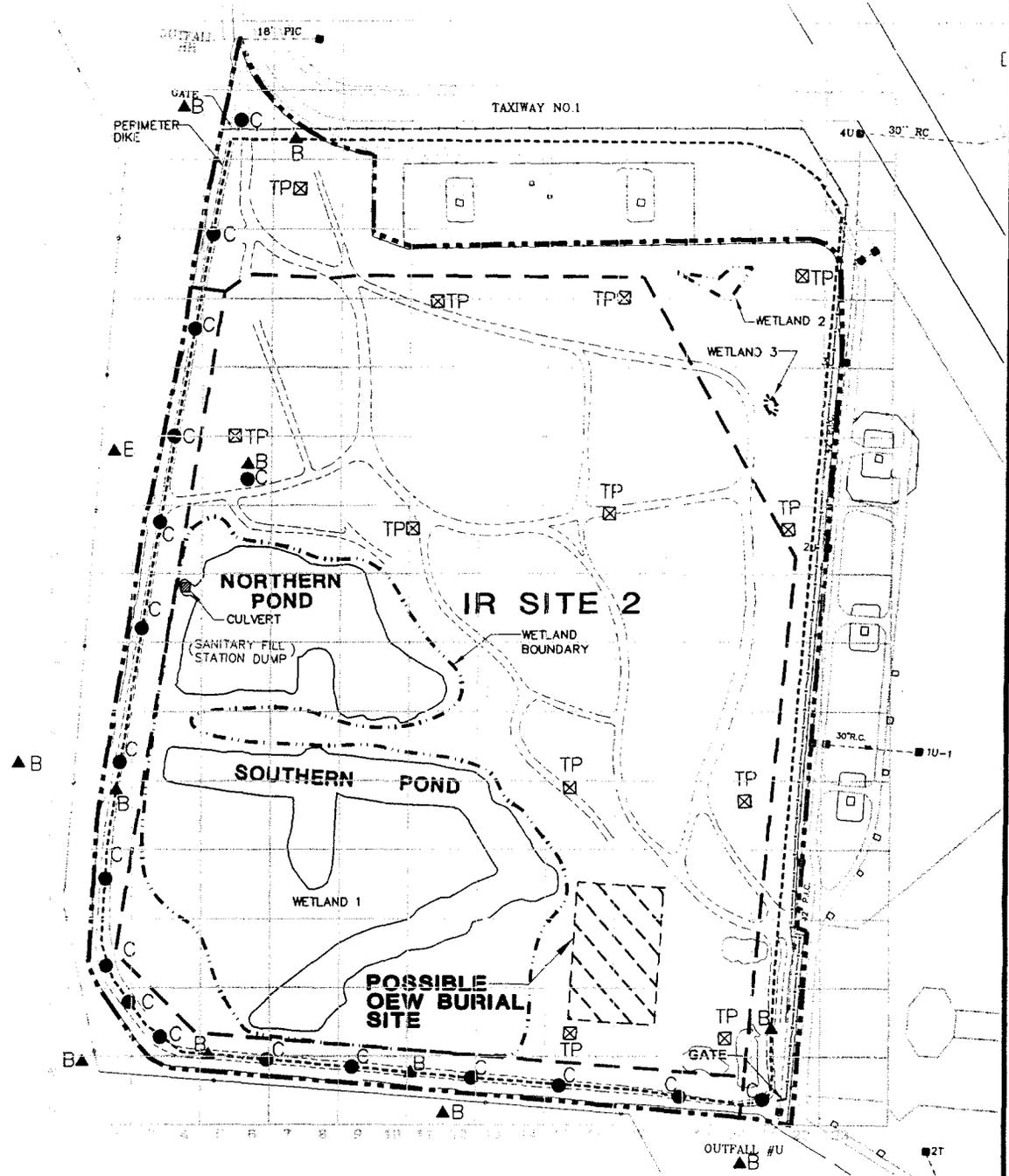
- Two surveyors for locating/marketing IR site boundaries and establishing the search grids
- SUXOS
- QA/QC Representative
- SHSS
- UXO Specialists (up to six)
- Geotechnical Engineers (up to three)
- Equipment Operators (UXO Specialists may act as equipment operators)

Prior to conducting any field activities, FWENC UXO personnel will conduct a visual surface sweep of all support zones, staging areas, and access roads as required to support site activities. All initial site activities will require a UXO Specialist escort. Further non-intrusive activities in areas previously inspected by UXO Specialists will not require a UXO escort (FWENC, 1998c).

The following field equipment is anticipated to be utilized on site during investigative/removal action and other field operations. This list does not include hand-held screening devices and other smaller field equipment that will be on site at various points throughout the field effort.

- Tractor-mounted grass cutter (Bush Hog)
- Hand-held grass cutters (Weed Eaters)
- Hand-held magnetometers
- 2,000-gallon water truck
- El 240 Cat excavator with a 3-foot smooth bucket
- 950 Cat loader
- Tri-axle dump truck
- Reed screen-all screening plant with a 4-inch Grizzly and ½-inch shaker screen
- 580 Case Extenda Backhoe with 4&1 front bucket (2)
- Generator [60 kilowatt (kW) for the site office trailer]
- Truck-mounted drill rig
- Equipment storage container

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LEGEND

- C PROPOSED CPT
- ▲ B PROPOSED BORING
- ⊠ TP PROPOSED TEST PIT
- SITE BOUNDARY
- - - FENCELINE



Figure 4-2
IR SITE 2-EXPLORATION AREA

Southwest Division
Naval Facilities Engineering Command

FOSTER WHEELER
ENVIRONMENTAL CORPORATION

4-2a

4.1.4 Operating Procedures

All SOPs are found in Appendix B. The site-specific safety procedures contained in the SOPs listed below will be followed throughout this project:

- BWHSP and SHSP
- SOP-1: Ordnance and Explosives Waste/Unexploded Ordnance Disposal Disposition
- SOP-2: Drilling, Geotechnical Sampling, and Testing
- SOP-3: Cone Penetrometer Testing
- SOP-4: Geotechnical Laboratory Testing
- SOP-5: Seismic Evaluation

There is no evidence of Chemical Warfare Agents ever being buried in the West Beach Landfill. If however, the presence of chemical warfare agents is suspected at any time, all work will stop and personnel will immediately evacuate a minimum of 100 feet in an upwind direction and notify the ECM, RPM, and the FWENC PjM. The Alameda Hazardous Material Response Team (510-522-2423) or military EOD (707-424-5517) unit will be notified and the Army Technical Escort, as appropriate (the Army Technical Escort Unit is responsible for responding to all incidents involving military chemical warfare agents.) FWENC UXO personnel will secure the area until relieved by competent authorities (FWENC, 2001b).

4.1.5 Temporary Support Facilities

The temporary facilities will include a site office trailer, an equipment storage container, a portable generator for power, a copier, office furniture, desktop computers, and two portable toilets. Cellular telephones and hand-held radios will be used for both on-site and off-site communications.

4.2 SURVEYING AND SITE CONTROL

Based on previously conducted site visits, IR Site 2 is accessible to project personnel and equipment, and neither road grading nor earth moving are required. Except for the dike slopes, the terrain in and around IR Site 2 is relatively flat. Existing vegetation will be cut to a height of 4 inches (or less) to permit the surface OEW characterization, TCRA, and geotechnical and seismic evaluations. A UXO Technician with a magnetometer will proceed in front of each piece of grass cutting equipment to screen for OEW that might be located on the landfill surface. IR Site 2 is fenced on the north and east sides and San Francisco Bay is located on the south and west sides. There are two access gates that are located on the north and south sides (Figure 2-1). The gates will remain locked during mowing, surface OEW sweep and removal action operations. The Alameda Point Caretaker/Environmental Compliance Officer controls the access and maintains the keys to the gates. The gates will remain locked during surface OEW

investigative and removal action activities. When fieldwork is taking place, the Site SUXOS will maintain a duplicate set of gate keys and will control the entrance to and exit from IR Site 2.

4.2.1 Exclusion Zones

EZ are areas where contamination (hazards) are known or likely to be present, or areas that, because of activity, have the potential to cause harm to personnel. EZ for high explosives are determined by the amount of explosives an OEW item contains and how it is configured. An uncased block of explosives, for example, would require a smaller EZ than a projectile with the same explosive weight because the throw-range of projectile case fragments is much greater than the blast-overpressure range of the bulk explosives. The minimum EZ for the OEW characterization will be 300 feet. If OEW is detected, general guidelines for expanding the EZ require 1,250 feet for non-fragmenting explosive materials, 2,500 feet for fragmenting explosive materials, or 4,000 feet for bombs and projectiles with 5-inch and greater caliber. If a single, identifiable OEW item is encountered, ordnance-specific case-fragment ranges found in Table 13-2 in OP 5 may be used to determine the EZ [Naval Sea Systems Command (NAVSEA), 1995]. The EZ shall be large enough to protect other personnel from the blast and fragmentation hazards of accidental detonation. The 300-foot EZ is depicted in Figure 4-1. Should a situation develop that requires an EZ of 2,500 or 4,000 feet, the Alameda Police and Fire Departments will be called on to assist in the evacuation of personnel. Evacuation procedures can be found in SOP-1 in Appendix B.

4.2.2 Exclusion Zone Marking and Control

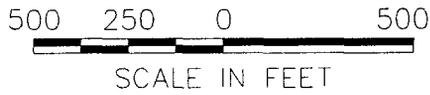
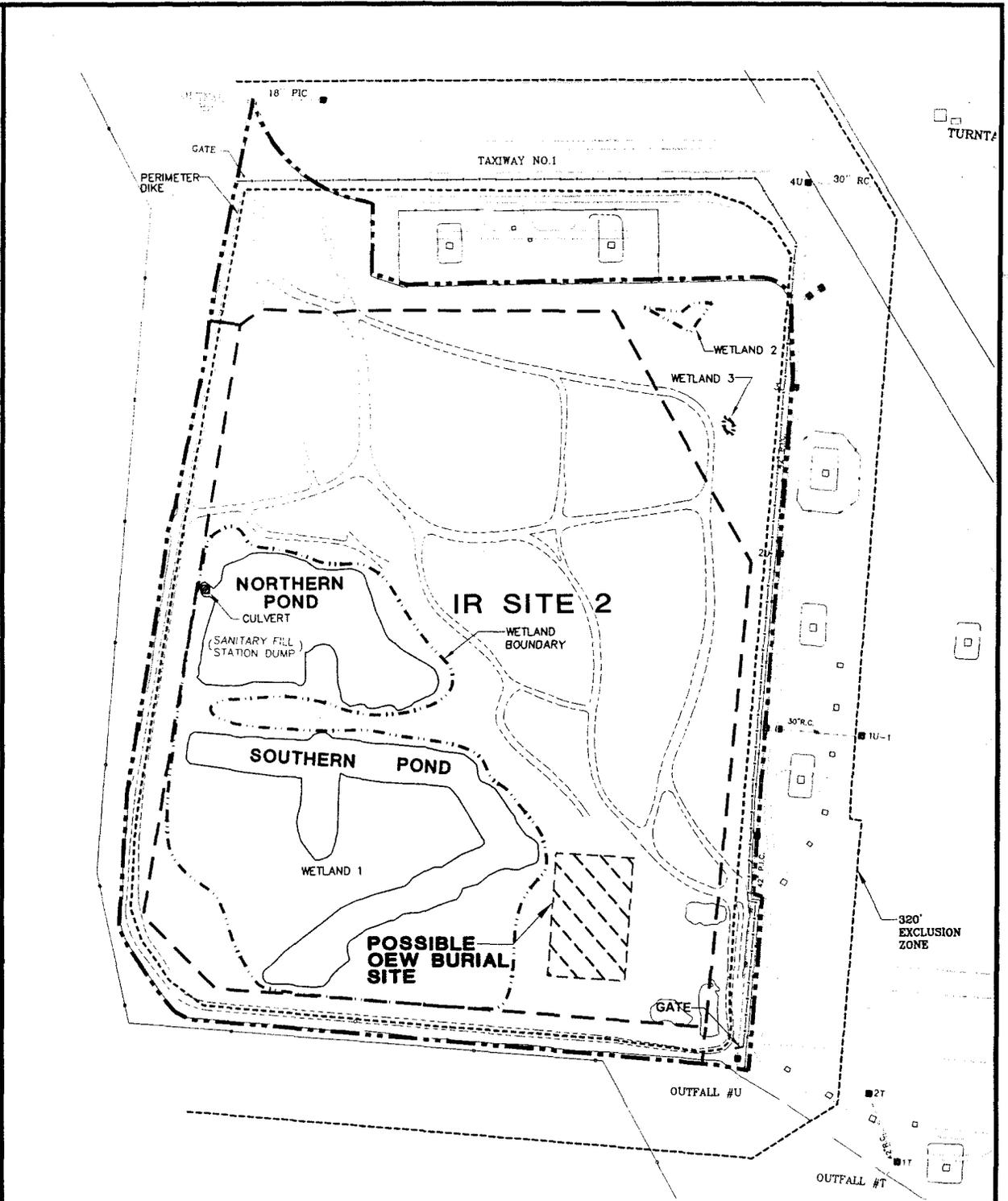
All of the land areas of IR Site 2 will be investigated. The ponds in the wetland areas will not be investigated. Until IR Site 2 is shown to be clear of surface OEW, access into the work site will be strictly controlled and limited to UXO-qualified (or supervised/escorted), authorized, and essential personnel only. The EZ will be maintained around IR Site 2 boundaries during surface OEW sweeping operations and around the Possible OEW Burial Site during removal action activities. Access gates will be secured, roads will be barricaded and posted, and a red "Bravo" flag will be flown near the access gates to provide a visual indication of potentially hazardous operations in progress (FWENC, 1998c). If OEW is discovered that is unsafe to transport and requires BIP procedures, the SUXOS will expand the EZ to a distance determined by the type/size of OEW encountered.

4.2.3 Communications

Due to the unavailability of utilities/services, cell phones will be used for all routine communications and to coordinate emergency assistance and logistical support. A radio communication system will be established and used for daily, on-site communications between personnel engaged in fieldwork. One person in every work team will carry a radio and cellular telephone. The SUXOS will ensure a project communications network is established and tested each day prior to the start of operations.

DRAWING NO: 102013241.DWG	DCN: FWSO-RAC II-02-0132	APPROVED BY: AL	CHECKED BY: LH	DRAWN BY: MD
	DO: # 0095	REV: REVISION 0	DATE: 02/08/02	

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LEGEND

- SITE BOUNDARY
- - - FENCELINE
- EXCLUSION ZONE

Figure 4-1
 IR SITE 2 OEW EXCLUSION ZONE
 ALAMEDA, CA

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 Naval Facilities Engineering Command

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4.2.4 UXO Avoidance Procedures

OEW/UXO are suspected to have been buried in the West Beach Landfill. Following the completion of the surface OEW investigation, FWENC UXO Technicians will assist geotechnical personnel by performing UXO avoidance procedures for test pit, soil boring, and excavation activities. UXO avoidance procedures can be found in Section 4.5.3 of this RI Work Plan and in SOP-2 and SOP-3 in Appendix B.

4.2.5 Bathymetric Survey

A bathymetric survey off the western coast of Alameda Point was conducted in conjunction with other investigative activities on IR Site 1. The survey area included the shoreline and waters off IR Site 2 at a distance of approximately 500 feet offshore, with sufficient coverage to address potential sliding or lateral spreading of perimeter dikes. The survey was performed to U.S. Army Corps of Engineers (USACE) Class 1 hydrographic survey standards. A copy of this standard was available on site during the survey work. Maps can be prepared using the following datums or other appropriate system as determined by the Geotechnical Engineer:

- Horizontal – Mercator Projection. GRS 80. State Plane Coordinate System, North American Datum 1983, Lambert Zones 1 through 6
- Vertical – Mean Sea Level, North American Vertical Datum, 1988

Openwater Bathymetry

A subcontractor was obtained to conduct the openwater bathymetry which performed at the site. The bathymetry data will be used in conjunction with tide, wind, and wave data for design of dike and shoreline erosion protection.

4.2.6 Topographic Survey

A licensed land surveyor will perform a shoreline/upland topographic survey for the site and provide spot elevations and associated horizontal coordinates for significant features within the limits of the site. The limits of the survey area include the entire upland site and the shoreline down to mean sea level (msl). The lateral limits of the survey area are shown in Figure 4-1.

The deliverable will be an accurate plan view showing the following features:

- 1-foot elevation contours
- All man-made features (building corners and footings, fences, concrete pads, and paved and gravel roadways)
- Drainage features (ditches, culverts, and wetland mudline elevations)
- Horizontal and vertical datums

- Control points (three minimum) and associated horizontal coordinates and elevations
- Shoreline horizontal locations

Existing data may be used within portions of the shoreline/upland survey area only if the data are field-verified to check the accuracy and quality of the data.

4.3 OEW INVESTIGATION

The OEW sweep will be conducted on dry land only and other elements of the proposed investigation will not be conducted (partially or completely) in areas that are under water. The non-wetland vegetation on IR Site 2 will be cut to a maximum height of 4 inches prior to the beginning of the surface OEW sweep. A UXO Technician with a magnetometer will proceed in front of each piece of grass cutting equipment to screen for OEW that might be located on the landfill surface. Following the locating, marking, and mapping of the site boundaries, a local Cartesian Coordinate grid system will be established by FWENC UXO Technicians to enable the UXO Specialists conducting the surface sweep to identify relative positions of OEW, if any is located. The coordinate axes will have an origin on the southwestern corner of the site and will be spaced 200 feet apart, creating a network of 200- x 200-foot grids as shown in Figure 4-2. The Y-axis will run north-to-south, the X-axis east-to-west, and the points where grid lines intersect will be marked with surveyors flags. Prior to start of OEW sweeping operations, the Sweep Team will be certified in the surface QC test grid using procedures established for the Search Effectiveness Probability (SEP) Test found in Appendix A, the Project CQC Plan. UXO Specialists will prosecute the sites in a line abreast, spaced sufficiently near one another to ensure complete visual coverage as the sweep line navigates systematically through the grid. If any OEW is encountered during the sweep, its location will be referenced by an abscissa/ordinate intersection point using the appropriate alphanumeric label of grid's placement within the coordinate system.

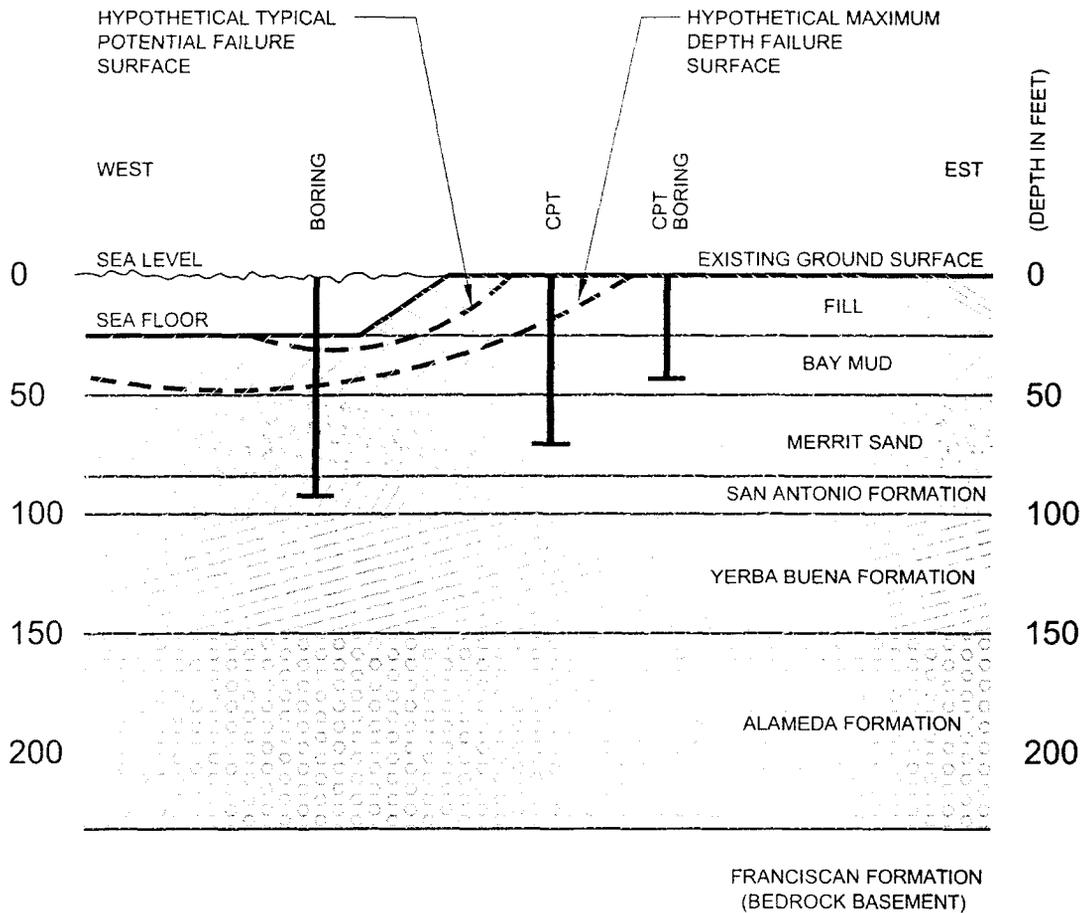
Any suspected or known OEW encountered will be clearly marked and its position annotated on the site map. The SUXOS shall evaluate all encountered OEW and determine if the work planned for the area can safely continue or what actions must occur before work can resume. The EZ will be expanded to the appropriate distance. If the ordnance item is considered hazardous, work in the area will cease and personnel will be evacuated to a safe distance. UXO personnel

will rope off the area with tape or flags and only essential UXO personnel will be allowed into the zone until the hazard has been removed.

FWENC UXO personnel will determine the status of any OEW encountered during the investigation. OEW items identified as safe to move/transport will be stored in Magazine M353 or 354 until the completion of investigative activities, a period of approximately 5 weeks. The OEW will then be packaged on site, manifested, and shipped to a treatment facility. OEW items that are unsafe to move/transport will require BIP procedures and the Travis Air Force Base

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NOTES:

1. ALL DEPTHS ARE APPROXIMATE AND MAY VARY ACROSS THE WIDTH AND LENGTH OF THE SITE.
2. BORING DEPTHS REPRESENT TYPICAL EXPECTED DEPTHS; NOT ALL OFFSHORE BORINGS WILL BE TO 100 FEET AND NOT ALL ONSHORE BORINGS WILL TERMINATE AT 50 FEET IN DEPTH

Figure 4-3
 SCHEMATIC GEOLOGIC CROSS-SECTION SHOWING
 APPROXIMATE EXPECTED DEPTHS OF BORINGS

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(AFB) EOD unit will be requested to respond. Prior to initiating BIP procedures, the following notifications will be made:

Agency	Name	Telephone Number
Naval Facilities Engineering Command (NAVFAC), Southwest Division	Rick Weissenborn	(619) 532-0952
NAS Caretaker Site Office	Doug DeLong	(415) 743-4718
EPA	Anna-Marie Cook	(415) 744-2367
Cal/EPA DTSC	Daniel Murphy	(510) 540-3767
FWENC	Abid Loan	(949) 756-7514
Alameda Police Department	Dispatch	(510) 748-4508
Alameda Fire Department	Dispatch	(510) 522-2423

Standardized Operating Procedures for encountered OEW are found in SOP-1 in Appendix B.

OEW scrap (shrapnel, bomb fins, mortar tails) must be accounted for from discovery to disposal. Items identified as OEW scrap will be inspected, removed from the site, documented, containerized, and placed under secure control for further disposition. Specific procedures for processing OEW scrap can be found in the Appendix B, SOP-1, OEW/UXO Disposal Disposition.

4.4 OEW ACCOUNTABILITY AND RECORDS MANAGEMENT

The field activity logbook, maintained by the SUXOS, will provide a daily journal of activities associated with the project site. It shall be opened upon first arrival for field operations and closed after demobilization at the project site. The field activity logbook is an official record of activities being performed and will contain, at a minimum, the following data:

- Date
- Daily weather conditions
- Safety meetings
- Start and stop times
- Personnel assigned and job classification
- Work stoppages
- Equipment used and number of hours in use
- Injuries to personnel
- Damage to equipment
- Official communication, written or verbal

- Quantity and type of OEW and OEW-related items encountered and their precise location, orientation as discovered, fusing, potential explosive content, and disposition
- Transportation activities
- A listing of all personnel involved with site activities
- A detailed description of all deliveries and/or shipments to or from the site
- Summary of major communications with the FWENC PjM, DON RPM, ECM, or regulatory agency representatives
- Handling, transport, or storage of OEW discovered
- The time required to clear the IR Site and the vegetation and terrain encountered
- Other pertinent data as required by the RPM or ECM
- Any problems encountered
- Signature of the SUXOS indicating that the recorded information and data are true and correct

4.5 OEW REMOVAL ACTION

One foot of topsoil will be removed from the entire 2.5-acre (approximate) Possible OEW Burial Site which will meet established remediation depth requirements for game refuges [Department of Defense (DoD), 1999]. UXO avoidance procedures will be followed and the soil will be removed in 6-inch lifts. The soil will be screened to separate trash and debris for recycling and disposal. The screened soil will be used to backfill the excavation site.

4.5.1 Equipment

The following equipment will be used for the removal action:

- Tractor-mounted grass cutter (Bush Hog)
- Hand-held grass cutters (Weed Eaters)
- Hand-held magnetometers
- 2,000-gallon water truck
- El 240 Cat excavator with a 3-foot smooth bucket
- 950 Cat loader
- Tri-axle dump truck
- Reed screen-all screening plant with a 4-inch Grizzly and ½-inch shaker screen
- 580 Case Extenda Backhoe with 4&1 front bucket (2)

4.5.2 Mapping Grid System

Surveyors will locate and mark the corners of the Possible OEW Burial Site during the upland survey of IR Site 2. The perimeter will be marked with surveyors' tape. The FWENC UXO Technicians will establish a network of 20-foot grids (approximately 250) within the Possible OEW Burial Site, stake each grid intersection, number the grids, and develop a field map of the grid network. Surface elevations in the Possible OEW Burial Site will be recorded.

4.5.3 Removal Action Excavation

Access to the site for the excavating equipment will be through the south gate. Following the grass cutting and surface OEW sweep, the removal action will be conducted as follows:

- The screening plant will be placed in a flat area immediately adjacent to one of the dirt roads that traverse the site, as near to the Possible OEW Burial Site as possible.
- Excavation of the Possible OEW Burial Site grids will be conducted from the outside-in and will begin with the grids that are located on the road(s).
- UXO Technicians will check the first grid with the magnetometer. If metal is detected, the UXO Technician will localize the site and probe the area to determine if the anomaly is located within 6 inches of the surface. If it is within 6 inches of the surface, the UXO Technician will carefully remove the soil covering the object until the identity of the object is ascertained. If the object(s) is not OEW, this process will be repeated until the entire grid is cleared.
- If OEW is unearthed, all work on the site will stop and non-UXO personnel will leave the site and proceed outside the EZ, or to a distance determined by the SUXOS. The SUXOS will positively identify the OEW, determine its status (unarmed, fuzed and fired, inert, etc.) and follow disposition procedures found in Appendix B, SOP-1.
- When the grid is cleared, the excavators will be positioned on the grid boundary and the bucket arm extended to the opposite side of the grid. The top 6 inches of soil will be dragged 20 feet to the edge of the grid line, removed, and placed in small stockpiles behind the excavators. The UXO Technicians will monitor the depth of the bucket to ensure that the 6-inch lifts are consistent. This process will be repeated until the top 6 inches of soil are removed from the grid.
- The UXO Technician will re-check the grid and ensure that there are no metal objects within the next 6 inches of soil. The excavators will repeat the soil removal process in 6-inch lifts until the grid is cleared to a depth of 1 foot. The finished grid will now become a clean cell and annotated on the field map.
- The magnetometer-scan and 6-inch removal process will be repeated in each grid until the entire Possible OEW Burial Site is cleared.
- A loader will transport the stockpile soil to the screening plant. The screening plant will be equipped with a 4-inch Grizzly and a 1/2-inch shaker screen. A UXO Technician will monitor the tailings and the debris removed by the Grizzly and shaker screen. If any OEW is discovered in the tailings or debris stream, all work will stop,

non-UXO personnel will leave the area, and the procedures established above will be followed.

- When the entire Possible OEW Burial Site is excavated, the tailings will be used to backfill the excavation site and the screened materials will be segregated for recycling or landfill disposal, as appropriate.
- A water truck will be used to wet the soil for dust mitigation, if required.
- Stakes, line-levels or surveyors' transits will be used by FWENC UXO Technicians to re-survey the site following the excavation to verify that a uniform soil-removal depth of 1 foot was achieved.

4.6 GEOTECHNICAL INVESTIGATION

Detailed procedures for performance of field exploration activities and sampling methods are provided in Appendix B, SOP-2, Drilling, Geotechnical Sampling, and Testing. UXO avoidance procedures will be used for test pit excavation and borehole drilling activities and can be found in SOP-2 and SOP-3 in Appendix B.

Approximately 12 soil borings, 18 CPTs, and 12 test pits are proposed for IR Site 2. Six of the borings have been drilled offshore (part of the IR Site 1 investigation) and six will be on land. The total geotechnical testing locations and depths are approximate and subject to revisions based on field data collected as work progresses. The offshore borings shall be used to assess the stability of the dikes and materials behind them. Representative, disturbed, and undisturbed soil samples will be retrieved for geotechnical analyses. Chemical analyses will not be performed during the focused remedial investigation; however, soil and/or water may be analyzed for waste disposal as described in Section 7.0. CPT soundings will be performed along the perimeter dike on the northern and western sides of the site at approximately 300-foot spacing to provide an approximately continuous representation of the site soils profile and in situ strength properties. CPT soundings will be performed in accordance with American Society for Testing and Materials (ASTM) Test Method D 3441. For QA, two CPTs will be advanced near two HSA borings to check CPT test results (soil stratification and penetration resistance) against soil layering and blow count information on boring logs. Figure 4-2 shows the locations of the various soil borings and test pits.

HSA and CPT soil exploration will be performed along five transects, two borings and one CPT per transect (one offshore, one upland near shoreline, and one on top of the existing dike). Initially, each HSA boring will extend approximately 50 feet into soil or sediments to confirm drilling into native soil, based on the existing information on the site soil stratigraphy [Tetra Tech EM, Inc. (TtEMI), 1999], and to obtain geotechnical data to adequately address the depths of critical potential failure surfaces in slope stability analyses and potential liquefiable soil layers. Two to three borings will be drilled deeper to penetrate through Younger Bay mud and into San Antonio and/or Merritt formations to evaluate shear strength and compressibility properties of both Younger Bay mud and granular soils. Figure 4-3 shows a schematic cross-

PAGE NO. 4-13

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section of typical depths of exploration. The offshore HSA borings will be performed using a drilling rig on a barge with a tug; upland borings will be drilled using a truck-mounted HSA rig. Collection of groundwater level measurements will be used for analysis of dike stability and bearing capacity.

Test pits will be excavated to measure the thickness of soil over the refuse and for collection of bulk soil samples. Each pit will be approximately 2 to 4 feet deep, depending on where landfill debris is encountered, and will be backfilled with the excavated soil.

4.6.1 Soil Boring Activities

Offshore borings will be conducted in conjunction with activities occurring on IR Site 1. For upland borings on IR Site 2, the standard sampling interval for drive samples is anticipated to be approximate every 5 feet. If there are zones of soft, fine-grained soil or sediment, Shelby tube samples may be taken in place of and/or in addition to drive samples. The sampling interval is approximate and subject to revision as field data is collected.

General procedures to be followed for soil borings are as follows:

- Check location, elevation, and boring number on topographic map.
- Take pre-activity photographs of the exploration location to document environmental conditions.
- Establish safety zone around drill site.
- Set up health and safety monitoring equipment.
- Follow procedures for UXO avoidance.
- Continuously check the drill cuttings or augered soil cuttings to note changes in strata.
- Refer to ASTM D-2488 for standard practice for identification and description of soils.
- Ambient air monitoring will be conducted during debris removal activities and any intrusive work. Instrumentation and monitoring strategy are found in Section 7.0 in the SHSP.
- Abandon boreholes in general accordance to State of California *Water Well Standards*, Bulletin 74-81, December 1981, p. 68 (Sealing methods), which details procedures for performing the grout (tremie) pipe method. Based on field conditions, modifications can be approved by the Geotechnical Engineer.
- Take post-activity photographs of the exploration location to document any changes in environmental conditions as a result of drilling/excavation activities.

The procedures for offshore borings were the same as upland, except that the location was recorded with digital global positioning system (DGPS). Depth to mudline was measured with a lead-line and water surface elevations were recorded from the tide gauge. No photographs were taken. UXO avoidance procedures were not required for offshore borings.

UXO Avoidance Procedures

UXO Technicians will clear the work site of metal debris. After finding a location the magnetometer indicates is free of detectable metal, the drill hole will be started with a hand-held auger. At a depth of 6 inches, the magnetometer probe will be inserted into the borehole and checked for metal. This procedure will be repeated every 6 inches until the depth of the hand-held auger is reached, about 4 feet. If clear of metal debris and with the SUXOS' approval, equipment and supplies will be mobilized to the drilling location, the drill rig will be positioned over the borehole, and will auger down to a maximum depth of 8 feet. The drilling string will then be pulled, the drill rig will relocate to a position at least 20 feet away from the borehole and the magnetometer probe will be lowered into the hole to check for metal. This procedure will be repeated every 4 feet until a depth of 20 feet is reached, or until the first sampling depth (less than 20 feet) is reached. After reaching 20 feet, UXO procedures may be suspended and drilling can proceed to sampling depth. If metal contamination is found in the borehole before reaching a depth of 20 feet, drilling will cease and the continuation or relocation of the boring will be evaluated by the SUXOS and Geotechnical Engineer.

Soil Boring Logs

FWENC Geotechnical Engineer will oversee the logging of the borings. Downhole logging will be not performed. Each soil boring will be logged using a field boring log form. Soil descriptions will follow Uniform Soil Classification System (USCS) guidelines. Soil boring logs will contain the following general site-specific information requested in the "header" on the log form as specified in ASTM D 2488:

- Physical characteristics of soil according to USCS
- Observed soil type
- Stratigraphic boundaries
- Geologic structures/discontinuities (faults, joints, beddings)
- Soil color, soil moisture
(Munsell Soil Color Charts will be used to define the soil color)
- Odors (if any, and precautionary measures taken)
- Organic vapor analyzer (OVA) readings
- Depth of samples taken
- Information on borehole diameter and weight and drop height of drive hammer

4.6.2 Test Pit Activities

Twelve test pits are to be excavated at IR Site 2 to determine the thickness and composition of the landfill cap. A backhoe with an 18- to 24-inch-wide bucket will be used to excavate the test pits and the depth of the pits will be determined by their location on the site. UXO avoidance procedures will be used during test pit excavations. The apparent depth of cover in the landfill appears to vary from 6 inches to 2 feet while test pits in non-landfill areas will be excavated to a depth of approximately 4 feet below ground surface (bgs) or refusal. Bulk sampling will be performed at various intervals based on soil conditions encountered in test pits. Approximately two samples will be collected per test pit, with locality selected based on materials encountered. Materials that have sloughed down into the test pit will be avoided when collecting a test pit sample. General work procedures to be followed are as follows:

- Check location, elevation, and test pit number on topographic map.
- Take pre-activity photographs of the exploration location to document environmental conditions.
- Establish safety zone.
- UXO Technicians will clear the excavation site of metal debris, check the site with the magnetometer and investigate all metal contacts located in the top 6 inches of topsoil to ensure they are not OEW. When this has been accomplished, the soil will be removed in 6-inch lifts. UXO Technicians will check the pit with the magnetometer after each lift and will hand-excavate all detected metal. This process will be repeated until the desired depth is obtained.
- Excavate test pits perpendicular to slope contours.
- Excavate test pits to a depth of approximately 2 to 4 feet bgs (depending on location) and no more than 10 feet in length.
- Collect bulk soil samples from the backhoe bucket with a hand trowel and sample bags in each significant soil type observed in the test pit. Samples will be classified in accordance with ASTM D 2487 and D 2488. If the soil is homogenous, then sample at 2-foot vertical intervals.
- Log excavated soils in accordance with ASTM D-2488.
- Map walls of test pits noting subsurface features including voids, oversized rock, rooting depth, root channels, depth of saturation, and cracks. Mapping will be done from the surface. Field personnel will not enter test pits.
- Photograph test pit walls.
- Make detailed observations of changes in soil moisture and note depth of water seepage into the pit (if any).
- Make detailed observations of any waste that might be encountered.
- Backfill test pits with excavated material, place in thin layers, and tamp with the backhoe bucket.

- Take post-activity photographs of the exploration location and test pit sidewalls to document any changes in environmental conditions as a result of drilling/excavation activities.

Test Pit Logs

FWENC Geotechnical Engineer will oversee the logging of the test pits. No downhole logging will be performed. Test pits will be logged using a trench log. Soil descriptions will follow USCS guidelines. The procedures for completing the field test pit log forms are described below:

- Fill in information in heading.
- Provide physical characteristics of soil according to USCS.
- Provide observed soil type.
- Provide stratigraphic boundaries.
- Describe soil color, soil moisture (Munsell Soil Color Charts will be used to define the soil color).
- Identify odors.
- Photograph test pit walls.
- Provide OVA readings.
- Provide depth of samples taken.
- Test pit logs will contain a sketch of the test pit wall showing depth of root penetration, root channels, voids, moisture front, and cracks. The sketch should also identify soil types, horizons, and cross-reference symbol to soil descriptions.

4.6.3 Exploration Termination Before Reaching Planned Depth

In the event that an obstruction or other cause prevents exploration advancement, the borehole/test pit will be abandoned. Shallow test pits above the water table will be backfilled with soil cuttings to grade. Procedures for borehole abandonment established in the State of California Water Well Standards, (1981) Bulletin 74-81, Section 23 will be followed. The exploration equipment will be moved a few feet to drill/excavate a replacement boring/test pit (after making sure the new location is cleared of metal, underground utilities, and is biologically cleared, if needed). The decision to perform a replacement boring/test pit will be based on previous exploration efforts and will be made by the PjM or designee. If the replacement boring/test pit fails to reach the required depth due to obstruction or refusal, the replacement exploration will be backfilled/sealed and the geotechnical engineer will inform the PjM.

4.6.4 Sampling Procedures

Soil samples will be obtained at the intervals specified in the preceding sections. Sampling intervals may be changed under the direction of the geotechnical engineer. If a sample is not

recovered, another attempt will be made directly below the unsuccessful sample interval. Soil samples that represent soil that has the proper characteristics and is available in sufficient volume will be submitted for laboratory testing.

Geotechnical Laboratory

Although the preliminary results of the IR completed by the DON indicated no chemical contamination of soil and groundwater at Site IR 2, soil samples with potentially high levels of contamination may be collected at the site. Laboratories screened to analyze these samples will have been provided a list of contaminants of concern based on environmental data already obtained from the site to ensure they are equipped to manipulate samples with high concentrations of contamination.

Drive and Push Samples

A combination of sampling methods and samplers will be used including standard penetration test (SPT) drive sampler, California Ring drive sampler and thin-walled tube push samplers. Sampling will be conducted in general accordance with ASTM D-1586, ASTM D-3550-84, and ASTM D-1587-94 procedures, respectively. Samples will be collected as follows:

- After the boring has been advanced to the desirable sampling depth, excessive cuttings will be removed from the bottom of the borehole. The SPT and Ring drive samplers will be alternated at 5-foot intervals or as determined by the Geotechnical Engineer. The sampling assembly will be lowered to the sampling depth. Using a downhole hammer, a sample will be collected when the sampler has been advanced approximately 12 to 18 inches. The number of blows, hammer weight, and drop height will be recorded on the soil boring log. HSA drill rigs equipped with automatic hammers will be used to provide control over driving forces and number of blow counts to ensure test results are consistent with industry standards. The soil sample will be retrieved and soil description recorded. An OVA headspace reading, where appropriate, will be collected from a portion of the sample contained in either the sampling “shoe” or sleeve. If refusal is encountered while sampling, the boring will be advanced a few feet to attempt collecting a sample. The following two criteria can be used to define refusal:
 - A total of 50 blows have been applied.
 - There is no observed advancement of the sampler during ten successive blows.
- When soft clays are encountered, the drive sample will be followed by a thin-walled push sampler (that is, Shelby tube). These tubes will be pushed approximately 24 inches.

Bulk Samples

Bulk samples will be collected from soil cuttings at each of the upland borings and from sidewalls of the test pits. Approximately 75 pounds of soil will be collected from the cuttings at each upland boring location (to provide sufficient sample for one Proctor test per two borings). A minimum of 20 pounds will be collected from each major soil type at each test pit location (to provide sufficient sample for one Proctor test per four test pits).

Bulk samples will be placed into moisture-proof bags with a hand trowel. The bags will be twisted and taped closed and a twist tie identification label will be fixed to the bag. For each bulk sample, a representative split sample of about 1 pound will be placed onto a plastic bag or sample jar. An OVA headspace reading will be collected from the headspace in the small bag or jar.

4.6.5 Sample Documentation and Labeling

Collected soil samples will be documented on a sample-tracking log. Entries will include the following information, as applicable:

- Name of Sampler
- Sample Identification Number(s)
- Date and Time of Collection
- Field Observations

A proper label will be affixed to each soil sample. Sample labels will be securely placed on or affixed to sample containers by the field geologist. Information to be entered on each label in indelible ink includes the following:

- Sample Identification Number
- Description of Sample
- Depth of Sample
- Date and Time of Sample Collection
- Name of Sampler
- Project Identifier (DO Number)

4.6.5.1 Sample Identification

Soil samples will be assigned an alphanumeric identifier to differentiate them from other collected soil samples. Each soil sample identification will contain the following six components:

1. The first component of the identifier is the DO Number (095).
2. The second component of the identifier corresponds to the sample location. Samples collected from IR Site 2 will be identified as IR2.
3. The third component of the identifier is the number (sequential) of the sample taken beginning with 001.

The sample collection locations, depths, and type of samples will be recorded in the field logbook. The chain-of-custody (COC) form contains an entry specifically for recording sample locations and depths. Below is an example of the sample identification to be used for IR Site 2:

095-IR2-001

4.6.5.2 Sample Containers

Drive samples taken with the California-modified drive sampler will be retained in six 1- to 6-inch-high brass storage sleeves and placed in a containment canister that will be sealed with plastic end-caps. Bulk samples (that is, those collected from cuttings by shovel) will be placed in soil sampling bags, twisted closed, and taped shut. A minimum of 75 pounds of soil will be collected for each bulk sample.

4.6.6 Field Documentation

At a minimum, sampling information will be recorded on a COC form and in a field logbook. Both documents will be completed in the field at the time of sample collection. In addition, field activity reports and/or appropriate monitoring datasheets will be completed at the time of the activity or immediately thereafter. All entries will be legibly recorded in indelible ink.

4.6.6.1 Chain-of-Custody

Soil samples are required to be handled and transported using a COC form. The COC provides the means to identify and track the COC of each individual soil sample from the point of collection through data analysis. The following procedures will be carried out:

- A COC record is required for each shipment of samples. Daily shipments are anticipated. The record is to be completed in indelible ink. Changes or corrections to the record consist of line-out deletions (for example, no “white-out” correction fluid) which are initialed and dated by the author of the change or correction.
- The COC record will be completed by a field engineer/geologist who performed and/or witnessed the sample collection activity. After completion of the record down through the initial “Relinquished by:” row, the top two copies will go to the lab and the bottom two copies of COC will be retained for records.
- The person relinquishing the samples to the courier retains a copy of the shipping paper.

- The laboratory representative who accepts the incoming sample shipment at the receiving laboratory will complete the first incomplete "Received by:" row on the COC record to acknowledge receipt of the samples. This signed original will be returned with the analytical reports.
- The laboratory representative who accepts the incoming sample shipment at the receiving laboratory will inspect the samples. If there is any apparent discrepancy or potential anomaly, the samples will not be logged in for testing until the issue is resolved through contact with the originating field geologist or his/her PjM. The laboratory will provide such notification by the most expedient method (for example, telephone and/or facsimile) followed by a written notification. A complete copy of the issue and its resolution will be documented and provided by the laboratory with the test reports.

4.6.6.2 Field Logbooks

A bound, field logbook with consecutively numbered pages will be assigned to this project. All entries will be executed in indelible ink. Corrections will be made by crossing out erroneous data with a single line and dating and initialing the entry. At the end of each workday, the responsible sampler will sign the logbook pages and any unused portions of logbook pages will be crossed out, signed, and dated. If it is necessary to transfer the logbook to another person, the person relinquishing the logbook will sign and date the last page used, and the person receiving the logbook will sign and date the next page to be used.

At a minimum, the logbook will contain the following information:

- Project name and location
- Date and time
- Personnel in attendance
- General weather information
- Work performed
- Field observations
- Sampling performed, including specifics such as location, type of sample, sample depth, type of analysis, and sample identification
- Field analyses performed, including results, instrument checks, problems, and calibration records for the field instrumentation
- Problems encountered and corrective actions taken
- QC activities
- Verbal or written instructions
- Any other events that may affect the samples

4.6.6.3 Document Correction

Changes and corrections on any project documentation and data will be made by crossing out the wrong information with a single line and writing the new information immediately above the crossed-out information, using permanent (indelible) ink and legible handwriting. The original item, although erroneous, must remain legible beneath the cross-out. The person making the correction will initial and date the correction.

4.6.7 Geotechnical Testing

Geotechnical laboratory testing will be performed on selected soil samples as described in Table 4-1. Laboratory testing will consist of moisture/density, particle-size analysis with hydrometer, Atterberg Limits, organic content, Modified Proctor compaction, triaxial permeability, and triaxial shear tests. The Modified Proctor compaction and triaxial permeability tests will be performed if existing cover soils are determined to contribute significantly to the hydraulic performance of the final cover system. This is determined based on the results of the field tests and laboratory in situ density/moisture content and index property measurements. These tests, if needed, will be performed on four composite specimens obtained by mixing soil samples generally representative of predominant near-surface soil conditions at the site to provide average hydraulic conductivity properties of the existing cover soils. The saturated hydraulic conductivity tests will be performed on soil samples with densities simulating the estimated "in-place" (average existing) and "after-compaction" (foundation layer for a new cover) conditions.

The scope of laboratory testing and the test methods to be used are also shown in Table 4-1.

TABLE 4-1
LABORATORY TESTING AND TEST METHODS

Test	Method	Sample Type and Quantity	Approximate Number	Total Sample Quantity
Atterberg Limits	ASTM D-4318-95a	Grab - 1 pound	4	4 pounds
Compaction Characteristics Using Modified Effort (Modified Proctor) (if needed)	ASTM D-1557-91	Grab - 40 pounds	4	160 pounds
Moisture/Density	ASTM D-2937-00 ASTM D-2216	1- to 6-inch high sample sleeve	12	12 sample sleeves
Organic Content	ASTM D-2974-00	Grab - 1/2 pound	6	3 pounds
Particle Size with Hydrometer	ASTM D-422-63	Grab - 1 pound	12	12 pounds
Saturated Hydraulic Conductivity (if needed)	ASTM D-5084-90	Grab 20 pounds	4	80 pounds

Test	Method	Sample Type and Quantity	Approximate Number	Total Sample Quantity
Unconsolidated, Undrained Triaxial Shear	ASTM D-2850-95	3-inch diameter by 6 inches high	2	4 pounds*
Consolidated, Undrained Triaxial Shear	ASTM D-4767	3-inch diameter by 6 inches high	6	13 pounds*
Water Contents	ASTM D-2216-92	Grab - ½ pound	20	10 pounds

Notes:

* Assumption: soil is a saturated, soft organic clay.

Samples (that is, drive and bulk samples) sent to the laboratory will be logged in and stored for testing assignments. Drive samples will be visually classified (ASTM D-2488) and selected drive samples will be prepared for moisture-density determinations (ASTM D-2937) and particle-size analysis ASTM D-422. Once a sufficient number of drive samples have been tested and correlations developed, hydraulic conductivity testing will be initiated. Assignments of saturated triaxial permeability tests will be done by the PjM with the assistance of the Certified Engineering Geologist and Geotechnical Engineer.

Test results will be presented in a report quality format from the subcontracted laboratory with summary tables in an electronic format. The laboratory report will be signed and stamped by the laboratory's Geotechnical Engineer and reviewed by FWENC. Electronic deliverables will satisfy Navy Environmental Data Transfer Standards (NEDTS) requirements.

Samples will be picked up on a daily basis from the site, specific location pending. Pickup service will include both drive and bulk samples. Sample retention period will be 60 days following the final reporting date for all drive and bulk samples. In addition, up to 20 selected bulk samples will be retained for a period of 1 year.

4.6.8 Seismic Field Evaluation

If adequate information on subsurface soil properties is not available, testing will be conducted to provide supplemental data. Prior to starting the field testing, detailed information will be provided for preparation of sampling and work plans if seismic refraction surveys with SASW analysis and/or CPT are required. Information shall include the number, length, orientation, and layout of each refraction survey array, and location, total depth, and sensor depth for the CPT investigation. CPT soundings will be performed on IR Site 2 every 300 feet apart. Further details of performance of CPT soundings are provided in Appendix B, SOP-2, Cone Penetrometer Testing.

4.7 SUBCONTRACTOR MANAGEMENT

FWENC will engage the services of several specialty subcontractors on this project. FWENC's methods and procedures for management of specialty subcontractors will be used to ensure that activities performed by subcontractors are in full compliance with the scope of work and do not adversely impact the project cost or schedules. The subcontractors for this project will be limited to a land surveyor, a drilling company, and a waste transporter. The subcontractors will provide services related to surveying, field exploratory/drilling, and offshore activities.

5.0 REGULATORY FRAMEWORK

Environmental investigation and remediation of former NAS Alameda is being conducted under the Department of Defense Installation Restoration Program (IRP). Activities conducted under the IRP are to be performed in accordance with CERCLA and the NCP. Under Executive Order 12580, the DON is the lead agency responsible for the cleanup effort, but the EPA, DTSC, and RWQCB are involved in IRP oversight. A RI is currently being conducted for IR Site 2 by the DON, and this TCRA is being planned based on initial sampling results and findings of the RI investigation activities indicating the presence of OEW materials in surface and subsurface soil.

5.1 REGULATORY PROCESS

Section 121(d) of CERCLA 1980 [CERCLA, 42 United States Code (USC), Section 9621(d)], as amended, states that remedial actions at CERCLA sites must attain (or the decision document must justify the waiver of) any federal or more stringent state environmental standards, requirements, criteria, or limitations determined to be legally applicable or relevant and appropriate. Although Section 121 of CERCLA does not itself expressly require that CERCLA removal actions comply with ARARs, the EPA has promulgated a requirement in the NCP mandating that CERCLA removal actions “. . . shall, to the extent practicable considering the exigencies of the situation, attain ARARs under federal environmental or state environmental or facility siting laws” [Title 40 Code of Federal Regulations (CFR), Section 300.415(j)] [40 CFR, Section 300.415(j)]. It is DON policy to follow this requirement. Certain specified waivers may be used for removal actions as is the case with remedial actions.

5.2 REGULATED SITE ACTIVITIES

5.2.1 Anticipated Waste Streams

Generation of several potential waste streams is anticipated from the TCRA soil investigation and test pit excavation activities at IR Site 2. These potential waste streams are categorized as follows:

- OEW and OEW scrap
- Contaminated soil [Resource Conservation and Recovery Act (RCRA) hazardous, non-RCRA hazardous, and non-hazardous waste] excavated during the removal action
- Oversized contaminated debris – rock, wood, piping, concrete, and scrap metal
- Wastewater, including: impacted stormwater runoff and fluids from equipment and personnel decontamination
- Non-hazardous solid waste, such as trash and inert construction debris

- Decontamination pad solids/sludges
- Used polyethylene liners from soil stockpiles and/or waste storage areas
- Used PPE

Waste management activities including management, transportation, and disposal of the aforementioned waste streams are described in Section 7.0 of this RI Work Plan.

5.3 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Applicable requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that specifically address the situation at a CERCLA site. The requirement is applicable if the jurisdictional prerequisites of the standard show a direct correspondence when objectively compared to the conditions at the site. An applicable federal requirement is an ARAR. An applicable state requirement is an ARAR only if it is more stringent than federal ARARs. If the requirement is not legally applicable, then the requirement is evaluated to determine whether it is relevant and appropriate. Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that, while not applicable, address problems or situations similar to the circumstances of the proposed response action and are well suited to the conditions of the site (EPA, 1988). A requirement must be determined to be both relevant and appropriate in order to be considered an ARAR.

The criteria for determining relevance and appropriateness are listed in 40 CFR, Section 300.400(g)(2) and include the following:

- The purpose of the requirement and the purpose of the CERCLA action
- The medium regulated or affected by the requirement and the medium contaminated or affected at the CERCLA site
- The substances regulated by the requirement and the substances found at the CERCLA site
- Any variances, waivers, or exemptions of the requirement and their availability for the circumstances at the CERCLA site
- The type of place regulated and the type of place affected by the release or CERCLA action
- The type and size of structure or facility regulated and the type and size of structure or facility affected by the release or contemplated by the CERCLA action
- Any consideration of use or potential use of affected resources in the requirement and the use or potential use of the affected resources at the CERCLA site

According to CERCLA ARARs guidance (EPA, 1988), a requirement may be “applicable” or “relevant and appropriate,” but not both. Identification of ARARs must be done on a site-specific basis and involve a two-part analysis: first, a determination whether a given requirement is applicable; then, if it is not applicable, a determination is made as to whether it is nevertheless both relevant and appropriate. It is important to explain that some regulations may be applicable or, if not applicable, may still be relevant and appropriate. When the analysis determines that a requirement is both relevant and appropriate, such a requirement must be complied with to the same degree as if it were applicable (EPA, 1988).

This section provides a brief description of potential ARARs with a determination of ARAR status (that is, applicable, relevant and appropriate, or not an ARAR). For the determination of relevance and appropriateness, the pertinent criteria were examined to determine whether the requirements addressed problems or situations sufficiently similar to the circumstances of the release or response action contemplated and whether the requirement was well suited to the site. A negative determination of relevance and appropriateness indicates that the requirement did not meet the pertinent criteria.

To qualify as a state ARAR under CERCLA and the NCP, a state requirement must be:

- A state law
- An environmental or facility siting law
- Promulgated (of general applicability and legally enforceable)
- Substantive (not procedural or administrative)
- More stringent than the federal requirement
- Identified in a timely manner
- Consistently applied

To constitute an ARAR, a requirement must be substantive. Therefore, only the substantive provisions of requirements identified as ARARs in this analysis are considered to be ARARs. Permits are considered to be procedural or administrative requirements. Provisions of generally relevant federal and state statutes and regulations that were determined to be procedural or non-environmental, including permit requirements, are not considered to be ARARs. CERCLA 121(e)(1), 42 USC, Section 9621(e)(1), states that “No Federal, State, or local permit shall be required for the portion of any removal or remedial action conducted entirely on site, where such remedial action is selected and carried out in compliance with this section.” The term “on site” is defined for purposes of this ARARs discussion as “the areal extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of the response action” (40 CFR, Section 300.5).

Non-promulgated advisories or guidance issued by federal or state governments are not legally binding and do not have the status of ARARs. Such requirements may however, be useful and are “to be considered” (TBC). TBC [40 CFR, Section 300.400(g)(3)] requirements complement ARARs, but do not override them. They are useful for guiding decisions regarding cleanup levels or methodologies when regulatory standards are not available.

Pursuant to EPA guidance (EPA, 1988), ARARs are generally divided into three categories: chemical-specific, location-specific, and action-specific requirements. This classification was developed to aid in the identification of ARARs; some ARARs do not fall precisely into one group or another. ARARs are identified on a site basis for removal actions where CERCLA authority is the basis for cleanup. As the lead federal agency, the DON has primary responsibility for identification of potential ARARs for IR Site 2. In preparing this ARAR analysis, the DON undertook the following measures consistent with CERCLA and the NCP:

- identified federal ARARs for the proposed removal action will be addressed in the Action Memorandum (AM), and will take into account site-specific information for the site
- reviewed potential state ARARs to determine whether they satisfy CERCLA and NCP criteria that must be met in order to constitute state ARARs
- evaluated and compared federal ARARs and their state counterparts to determine whether state ARARs are more stringent than the federal ARARs or are in addition to the federally required actions
- reached a conclusion as to which federal and state ARARs are the most stringent and/or “controlling” ARARs for the proposed removal action

5.3.1 Potential Location-Specific ARARs

Coastal Resource ARARs

Federal Coastal Zone Management Act (FCZMA) – The FCZMA (16 USC, Sections 1451 through 1464) requires that all federal activities that affect the coastal zone shall be conducted in a manner consistent, to the maximum extent practicable, with approved state management programs. California’s approved coastal management programs include the San Francisco Bay Plan developed by the San Francisco Bay Conservation and Development Commission. The Bay Plan’s policies include limiting bay filling and maintaining marshes and mudflats to the fullest extent possible to conserve wildlife, abate pollution, and protect the beneficial uses of the bay. The FCZMA is not an ARAR since the TCRA does not impact marshes, mudflats, or wildlife nor does it affect beneficial uses of the bay.

California Coastal Act of 1976 – The Public Resources Code (California Public Resources Code, Sections 30000 through 30900) – and 14 California Code of Regulations (CCR), Sections, 13001 through 13666.4 regulate activities associated with development to control direct significant

impacts on coastal waters and to protect state and national interests in California coastal resources. The California Coastal Act policies set forth in the act constitute the standards used by the California Coastal Commission in its coastal development permit decisions and for the review of local coastal programs. These policies contain the following substantive requirements: protection and expansion of public access to the shoreline and recreation opportunities (California Public Resources Code, Sections 30210 through 30224), protection, enhancement, and restoration of environmentally sensitive habitats including intertidal and nearshore waters, wetlands, bays and estuaries, riparian habitat, grasslands, streams, lakes, and habitat for rare or endangered plants or animals (California Public Resources Code, Sections 30230 through 30240), protection of productive agricultural lands, commercial fisheries, and archaeological resources (California Public Resources Code, Sections 30234, 30241 through 30244), protection of the scenic beauty of coastal landscapes (California Public Resources Code, Section 30251), and provisions for expansion, in an environmentally sound manner, of existing industrial ports and electricity-generating power plants (California Public Resources Code, Section 30264).

It is noted that the Oakland Inner Harbor, which connects to the San Francisco Bay, is located within 200 feet of the site. Since the site is near a coastal area, a check with the California Coastal Commission was made to determine if the site was within a coastal zone. Since the TCRA area is greater than 100 feet from the coast high tide line, the site is not affected by any coastal zoning restrictions. However, implementing the TCRA at IR Site 2 should be consistent with these goals and will conform to the substantive requirements of the state management program. While the removal action may involve short-term and temporary excavation and staging of contaminated soils and OEW materials, the excavation activities will be conducted in a manner that will protect the adjacent coastal zone. The selected removal action will also reduce contaminants of concern in the surface soils and thus, reduce potential exposure of coastal fauna to contaminants through erosion. By reducing contamination in the area, contaminants will be less bioavailable to food chains through flora as well.

Cultural Resources ARARs

The National Historic Preservation Act requires federally funded projects to identify and mitigate impacts of project activities on properties included in or eligible for the National Register of Historic Places. Historic buildings or landmarks are not present in the area that could be impacted by the removal action at the site. Therefore, the National Historic Preservation Act is not a potential ARAR.

The Archaeological and Historic Preservation Act requires that for federally funded or approved projects that may cause irreparable loss to significant scientific, prehistoric, historic, or archaeological data, the data must be preserved by the agency undertaking the project or the agency undertaking the project may request the Department of Interior to do so. The site is located on an area of engineered fill material so prehistoric or historic sites do not exist for the

area that potentially could be impacted by the removal action. Therefore, the Archaeological and Historic Preservation Act is not a potential ARAR.

Wetlands Protection and Floodplains Management ARARs

IR Site 2 is not within a known floodplain, but it is located adjacent to wetland areas and surface water bodies. Therefore Executive Order No. 11990, Protection of Wetlands [40 CFR, Section 6.302(a)], Executive Order No. 11988, Floodplain Management [40 CFR, Section 6.302(b)], and the Clean Water Act, Section 404, 33 USC, Section 1344, are ARARs for this response action. The proposed investigation and actions do comply with the substantive portions of the Clean Water Act pursuant to Section 404. Specific mitigation measures to be taken to minimize potential impacts to wetlands are presented in the Environmental Protection Plan (EPP) (Section 6.0).

Migratory Bird Treaty Act of 1918 [16 USC 703-712; Chapter 128]. This act makes it unlawful to pursue, hunt, kill, capture, possess, buy, sell, purchase, or barter any migratory bird, including the feathers or other parts, nests, eggs, or migratory bird products. Several species of migratory birds occupy IR Site 2. Specific mitigation measures to be taken to minimize potential impacts to migratory birds are presented in the EPP (Section 6.0).

National Wildlife Refuge System Administration Act [(NWRSA) - Title 16, Chapter 5A, Subchapter III, Section 668d]. Certain wildlife species could potentially occur on IR Site 2 based on their presence on similar areas in Alameda County. They include winter-run chinook salmon, tidewater goby, California brown pelican, California clapper rail, salt marsh common yellowthroat, Alameda song sparrow, western snowy plover, California least tern, American peregrine falcon, Stellar sea lion, and salt marsh harvest mouse (USFWS, 1998). None of these species have been observed on IR Site 2 in recent years, but they have been observed on lands and waters near the site. The NWRSA is applicable because it prohibits the disturbing, injuring, cutting, burning, removing, destroying, or possessing of any real or personal property of the United States, including natural growth, in any area of the system, or take or possess any fish, bird, mammal, or other wild vertebrate or invertebrate animals or part or nest or egg thereof within any such area, or enter, use, or otherwise occupy any such area for any purpose, unless such activities are performed by persons authorized to manage such area, or unless such activities are permitted with authorization from refuge managers, or by express provision of the law. Planned actions at the site are authorized and have an impact on the existing wildlife and the habitat will be minimal.

California Fish and Game Code (Sections 1600, 1601, 1603, 2014, 2080, 3005, and 5650). Regulations that apply to actions that impact wetlands, responsibility and damages for negligently destroying wildlife, the illegal taking of endangered/threatened species, other birds, and mammals, and the discharge or release of hazardous materials into California waters are all

relevant ARARs. The EPP in Section 6.0 presents mitigation measures to be implemented to prevent impacts to sensitive habitats and listed species.

Endangered Species Act of 1973 (ESA) (16 USC, Sections 1531 et seq.), California Endangered Species Act (CESA). Endangered species could occur on IR Site 2, but are not likely to inhabit the site. Planned actions should not impact wildlife that exists on the site. Intrusive impacts will be timed so as to avoid impacts on threatened and endangered species.

5.3.2 Potential Action-Specific ARARs

Although the soil to be excavated during the TCRA is not anticipated to be hazardous, OEW materials will be managed as a RCRA hazardous waste in accordance with the following provisions:

Department of Defense and DON Publications

Potential action-specific ARARs and TBC requirements focus primarily on the management of OEW as a potentially reactive (D003) hazardous waste. Because the remediation project is being conducted on a BRAC site, DoD and DON publications govern the handling, storage, transportation, clearance, and disposal requirements for OEW. They broadly apply and are applicable to all OEW activities on federal property as follows:

- *U. S. Navy Manual Naval Sea Systems Command (NAVSEA) OP-5.* Ammunition and Explosives Ashore Safety Regulations for Handling, Storing, Production, Renovation and Shipping
- *DoD Instruction 4145.26M.* DoD Contractor's Safety Manual for Ammunition and Explosives
- *DoD 6055.9-STD.* DoD Ammunition and Explosives Safety Standards, DDESB

RCRA and California Hazardous Waste Control Act ARARs/TBCs

Hazardous wastes managed in accordance with the substantive requirements of the RCRA and California Hazardous Waste Laws are likely ARARs as follows:

- If, based on the hazardous waste determination described under the federal chemical-specific ARARs discussion, wastes are determined to be hazardous, substantive requirements of 22 CCR, Section 66262.34 (pertaining to hazardous waste accumulation) will be applicable. Waste profiling of the soil to be removed will be conducted as a pre-removal activity. Waste accumulated on site for 90 days or less is subject to limited storage requirements.
- Hazardous waste generator requirements (22 CCR, Section 66262)
- Container storage (22 CCR, Sections 66264.171 through 66264.178).

- Staging piles (40 CFR, Part 264.554) – This regulation allows relief from land disposal restrictions (LDRs) for temporary storage of remediation waste on contiguous property. Placing hazardous remediation wastes in a staging pile does not trigger LDRs or minimum technology requirements. The substantive provisions of Section 264.554(d), (e), (f), (h), (i), (j), and (k) are ARARs for design and operating criteria for the staging pile if the soil removed during the TCRA is hazardous.
- Transportation requirements (40 CFR, Part 263; 22 CCR, Section 66263)
- On-site OEW storage/hazardous waste stockpile/storage area design and operation requirements (40 CFR, Part 262.250)

U.S. Department of Transportation ARARs and Requirements TBC

U.S. Department of Transportation (DOT) requirements which are potential ARARs include:

- Classification, packaging, and labeling requirements for on-and off-site transportation of hazardous materials on any public roadway (49 CFR, Parts 171 through 180)
- Identification, shipping, packaging, and container selection for OEW destined for off-site treatment, storage, or disposal (49 CFR, Parts 172, 173, and 178)

Other Federal/California ARARs and Requirements TBC

Other requirements that are potential ARARs include:

- Military Munitions Rule (MMR). Requirements for waste military munitions (WMM), transportation, treatment, and disposal of WMM and response to WMM/explosive emergencies (40 CFR, Parts 260 through 270)
- Fugitive dust may be generated during the excavation and handling of the contaminated soil. The pertinent substantive provisions of the Bay Area Air Quality Management District Regulations are considered applicable for these activities. In accordance with the regulations, reasonably available control measures will be applied during the TCRA to prevent fugitive dust emissions.

5.3.3 Potential Chemical-Specific ARARs

OEW

Under 40 CFR, Part 261.23 (a)(8) recovered OEW is considered RCRA hazardous waste and the requirements specified in Section 5.3.2 apply.

RCRA Hazardous Waste Standards

The federal RCRA requirements at 40 CFR, Part 261 does not apply in California because the state RCRA program is authorized by the EPA. The authorized state RCRA requirements are, therefore, considered potential federal ARARs. The applicability of RCRA requirements depends

on whether the waste is RCRA hazardous waste, whether the waste was initially treated, stored, or disposed after the effective date of the particular RCRA requirement, and whether the activity at the site constitutes treatment, storage, or disposal as defined by RCRA. However, RCRA requirements may be relevant and appropriate even if they are not applicable. The determination of whether a waste is RCRA hazardous waste can be made by comparing the site waste to the definition of RCRA hazardous waste. The RCRA requirements at 22 CCR, Sections 66261.21, 66261.22(a)(1), 66261.23, 66261.24(a)(1), and 66261.100 are potential ARARs because they define RCRA hazardous waste. A waste can meet the definition of hazardous waste if it has the toxicity characteristic of hazardous waste. This determination is made by using the Toxicity Characteristic Leaching Procedure (TCLP). The maximum concentrations allowable for the TCLP listed in Section 66261.24(a)(1)(B) are potential federal ARARs for determining whether the site has hazardous waste. If the site waste has concentrations exceeding these values, it is determined to be a characteristic RCRA hazardous waste.

State RCRA requirements included within the EPA-authorized RCRA program for California are considered to be potential federal ARARs and are discussed above. When state regulations are either broader in scope or more stringent than their federal counterparts, they are considered potential state ARARs. State requirements such as the non-RCRA, state-regulated hazardous waste requirements may be potential state ARARs because they are not within the scope of the federal ARARs (57 Federal Register 60848). The 22 CCR, Division 4.5 requirements that are part of the state-approved RCRA program would be applicable state ARARs for non-RCRA, state-regulated hazardous wastes.

The site waste characteristics need to be compared to the definition of non-RCRA, state-regulated hazardous waste. The non-RCRA, state-regulated waste definition requirements at 22 CCR, Section 66261.24(a)(2) are state ARARs for determining whether other RCRA requirements are state ARARs. This section lists the total threshold limit concentrations and soluble threshold limit concentration. The site waste may be compared to these thresholds to determine whether it meets the characteristics for a non-RCRA, state-regulated hazardous waste.

Title 27, Sections 20210 and 20220 are state definitions for designated waste and non-hazardous waste, respectively. These may be ARARs for soil that meets the definitions. These soil classifications determine state classification and siting requirements for discharging waste to land.

5.4 COMMUNITY RELATIONS ACTIVITIES

As the lead agency for the environmental IRP activities at the former NAS Alameda, the DON is responsible for conducting community relation activities for the TCRA at IR Site 2.

In accordance with 40 CFR, Part 300.415(n)(2) for CERCLA actions where, based on the site evaluation, the lead agency determines that a removal is appropriate and that less than 6 months

exist before on-site removal activity must begin, the lead agency shall 1) publish a notice of availability of the administrative record file established in a major local newspaper of general circulation within 60 days of the initiation of on-site removal activity, 2) provide a public comment period as appropriate and not less than 30 days from the time the administrative record file is made available for public inspection, and 3) prepare a written response to significant comments. In addition to these actions, the proposed project activities will be discussed with the Restoration Advisory Board (RAB) that consists of interested community members and various responsible agencies.

Several community relation activities 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.

5.4.1 Public Information

For a complete record of activities associated with this TCRA, documents are contained in information repositories that are located at:

- 1) Alameda Main Public Library (Historic Alameda High School)
2220 Central Avenue
Alameda, California
- 2) Alameda Point Former NAS Alameda
950 West Mall Square, Suite 141
Alameda, California

The complete administrative record is located at 1220 Pacific Highway, San Diego, California, and is maintained by Ms. Diana Silva, SWDIV Administration Record Manager, (619) 532-3676.

5.4.2 Public Participation

The proposed TCRA will be discussed during community meetings and through the RAB. In addition, a public notice will be issued that describes the proposed TCRA and the availability for review of the project administrative record.

5.5 AGENCY NOTIFICATION

The following individual agencies will be notified at least 30 days prior to the start of any operations on IR Site 2:

- USFWS – Ms. Marge Kolar
- EPA – Ms. Anna-Marie Cook
- RWQCB – Mr. Dennis Mishek
- SWDIV BRAC Operations – Mr. Mike McClellan/BRAC Environmental Coordinator

6.0 ENVIRONMENTAL PROTECTION PLAN

This EPP encompasses IR Site 2, OU-4A of former NAS Alameda, Alameda Point, Alameda, California. A brief description of IR Site 2 is presented in Section 2.0 of the Focused RI Work Plan. IR Site 2 is located at the westernmost edge of Alameda Point (Figure 1-1).

6.1 INTRODUCTION

This EPP has been developed to protect sensitive natural resources during OEW characterization, TCRA, and geotechnical and seismic evaluation operations. This EPP was developed by documenting future reuse projects scheduled at IR Site 2, as well as identifying potentially sensitive resources within the area. Activities planned for the site were designed around identifying and avoiding sensitive resources whenever possible and minimizing potential impacts on sensitive resources when they cannot be avoided. Implementation of this EPP and alternative management actions/programs has been assessed as consistent with the requirements of the National Environmental Policy Act (42 USC, Section 4321 et. seq), and the Clean Water Act, Section 404, 33 USC, Section 1344. These mitigation measures include guidelines that have been accepted by regulatory agencies for similar OEW, geotechnical, and seismic operations at other former military sites. These measures were developed based upon site-specific analysis that addressed unique concerns and incorporated general best-management procedures and guidelines that have been approved at other sites.

At the present time, the proponent does not intend to conduct soil sampling or boring activities within the boundaries of any wetland areas. The West Beach Landfill Wetland provides water and food for wildlife, serves as a migration and dispersal corridor for wildlife, and contains habitat that is distinct from the adjacent uplands. This feature also provides foraging, nesting, rearing, and breeding habitat for a variety of wildlife species.

The geotechnical test pit and drilling sites will be verified by a FWENC biologist to minimize the project's potential disturbance to natural resources at the IR Site 2. Location of these sample areas will meet the following objectives where feasible:

- Minimize the use heavy machinery.
- Minimize off-road intrusion (for example, trucks and cars can be parked on roads, side roads, lots, and so forth).
- Avoid areas suspected to have threatened or endangered flora and/or fauna.

6.2 ENVIRONMENTAL ISSUES AND CONCERNS

IR Site 2 is located on the western coastline of Alameda Point, Alameda, California, and includes the West Beach Landfill (the landfill), the West Beach Landfill Wetland (the wetland), and the associated interior and coastal margins.

The landfill is sited on approximately 77 acres in the extreme southwestern end of Alameda Point. It was used as the main disposal area for the former NAS Alameda from approximately 1952 through 1978. The wetlands cover approximately 30 acres and are bounded by the landfill to the north and east and by the coastal margin adjacent to the San Francisco Bay on the south and west.

The interior margin is the area of IR Site 2 that lies outside the landfill and wetlands to the north and east. It also contains part of the perimeter dike and includes all areas outside the dike to the north and east. It is a geographic definition used primarily for classifying sampling locations. Mustard and thistles are the dominant vegetation of the upland areas while Bermuda grass and pickleweed dominate the wetlands (FWENC, 2001a; USFWS, 1998).

6.2.1 Wetlands

The wetland occupies a vegetated space that includes approximately 30 acres of wetland habitat. The wetland is both seasonally wet and wet during high tides. The wetland consists of two ponds and adjacent areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

At the present time, the DON does not intend to conduct soil sampling or boring activities within the boundaries of any wetland areas. If investigation or remediation activities are required in wetland areas, their impacts will be minimized to the maximum extent possible by performing the work in accordance with applicable regulations and established procedures. The only material known to have been deposited in the wetland is scrap metal (E&E, 1983). The coastal margin is the thin strip of land between the landfill or wetland, and the bay. It acts as a buffer for the landfill and the wetland and is composed of the perimeter dike and rip-rap seawall. Materials in the coastal margin differ from those in the landfill and wetlands.

The Habitat Restoration Group (HRG) conducted a wetland delineation of the Landfill Wetland for the DON in October 1993 in accordance with the standards described in the *1987 Corps Wetland Delineation Manual*. Additionally, PCR Environmental, Kinnetics Laboratories, Inc., and Tocsin, Inc. in association with the HRG, classified the wetland at IR Site 2 in February 1994.

6.2.2 Wildlife

Species that are federally listed as endangered or threatened that could potentially occur at IR Site 2 (based on their presence on similar areas in Alameda County) 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 IR Site 2 and activities planned for the site will not adversely affect them. Compliance with the following regulatory legislation will be required: Migratory Bird Treaty Act of 1918, the ESA of 1973, as amended, the Fish and Wildlife Act of 1956, as amended by the Fish and Wildlife Improvement Act of 1978, Section 404 of the Clean Water Act, and the NWRSA of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1977.

Migratory Waterfowl and Other Waterbirds

The open water area adjacent to IR Site 2 is a wintering area for migratory water fowl. These waters provide resting and feeding habitat for over 1,000 ducks on any given day during the winter (USFWS, 1998). Based on Christmas bird count surveys (conducted 1 day annually in December), surf scoters make up the majority of these numbers, with canvasback, lesser and greater scaup, goldeneye, bufflehead, red-breasted merganser, and ruddy ducks also being present. Open water areas adjacent to IR Site 2 also provide important foraging habitat for other waterbirds.

6.3 POTENTIAL IMPACTS OF CHARACTERIZATION/SURVEY OPERATIONS

Endangered or threatened species could potentially occur on IR Site 2. By implementing environmentally sensitive investigation and characterization methods, potential impacts to these resources can be minimized. Section 6.4 describes the proposed measures. FWENC would implement during all phases of the characterization/investigation to minimize or mitigate potential impacts.

6.4 IMPACT MINIMIZATION MEASURES

The procedures outlined in this section will be implemented by the FWENC Site Superintendent to minimize environmental effects of the proposed action. Procedures for the OEW characterization, TCRA, and geotechnical and seismic evaluations will be implemented in compliance with all applicable federal and state regulations, including those that protect air, water, land, human health and safety, and cultural and biological resources.

6.4.1 Worker Education Briefing

Before the start of any activities, all on-site personnel will be briefed on health and safety issues and the need for minimizing impact on sensitive biological resources. Methods for avoiding and minimizing potential impact on the species and communities of concern will be stressed during the on-site training.

6.4.2 Mitigation by Avoidance

In conjunction with the OEW characterization, geotechnical and seismic evaluations will be conducted to identify sensitive biological resources and environmental issues and concerns. If sensitive plants or communities are identified within the proposed drilling and excavation sites, the plants or groups of plants will be avoided or the site will be relocated.

6.4.3 Wetlands Protection

All IR Site 2 activities will be performed in accordance with applicable regulations, and a 'no net loss' to wetlands approach will be implemented. The approach will comply with the intent of Section 404 of the Clean Water Act by compensating for all wetland areas impacted by investigation or remediation activities. The approach will involve a qualified biologist accurately delineating the wetland boundaries at the site (staking and flagging wetland boundaries) and mitigation for impacts to wetland features. Wetland areas impacted during investigation or remediation activities will be documented, and additional wetland areas will be created at a 1.5:1 mitigation to impact ratio. The U.S. Army Corps of Engineers was not contacted. However, until the investigation portion of the project is completed, it cannot be determined if the proposed action involves significantly altering vegetation in wetland areas.

If investigation or remediation activities result in wetland impacts, mitigation proposed to offset project impacts will result in wetland habitat creation.

Created wetland habitat will be intended to be of the same or higher quality than the impacted wetland and will serve to offset wetland losses. Wetland habitat creation will seek to create a self-sustaining system that does not require active management or supplemental water once the establishment phase is complete. Wetland habitat creation will be focused on the area adjacent to existing wetland to the maximum extent feasible. Vegetation will be established in the created wetland through a combination of natural re-vegetation, salvage of seed bank, and vegetation materials from any impacted wetland areas, and if necessary, vegetation will be established through the collection and application of seed material followed by hand planting of vegetation to mimic natural patterns. Wetland preservation will be considered successful when:

- A dominance of the created wetland acreage exhibits positive field indicators of wetland vegetation, soils, and hydrology (that are functioning as wetlands).
- Species composition in the created wetland is similar to that of the original impacted habitat.

6.4.4 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 through August 31) (USFWS, 1998; DON 1997). A biologist will determine if nesting is evident during the periods before or after the peak nesting season, prior to the inception of any clearing activities.

6.4.5 Plant Community Protection

Plant species found within the salt marsh ecosystem and other portions of IR Site 2 are not state or federally listed. The vegetation will be mowed to a maximum height of 4 inches to facilitate the surface OEW sweep and other planned activities. Topsoil removed during the removal action will be sifted and replaced.

Trees will be pruned on a case-by-case basis and only as required to accomplish the tasks as outlined in this RI Work Plan. Tree removal is not required to perform the geotechnical and seismic evaluations at IR Site 2, but some trees may be removed during the TCRA.

6.5 MONITORING

A biological monitoring team will be on site during the initial ground disturbing activities. The monitoring team will include a FWENC biologist and, if available, a DON field biologist. If a DON biologist is not available, a second FWENC biologist will complete the team. The monitoring team shall oversee protective requirements and mitigation measures and follow site visits on an as-needed basis to assess the level of disturbance to the wildlife and plants. A determination that the chosen course of action is acceptable will be made in the field. Field personnel will determine whether an action is acceptable with regard to the level of disturbance to wildlife and plants by utilizing the following criteria outlined in the EPP.

- The action must be authorized by the USFWS and the qualified FWENC biologist will oversee the field activities.
- To the maximum extent feasible, the use of heavy equipment and off-road intrusion in areas with sensitive biological resources (wetlands, tern breeding area, and so forth) will be minimized.
- Investigation and remedial activities will not take place during the peak of the avian breeding season (April 1 to August 31) without the prior approval of the USFWS and the qualified FWENC biologist to oversee the field activities.
- A qualified biologist will determine if nesting is evident during the periods before or after the peak of the nesting season, prior to the inception of the investigation or remedial actions. Monitoring reports will be prepared for each site visit.

7.0 WASTE MANAGEMENT PLAN

This Waste Management Plan (WMP) was specifically developed to identify regulatory requirements applicable to the disposal of investigation PPE, decontamination water, and other materials generated during the OEW characterization, TCRA, and geotechnical and seismic evaluations to be conducted at IR Site 2. The WMP details the waste management practices, documentation, and training requirements that are necessary to ensure proper waste handling, transportation, and disposal. In addition, the WMP provides guidance regarding waste minimization practices to be followed during the project to reduce the volume of waste generated, stored, and removed from the site for disposal.

The WMP addresses the following anticipated regulated activities:

- Containerization, storage, and disposal of potentially non-RCRA hazardous and RCRA hazardous wastes generated in accordance with seismic and geotechnical survey activities (These wastes may include debris, PPE, and decontamination water)
- Sampling and analysis of waste materials for subsequent investigation, management, and disposal purposes
- Assisting the DON with identification of appropriate transportation companies and disposal facilities for wastes generated from the project activities (if required)
- Preparing materials, completing documentation, labeling, and placarding waste containers for transport to an appropriate off-site disposal facility

7.1 REGULATORY REQUIREMENTS

Project activities may generate non-hazardous waste, non-RCRA hazardous wastes, and RCRA hazardous wastes. As such, the following federal and state regulations are applicable and must be complied with during implementation of planned project activities:

- California and EPA Regulations for Identification and Management of Hazardous Waste, 22 CCR, Sections 66260 through 66299 and 40 CFR, Parts 260 through 299
- DOT Rules For Hazardous Materials Transport, 49 CFR, Parts 100 through 178
- Bay Area Air Quality Management District Regulations
- Applicable DON and DoD Environmental Permits, Policies, and Procedures
- Appropriate Best Management Practice (BMP) will be followed to control run-on/runoff and to minimize fugitive dust emissions during project activities

Environmental investigation and remediation of IR Site 2, OU-4A of former NAS Alameda is being conducted under the DoD IRP. Activities conducted under the IRP are to be performed in accordance with CERCLA and the NCP. Under Executive Order 12580, the DON is the lead

agency responsible for the cleanup effort, but the EPA, the California Environmental Protection Agency (Cal/EPA) DTSC, and the RWQCB are involved in IRP oversight. This project is being conducted in support of an RI/FS for IR Site 2. The NCP requires that the substantive requirements of ARARs are followed; and compliance with administrative requirements is waived. Specifically, CERCLA response actions are exempt by law (as codified in Title 40 CFR, Part 300.400) from the requirement to obtain federal, state, or local permits related to any activities conducted on site. In addition to federal requirements, promulgated state regulations are potential ARARs.

7.2 WASTE MINIMIZATION

In order to minimize the volume of waste, the following general rules will be applied:

- Contaminated materials will not be unnecessarily commingled with uncontaminated materials.
- When practicable, material and equipment will be decontaminated and reused.
- Volume reduction techniques will be utilized, as appropriate.

7.3 PROJECT WASTE DESCRIPTIONS

Resultant waste streams associated with the project activities that may be encountered can be categorized as follows:

- Contaminated soil cuttings
- Uncontaminated soil cuttings
- Excavated soil
- OEW (RCRA hazardous)
- OEW scrap
- Debris
- PPE

7.4 WASTE MANAGEMENT ACTIVITIES

This section describes in more detail how waste generated during project activities will be characterized and classified.

7.4.1 Waste Characterization/Classification

IR Site 2 is considered an area of contamination under the CERCLA program as administered by the EPA and the Cal/EPA DTSC. Soil cuttings and excavated materials will be stockpiled adjacent to their point of origin. These materials will eventually be re-graded into the soil surface

upon subsequent land reuse and development. The designation of IR Site 2 as an area of contamination (AOC) allows the placement of material generated during investigations within the same AOC without triggering land disposal restrictions.

Where a clear hazardous waste determination cannot be made, decontamination water generated from daily decontamination activities, PPE, and other debris (unless decontaminated) utilized during project activities, will be sampled and analyzed in accordance with federal and California Hazardous Waste Management Regulations and Solid Waste Management Regulations. A determination will then be made as to whether the materials are a characteristic hazardous waste based on the criteria for ignitibility, reactivity, corrosivity, or toxicity as defined in 22 CCR, Section 66261, Article 3.

7.4.2 Hazardous Waste Management

RCRA Subtitle C and the California Hazardous Waste Management Regulations govern hazardous waste management from the point of generation, through storage and treatment (if necessary), to its ultimate disposal. The Cal/EPA DTSC is authorized by the EPA to oversee management of the hazardous waste program in California. Hazardous waste must comply with the following requirements:

- Any waste generated during project activities that is required to be removed from the site for disposal must be characterized to determine whether it is a hazardous waste. Analytical testing requirements are detailed in Appendix B, SOP-2, Drilling, Geotechnical Sampling, and Testing.
- Hazardous waste must be managed in accordance with 22 CCR, Section 66262, Standards Applicable to Generators of Hazardous Waste.
- Hazardous waste transported off site must be manifested in accordance with 22 CCR, Section 66262 Article 2, Manifests, and accompanied by land disposal restriction (LDR) certification notices as per 22 CCR, Section 66268.7, Waste Analysis and Recordkeeping.
- Hazardous waste must be stored in accordance with 22 CCR, Section 66265, Article 9, Use and Management of Containers, and/or 22 CCR, Section 66265 Article 10, Tank Systems.
- All containers and tanks of hazardous waste to be stored or disposed will be clearly marked with a completed hazardous waste label, indicating the starting date of accumulation, EPA identification number, EPA waste code, DOT markings, and so forth.
- Hazardous waste may be stored in tanks or containers on site for a maximum of 90 days. The 90 days begin on the date that the waste is first generated and containerized (that is, the day the first drop of waste is placed in a container).

- Hazardous waste must be disposed only at a hazardous waste disposal facility permitted for the disposal of the particular type of hazardous waste generated, and approved by FWENC and the DON.

7.4.3 Waste Containerization and Storage

Container selection will be performed by DOT-trained personnel based on type and quantity of waste to be generated. Containers may include either DOT-specification drums or roll-off bins for regulated hazardous material. DOT-specification containers are not required for material that does not meet a DOT hazard class.

Prior to commencing project activities, the FWENC SUXOS will, in conjunction with the ECM, select areas for the temporary staging and storage of excavated soil, investigation-derived materials, decontamination fluids, and PPE. Where appropriate and feasible, these areas will include secondary containment.

Waste material must be classified according to California and DOT criteria before the labels are applied. Upon classification, each container will be marked and labeled as required. Trained personnel, as required by 49 CFR, 172 Part, Subpart H, will conduct all DOT functions.

At the time of generation, all waste containers will be labeled using indelible ink, with the following information:

- Source and location
- Contents and quantity of material in the container
- Potential health, safety, and environmental hazards
- Accumulation start date (the date the first drop of material was put in the container)

Containers determined to contain hazardous waste will be immediately labeled with a completed commercial "HAZARDOUS WASTE" label, which will include the accumulation start date and other requested information. Containers for which additional characterization is necessary to make a waste determination will be labeled as "Potentially Hazardous Waste – Pending Analysis."

As practicable, hazardous waste stored in containers (that is, 55-gallon drums and roll-off bins) will also be stored on wooden pallets, if possible, and within a predesignated waste storage area with secondary containment. An inventory of waste containers will be maintained for later submittal to and inspection by DON personnel, if required.

Containers of hazardous waste will be inspected and logged weekly while the fieldwork is in progress. Tanks containing hazardous waste will be inspected on a daily basis. Inspections will encompass evaluation for proper labeling, secure closure, the condition of each container/tank, number of containers/tank, and condition of the storage and secondary containment area. Any

signs of deterioration, leaking, or significant dents will be noted, and containers will be immediately over-packed or replaced, if necessary. Inspection results will be provided to the DON, as requested. Waste streams generated from site activities will be allowed to accumulate on site for a period of time not to exceed 14 days from the first date of generation. Accumulated wastestreams will be evaluated on a weekly basis to profile for transportation and disposal by a waste disposal subcontractor.

7.4.4 Wastewater and Waste Fluids

The hazardous waste generator regulations referenced in 22 CCR, Section 66262 and 40 CFR, Part 262 contain applicable requirements for facilities that store hazardous wastes in tanks or containers for over 90 days. Decontamination water will be collected and stored within DOT-approved 55-gallon containers. Although anticipated to be non-hazardous, the containers will be managed and inspected in accordance with the substantive requirements of 22 CCR, Section 66265.173. These regulations require documentation of weekly inspections of the containers and the container storage area. In addition to these requirements, adequate secondary containment (that is, 100 percent of the container(s) volume plus the maximum rainfall from a 25-year, 24-hour storm event) will be implemented as a BMP. The contents of the container(s) will be characterized per the requirements of 22 CCR, Section 66261 to determine appropriate disposal options.

Waste fluids generated from heavy equipment maintenance activities will be collected and removed from the site by the maintenance contractor for recycling. Hazardous wastes containing free liquids have stringent secondary containment requirements. These requirements include:

- A base free of cracks or gaps and sufficiently impervious to contain leaks, spills, and accumulated precipitation until the collected material is detected and removed.
- The base will be sloped or the containment system will be otherwise designed and operated to drain and remove liquids resulting from leaks, spills, or precipitation. Alternatively, the containers may be elevated on pallets to prevent contact with accumulated liquids.
- The containment system must have sufficient capacity to contain 10 percent of the volume of containers or the volume of the largest container, whichever is greater.
- Spilled or leaked waste and accumulated precipitation will be removed from the sump or collection area in a timely manner to prevent overflow of the collection system.

7.4.5 OEW (RCRA Hazardous)

OEW (RCRA Hazardous) material will be controlled and accounted for from discovery to disposal. This material would include all types of unexpended or dud-fired ordnance items or OEW fragments that contain energetic materials. Procedures for the accountability and disposition of OEW are found in SOP-1, Appendix B.

7.4.6 OEW Scrap

OEW scrap (shrapnel, fins, expended munitions) will be controlled and accounted for from discovery to disposal. Procedures for the accountability and disposition of OEW scrap are found in Appendix B, SOP-1.

7.4.7 Used PPE and Other Debris

Pieces of metal, metal piping, liners, used PPE, and other debris that is capable of being decontaminated (treated) under the hazardous debris rule in 22 CCR, Section 66268.45, will be decontaminated and segregated in a lined stockpile or roll-off bin for subsequent disposal as non-hazardous waste. Used PPE and debris that cannot be effectively treated (for example, wood, PVC piping, and so forth) will be segregated in containers (drums or roll-off bins) and managed as hazardous waste in accordance with the substantive requirements of the container management regulations codified in 22 CCR, Sections 66264.170 through 66264.178 pending characterization and appropriate disposal.

7.4.8 Waste Accumulation Areas

Hazardous waste storage areas also require:

- A sign with the legend, “Danger Hazardous Waste Area-Unauthorized Personnel Keep Out” (written in English and Spanish), will be posted at each 90-day accumulation area in sufficient numbers to be seen from any approach. The signs will be legible from a distance of at least 25 feet.
- Aisle space will be maintained to allow the unobstructed movements of personnel, fire protection equipment, spill control equipment, and decontamination equipment into any area of facility operation in an emergency, unless aisle space is not needed for any of these purposes.
- The following emergency equipment will be located or available to personnel during active waste management activities at each accumulation area:
 - A device, such as a telephone or a hand-held two-way radio, capable of summoning emergency assistance will be available.
 - Portable fire extinguishers, fire control equipment, spill control equipment, and decontamination equipment will be available.

Bulk quantities of fuel, oil, or other hazardous materials will not be stored on site. Equipment fueling and maintenance activities will be performed by an off-site contractor on an as-needed basis.

7.5 REPORTING SPILLS AND RELEASES

Precautions will be taken to prevent hazardous material spills. Informal daily inspections by site personnel of equipment, structure(s), and containers will be conducted. In addition, personnel using hazardous materials will inspect containers before and after use. In the event of a spill/release, the Site Superintendent will notify the DON, and spill response will be conducted in accordance with the BWHSP and federal, state, and local regulations, and in accordance with DON policies and procedures.

7.6 TRAINING/CERTIFICATION REQUIREMENTS

This section presents the DOT and waste management training and certification requirements for personnel involved in the project. Employees involved in waste management operations will be trained in FWENC's Waste Management and Environmental Compliance policies and procedures to ensure that they are familiar with the program. These policies and procedures meet Department of Justice requirements for a sound environmental management program and satisfy the hazardous waste management training requirements under 22 CCR, Section 66265.16. In addition, personnel who perform or oversee DOT-related activities will be DOT-trained. DOT and waste management training records will be maintained in FWENC's Corporate Department files and will be available, as necessary, to on-site personnel. Copies of all training certificates for FWENC and subcontractor personnel will be kept on site during the course of all activities.

7.7 DOCUMENTATION AND RECORDS RETENTION

This section presents project requirements relating to documentation and records and their retention.

7.7.1 Documentation

The information contained in this section applies to all waste managed during project activities. Field records will be kept in the project files. Information to be recorded includes, but is not limited to, the following:

- Description of waste generating activities
- Location of waste generation (including depth, if applicable)
- Type of waste
- Date and time of generation
- Name of person recording information
- Name of field manager at time of generation and at time of disposal
- Test results
- Inspection logs

- Waste documentation, including:
 - Waste profile sheets
 - LDR certification
 - Hazardous waste manifest
 - Trip tickets or bills of lading
 - Copies of any state or local permits or approvals

7.7.2 Transportation

Transportation documentation will comply with DOT regulations 49 CFR, Parts 100 through 178 and will be prepared or reviewed by appropriately trained FWENC personnel.

Containers will be marked, labeled, and/or placarded prior to off-site transport. Treatment, storage, and disposal facility (TSDF) waste profile sheets, LDR certifications, waste manifests, and shipping documents will be submitted by FWENC personnel for the appropriate DON officials to review and sign. Waste transporters used will be registered with the Cal/EPA DTSC and approved by the DON and FWENC procedures for TSDF and transporter approvals.

7.7.3 Hazardous Waste Manifests and LDR Certification

All hazardous waste transported from the site will be accompanied by a Hazardous Waste Manifest. DON personnel will be responsible for reviewing and signing all waste documentation, including waste profiles, manifests, and LDR certifications (manifest packages). Prior to signing the manifest, the designated DON official will ensure that pre-transport requirements of packaging, labeling, marking, and placarding are met according to 22 CCR, Sections 66262.30 through 66262.33, and 49 CFR, Parts 100 through 177.

The DON will receive one copy of the manifest; the remaining copies will be given to the transporter. The manifest will be returned to the DON signatory official to be placed on file. Copies of all manifests for waste generated at the site will also be kept in a central project file.

A LDR form will accompany the shipment of hazardous waste to the TSDF. The TSDF must be notified prior to sending the waste. The following items must accompany the notification and are included in one of the following facility specific forms:

- EPA identification number (provided by the DON)
- Manifest number
- Waste analysis data
- If the waste is also restricted, corresponding concentration-based or technology-based treatment standards or prohibitions

7.7.4 RCRA Records Retention

The designated DON manifest signatory official will be responsible for ensuring that all hazardous waste recordkeeping requirements are met according to 22 CCR, Sections 66262.20 through 66262.44, including retention of signed copies of manifests from the designated facility that received the waste. The copy must be maintained for a period of at least 3 years from the date the waste was accepted by the initial transporter. Additionally, biennial and exception reporting must be submitted, as necessary, according to 22 CCR, Sections 66262.41 and 66262.42, respectively. Additional reporting may be required according to 22 CCR, Section 66262.43.

8.0 REFERENCES

- Department of Defense (DoD). 1998. *DoD Contractors Safety Manual for Ammunities and Explosives*. Washington D.C. Governmental Printing Office.
- _____. 1998. *Policy to Implement the EPA's Military Munition Rule*. Washington D.C.: Government Printing Office.
- Department of Defense Explosive Safety Board (DDESB). 1999. *DOD Ammunition and Explosives Safety Standards-DOD 6055.9-STD*. Washington, D.C.: The Office of the Under Secretary of Defense.
- Ecology and Environment, Inc. (E&E). 1983. *Initial Assessment Study, Naval Air Station, Alameda California*. Prepared for the Department of the Navy, Navy Assessment and Control of Installation Pollutants Department, Naval Enery and Environmental Support Activity, Port Hueneme, California.
- Foster Wheeler Environmental Corporation (FWENC). 1998a. *UXO Drilling Operations (EHS 7-2)*. Morris Plains, New Jersey.
- _____. 1998b. *UXO Quality Control (EHS 7-3)*. Morris Plains, New Jersey.
- _____. 1998c. *UXO Initial Site Assessment. (EHS 7-1)*. Morris Plains, New Jersey.
- _____. 2001a. *Jurisdictional Delineation Report for West Beach Wetlands*. IR Site 2 – Alameda Point, Alameda, California. December.
- _____. 2001b. *Preliminary-Draft Base-Wide Health and Safety Plan, UXO Investigation/Removal Action and Geotechnical Characterizations at Sites 1 and 2, Alameda Point, Alameda, California*. San Diego, California: FWENC.
- Makdisi, F.I., and H.B. Seed. 1978. *Simplified Procedure for Estimating Dam and Embankment Earthquake-Induced Deformations*. Journal of the Geotechnical Engineering Division, ASCE 104(GT7):849-867.
- Naval Sea Systems Command (NAVSEA). 1995. *Ammunition and Explosives Ashore; Safety Regulations for Handling, Storing, Production, Renovation and Shipping*. NAVSEA OP 5, Volume 1. Indian Head, Maryland: Naval Ordnance Center.
- Neptune and Company (N&C), Inc. 2000. *IR Site 2 Remedial Investigation Report, Alameda Point, Alameda, California – Draft*. Los Alamos, New Mexico. For Southwest Division Naval Facilities Engineering Command.
- Robertson, P.K. and C.E. Wride. 1997. *Cyclic Liquefaction and its Evaluation Based on SPT and CPT*. Proc., NCEER Workshop on *Evaluation of Liquefaction Resistance of Soils*. Tech Rep. NCEER 97-0022, T.L. Youd and I.M. Idriss, eds., National Center for Earthquake Engineering Research, State University of New York at Buffalo, Buffalo, 41-87.
- Seed, H.B. and I.M. Idriss. *Simplified Procedure for Evaluating Soil Liquefaction Potential* Journal of Soil Mechanics, Foundations Division, ASCE, 97: SM9, September 1971. p. 1,249-1,273.
- State of California. 1981. *Water Well Standards, Bulletin 74-81*. December.

- Supervisor of Shipbuilding, Conversion and Repair, Portsmouth (SSPORTS), Vallejo Detachment. 1999a. *Unexploded Ordnance Site Investigation Final Summary Report, Final*. Vallejo, California: SSSPORTS.
- SSSPORTS. 1999. *Unexploded Ordnance Site Investigation, Survey Work Package*. Vallejo, California: SPORTS.
- SSSPORTS. 1998. *Unexploded Ordnance Removal Action, Installation Restoration Site 2, Alameda Point – Alameda, California, Summary Report*. Vallejo, California: SSSPORTS.
- Tetra Tech EM Inc. (TtEMI). 1999. *OU-3 Remedial Investigation Report, Final, Alameda Point, Alameda, California Volumes 1-3*. Rancho Cordova, California.
- U.S. Army Corps of Engineers. 1987. *Corps of Engineers Wetlands Delineation Manual*. January.
- U.S. Department of the Navy (DON). 1997. *Biological Assessment for Disposal and Reuse of the Naval Air Station and Fleet and Industrial Supply Center, Alameda Facility and Annex Alameda, California*. Unpublished Report. EFA West Naval Facilities Engineering Command. San Bruno, California.
- U.S. Environmental Protection Agency (EPA). 1988. *CERCLA Compliance With Other Laws Manual, Draft Guidance*. EPA/540/G-89/006, Office of Emergency and Remedial Response. Washington, DC. August.
- U.S. Fish and Wildlife Service. 1998. *Draft Comprehensive Conservation Plan, Alameda National Wildlife Refuge*. Portland, Oregon.

APPENDIX A

**PROJECT CONTRACTOR
QUALITY CONTROL PLAN**

Southwest Division
Naval Facilities Engineering Command
Contracts Department
1220 Pacific Highway, Building 127, Room 112
San Diego, California 92132-5190

CONTRACT NO. N44255-95-D-6030
DO No. 0095

APPENDIX A
FINAL
PROJECT CONTRACTOR QUALITY CONTROL PLAN
Revision 0
February 8, 2002

**ORDNANCE AND EXPLOSIVES WASTE CHARACTERIZATION,
AND GEOTECHNICAL AND SEISMIC EVALUATIONS
AT INSTALLATION RESTORATION SITE 2
ALAMEDA POINT
ALAMEDA, CALIFORNIA**

DCN: FWSD-RACII-02-0132



FOSTER WHEELER ENVIRONMENTAL CORPORATION

1230 Columbia Street, Suite 640
San Diego, CA 92101

Abid Loan, P.E.
Project Manager

Mary Schneider
Program QC Manager

TABLE OF CONTENTS

	<u>PAGE</u>
LIST OF TABLES	iv
LIST OF FIGURES	iv
ABBREVIATIONS AND ACRONYMS	v
1.0 INTRODUCTION	1-1
1.1 PURPOSE	1-1
1.2 SCOPE	1-2
2.0 ORGANIZATION AND RESPONSIBILITIES	2-1
2.1 PROJECT MANAGER	2-1
2.2 SITE SUPERINTENDENT	2-1
2.3 PROJECT QUALITY CONTROL MANAGER	2-3
2.4 UXO QC REPRESENTATIVE	2-4
2.5 SENIOR UXO SUPERVISOR	2-5
2.6 SITE HEALTH AND SAFETY SPECIALIST	2-5
2.7 SUBCONTRACTORS AND VENDORS	2-6
3.0 SUBMITTALS	3-1
3.1 SUBMITTAL DESCRIPTIONS	3-1
3.2 SUBMITTAL REQUIREMENTS	3-3
3.3 REVIEW OF SUBMITTALS	3-4
3.4 SUBMITTAL PROCESS	3-4
3.4.1 Format of Administrative Submittals	3-5
3.5 REVIEW AND PROCESSING OF SUBMITTALS THAT DO NOT REQUIRE DON APPROVAL	3-5
3.6 REVIEW AND PROCESSING OF SUBMITTALS THAT REQUIRE DON APPROVAL	3-5
3.7 REVISED SUBMITTALS	3-6
4.0 TESTING	4-1
4.1 DOCUMENTATION	4-1
4.2 LABORATORY SERVICES	4-1
4.2.1 Accreditation for Non-Environmental Projects	4-1
4.2.2 Accreditation for Environmental Projects	4-2
5.0 FIELD INSPECTION PLAN	5-1
5.1 COORDINATION AND MUTUAL UNDERSTANDING MEETING	5-4
5.2 QC MEETINGS	5-4
5.3 PREPARATORY PHASE INSPECTION	5-5
5.3.1 Standard Penetration Testing Quality Control	5-6

TABLE OF CONTENTS

(Continued)

	<u>PAGE</u>
5.4 INITIAL PHASE INSPECTION	5-6
5.4.1 Excavation Elevation Check	5-6
5.5 FOLLOW-UP PHASE INSPECTION	5-7
5.5.1 Surface Clearance Effectiveness Test	5-7
5.5.2 Standard Penetration Testing Quality Control	5-8
5.6 ADDITIONAL PREPARATORY AND INITIAL PHASES	5-8
5.7 COMPLETION INSPECTION	5-8
5.7.1 Field Quality Control Completion Inspections	5-8
5.7.2 Pre-Final Inspection	5-9
5.7.3 Final Acceptance Inspection	5-9
5.8 INSPECTION DOCUMENTATION.....	5-9
6.0 DOCUMENTATION	6-1
6.1 CONTRACTOR QUALITY CONTROL REPORT	6-1
6.2 CONTRACTOR PRODUCTION REPORT.....	6-2
6.3 CONFERENCE NOTES AND CONFIRMATION NOTES.....	6-2
6.4 TESTING PLAN AND LOG.....	6-3
6.5 CERTIFICATION OF SURFACE CLEARANCE TEAMS.....	6-3
6.6 REWORK ITEMS LIST	6-3
7.0 NONCONFORMANCES.....	7-1
7.1 IDENTIFICATION OF NONCONFORMING ITEMS	7-1
7.1.1 In-Process Deficiencies	7-1
7.1.2 Installed Deficiencies	7-2
7.1.3 Condition Requiring Stop Work.....	7-2
7.1.4 NCR Log	7-2
7.2 NONCONFORMING ITEMS	7-2
7.3 DISPOSITION	7-2
7.3.1 Field Change Requests and Design Change Notices.....	7-3
7.4 CORRECTIVE ACTIONS.....	7-3
8.0 QUALITY MANAGEMENT.....	8-1
9.0 REFERENCES	9-1

TABLE OF CONTENTS

(Continued)

ATTACHMENTS

Attachment 1	Delegation of Authority Letter
Attachment 2	Resume
Attachment 3	Quality Control Forms
	– Contractor Quality Control Report
	– Submittal Register
	– Testing Plan and Log
	– Catalog Cut/Shop Drawing Transmittal and Approval
	– Contractor Production Report
	– Preparatory Phase Checklist
	– Initial Phase Checklist
	– Follow-up Phase Checklist
	– Materials Inspection Checklist
	– Completion Inspection Checklist
	– Field Change Request
	– Design Change Notice
	– Nonconformance Report
	– Nonconformance Log
	– Rework Items List
	– Photograph Log Sheet
	– Request for Engineering Information
	– Request for Information

LIST OF TABLES

	<u>PAGE</u>
Table 5-1	Definable Features of Work..... 5-2

LIST OF FIGURES

Figure 2-1	Project Organization Chart 2-2
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ABBREVIATIONS AND ACRONYMS

ASTM	American Society for Testing and Materials
BRAC	Base Realignment and Closure
CAD	computer-assisted drafting
CL	confidence level
CPR	cardiopulmonary resuscitation
CPT	cone penetrometer test
CQC	Contractor Quality Control
CQCR	Contractor Quality Control Report
DCN	Design Change Notice
DERA	Defense Environmental Restoration Account
DFW	Definable Feature of Work
DO	Delivery Order
DON	U.S. Department of the Navy
ECM	Environmental Compliance Manager
EFANW	Engineering Field Activities Northwest
EPA	U.S. Environmental Protection Agency
FCR	Field Change Request
FWENC	Foster Wheeler Environmental Corporation
GIS	Global Information System
IR	Installation Restoration
IRP	Installation Restoration Program
MSDS	Material Safety Data Sheet
NAS	Naval Air Station
NCR	Nonconformance Report
NTR	Navy Technical Representative
OEW	ordnance and explosive waste
O&M	operations and maintenance
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PD	probability of detection
PjM	Project Manager
PQCM	Project Quality Control Manager
QA	Quality Assurance
QC	quality control

ABBREVIATIONS AND ACRONYMS

(Continued)

RAC	Remedial Action Contract
RFI	request for information
RI	Remedial Investigation
ROICC	Resident Officer in Charge of Construction
RPM	Remedial Project Manager
SD	submittal description
SDS	Spatial Data Standard
SEC	Site Emergency Coordinator
SEP	Search Effectiveness Probability
SHSP	Site-Specific Health and Safety Plan
SHSS	Site Health and Safety Specialist
SOP	Standard Operating Procedure
SUXOS	Senior UXO Supervisor
SWDIV	Southwest Division Naval Facilities Engineering Command
UXO	unexploded ordnance

1.0 INTRODUCTION

This Project Contractor Quality Control (CQC) Plan establishes the procedures and methods to be implemented for the ordnance and explosive waste (OEW) investigation and geotechnical and seismic evaluations at Installation Restoration (IR) Site 2, Operable Unit (OU) 4A of the former Naval Air Station (NAS) Alameda, Alameda Point, Alameda, California. The Project CQC Plan combines the Southwest Division Naval Facilities Engineering Command (SWDIV) and Engineering Field Activities Northwest (EFANW) Remedial Action Contract (RAC) II No. N44255-95-D-6030 and requirements with the Foster Wheeler Environmental Corporation (FWENC) quality control (QC) system requirements.

1.1 PURPOSE

The purpose of this Project CQC Plan is to establish the specific procedures and methods for field inspections and processing activities performed at IR Site 2. The Project CQC Plan provides an effective QC system to ensure the quality of all work performed by FWENC and its subcontractor personnel.

This site-specific Project CQC Plan for Delivery Order (DO) No. 0095 is an addendum to the *Final Contractor Quality Control Program Plan* (FWENC, 1999).

The objective of the remediation work is to perform an OEW investigation, a Time-Critical Removal Action in the Possible OEW Burial Site and geotechnical and seismic evaluations of IR Site 2 and its adjacent waters. The field activities will also include installation of temporary facilities and site controls, erosion control, and soil sampling/analysis and classification.

All records shall be specified, prepared, and maintained to provide documentary evidence of quality. Records will be legible, identifiable, retrievable, and protected against damage, deterioration, or loss. Requirements and responsibilities will be established and documented to ensure control of preparation, maintenance, distribution, retention, and disposition.

This Project CQC Plan complies with the requirements of the following documents:

- *Contractor's Guide* (SWDIV, 1996)
- *Guide Specification, NFGS-D 1450H* (Naval Facilities Engineering Command, 1999a)
- *Guide Specification, NFGS-D 1330F* (Naval Facilities Engineering Command, 1999b)

1.2 SCOPE

This Project CQC Plan is applicable to all field operations and will be available in the project field office. All work activities will be conducted in accordance with the Focused Remedial Investigation (RI) Work Plan. The Project CQC Plan will be implemented for the following activities:

- Installation of temporary facilities (for example, site office trailer, fencing, and staging areas)
- Site surveys (pre-screening for hazardous materials)
- Bathymetric survey
- Cutting vegetation down to a height of 4 inches or less
- Surface OEW investigation
- Time-Critical Removal Action
- Geotechnical sample collection
- Geotechnical laboratory testing
- Seismic field evaluation
- Transportation and disposal of debris
- Restoration of the site

2.0 ORGANIZATION AND RESPONSIBILITIES

This section describes the organization and authority for project personnel performing construction operations, including subcontractors. The organizational structure, functional responsibilities, personnel qualifications, levels of authority, and lines of communication established within the organization to ensure that high quality work is documented. The organization chart can be found in Figure 2-1.

All personnel assigned to this project will be qualified and experienced. The resumes of key unexploded ordnance (UXO) and QC personnel are available upon request. The responsibilities and authorities of the key project personnel are described in the following paragraphs.

2.1 PROJECT MANAGER

The Project Manager (PjM), Mr. Abid Loan, is responsible for the direction, execution, and successful completion of project tasks to achieve overall project goals. The PjM has responsibility for and the authority to perform the following quality affecting activities related to the project:

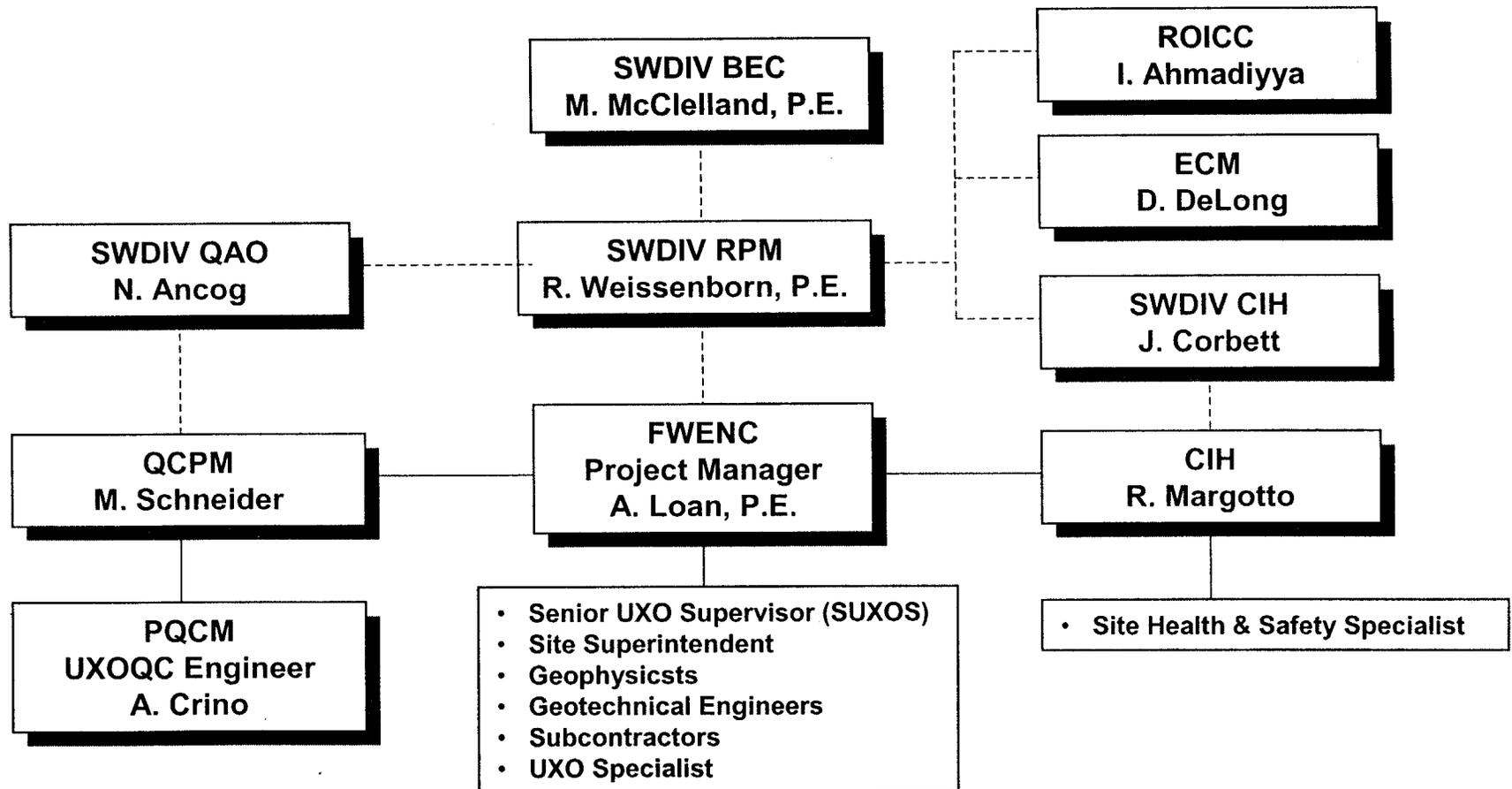
- Coordinate work activities of subcontractors and FWENC personnel, and ensure all personnel adhere to the administrative and technical requirements of the project.
- Monitor and report the progress of work and ensure project deliverables are completed on time and under budget.
- Ensure adherence to the quality requirements of the contract, project scope of work, and the Project CQC Plan.
- Ensure that all work activities are conducted in a safe manner in accordance with the Site-Specific Health and Safety Plan (SHSP), *U.S. Army Corps of Engineers Safety and Health Manual* (COE EM-385-1-1), and all applicable Occupational Safety and Health Administration (OSHA) regulations.
- Serve as the primary contact between U.S. Department of the Navy (DON) personnel and FWENC for actions and information related to the work.
- Ensure that all contract work will meet the requirements of the specifications and applicable codes.
- Coordinate satisfactory resolution and completion of evaluation and acceptance report for Nonconformance Reports (NCRs).

2.2 SITE SUPERINTENDENT

The Site Superintendent reports to the PjM and is responsible for coordinating, directing, implementing, and supervising site activities. The Senior UXO Supervisor (SUXOS) will act as the Site Superintendent for this project. Specific duties of the Site Superintendent include:

Figure 2-1

Project Organization Chart



- Implement construction activities in accordance with the RI Work Plan.
- Direct field leaders, support personnel, and subcontractors.
- Administer site access.
- Maintain work site, vehicles, and equipment.
- Coordinate and maintain logistics of all components of on-site tasks, including all personnel and equipment.
- Prepare daily production reports and estimate future scheduling needs.
- Coordinate, prepare, and complete all required field reports.
- Ensure that all safety requirements are met, enforced, and documented.
- Ensure compliance with applicable regulations, contractual, and health and safety requirements.
- Maintain the current 2-week look-ahead schedule of field activities.
- Recommend changes to improve project efficiency and effectiveness.
- Verify that field personnel are trained and qualified to complete assigned tasks.
- Attend QC meetings.
- Coordinate work efforts with the Project Quality Control Manager (PQCM) and Site Health and Safety Specialist (SHSS).
- Provide technical justification for change orders.
- Maintain site security.

2.3 PROJECT QUALITY CONTROL MANAGER

The PQCM is responsible for overall management of project QC and reports to the Program QC Manager. An appointment letter assigning the PQCM for implementation of the QC program is provided in Attachment 1 and will be issued to the Navy Technical Representative (NTR)/Resident Officer in Charge of Construction (ROICC) as well as the DON Remedial Project Manager (RPM) prior to beginning fieldwork. The PQCM's resume is presented in Attachment 2. The PQCM will be on site at all times during construction. The PQCM has the authority to stop work on site-related issues affecting the quality of work performed and directing the correction of all nonconforming work. In the event of his absence, a qualified individual will be appointed to serve as her replacement. The requirements for the alternate will be the same as for the designated PQCM.

The duties of the PQCM as they apply to this project include:

- Provide and maintain an effective QC system for all construction activities.
- Monitor QC activities to ensure conformance with authorized policies, procedures, contract specifications, and sound practices.
- Maintain sufficient staff to perform all QC activities to ensure QC for all work phases.

- Prepare the Contractor Quality Control Report (CQCR).
- Perform and coordinate the three phases of inspection (preparatory, initial, and follow-up) and ensure they are implemented for all definable phases of construction.
- Ensure all required tests and inspections are performed and results reported.
- Conduct required QC meetings, including the coordination and mutual understanding, site survey visit, and other scheduled meetings.
- Stop work that is not in compliance with the contract.
- Be responsible for issuance and enforcement of NCR.
- Ensure that all on-site and off-site inspections, testing, and sampling are performed in accordance with the plans, specifications, and applicable codes.
- Provide inspection and conduct or supervise testing and sampling.
- Coordinate and maintain submittal register, photograph log sheet, request for information (RFI), and NCR log.
- Review and maintain records of approved submittals, Design Change Notices (DCNs) for construction activities, and Field Change Requests (FCRs).
- Inspect material delivery handling and storage in accordance with technical specifications.
- Issue compliance notice on material, equipment, work in place, and workmanship.
- Review project plans and procedures for quality issues.
- Identify the need for corrective action and initiating, recommending, and coordinating solutions for project quality problems.
- Perform submittal reviews and approvals/certifications.

2.4 UXO QC REPRESENTATIVE

The UXO QC Representative will be responsible for QC activity related to all OEW and OEW-related work. The duties of UXO QC Representative include:

- Implement UXO Surface Clearance Team certification procedures prescribed in the CQC Plan as directed by the PQCM.
- Conduct Surface Clearance Effective Tests defined in the CQC Plan as directed by the PQCM.
- Conduct surveillance activity of encountered OEW (if any).
- Conduct other inspection/audit activity as directed by the PQCM.
- Complete reports and other documentation as directed by the PQCM.

2.5 SENIOR UXO SUPERVISOR

The SUXOS will also be the Site Superintendent for this project. He will be responsible for implementing, directing, and supervising inspection and certification activities for all UXO and UXO-related activities. The duties of the SUXOS include:

- Ensure that all fieldwork activities are performed in accordance with the FWENC Corporate engineering procedures, technical specifications, RI Work Plan, and applicable professional standards.
- Give ordnance safety briefings.
- Provide oversight of fieldwork activities performed by subcontractors.
- Implement specifications requirements.
- Conduct daily field inspections and tests required by the project technical specifications and applicable professional standards.
- Prepare and sign field certifications and documents in accordance with the technical specifications and RI Work Plan.
- Issue and maintain FCRs and DCNs.
- Has overall responsibility and accountability for all UXO handling activities conducted by FWENC personnel and their subcontractors.
- Act as the Site Emergency Coordinator (SEC).

2.6 SITE HEALTH AND SAFETY SPECIALIST

The SHSS ensures that all elements of the approved SHSP are implemented and enforced on site. The SHSS reports directly to the Program Health and Safety Officer, Roger Margotto, and will assist in implementing and enforcing the SHSP in the field. The SHSS has full authority to issue stop work orders or evacuation orders where work operations or noncompliance(s) may threaten the health and safety of site workers or the public.

Duties and responsibilities for the SHSS include the following:

- Ensure enforcement of the SHSP through daily site inspections.
- Coordinate site health and safety requirements with the Project Superintendent and DO Manager.
- Ensure maintenance of all health and safety monitoring and personal protective equipment, and direct site monitoring activities.
- Report all health and safety monitoring results to the Program Health and Safety Officer.
- Coordinate daily field activities with the Site Superintendent.
- Coordinate site safety and emergency response duties; verify site communications system with site personnel.
- Implement periodic checks of safety equipment and supplies.

- Perform inspection of safety equipment.
- Coordinate with the Program Health and Safety Officer and ROICC.
- Maintain recordkeeping and reporting systems.
- Initiate necessary revisions or changes to the SHSP.
- Maintain site control procedures.
- Maintain current certification for first aid and cardiopulmonary resuscitation (CPR).

2.7 SUBCONTRACTORS AND VENDORS

The subcontractors for this project will be limited to a land surveyor, an equipment operator, a drilling company, waste transporter, and a marine service (barge) company. The subcontractors are required to provide labor, material, and equipment necessary to conduct their respective services as directed by the Site Superintendent. All subcontractors and vendors will be required to conform to the FWENC's CQC Plan and the requirements specified in all approved procedures, technical specifications, and contract provisions.

The subcontractor's QC inspectors are responsible for field inspection of their processing and operating activities. FWENC will monitor, oversee, and make on-site observations and inspections of work in progress to determine if the subcontractor's work is proceeding in accordance with the CQC Plan.

Subcontractor personnel are responsible for maintaining a daily log of the project activities they perform and for providing information needed to complete the CQCR. All inspection records, including inspection reports, deficiency reports, and re-inspections of corrective actions, will be documented by the PQCM.

3.0 SUBMITTALS

This section describes the review and approval process of submittals. In addition, the PQCM will institute and maintain a submittal register (Attachment 3) to track submittals from issue to approval. A list of required submittals will be developed at the initiation of the project activities and revised as necessary. The submittal register will be kept current by FWENC at the job site. Copies of the submittal register will be provided to the government at the end of the project.

Submittals will be scheduled, reviewed, certified, and managed in accordance with the *Guide Specification NFGS-01330F* (Naval Facilities Engineering Command, 1999a).

Required submittals are all Administrative as follows:

- **Administrative Submittals.** Data presented for reviews and approval to ensure that administrative requirements of projects are adequately met, but not to ensure directly that work is in accordance with design concept and in compliance with contract documents.

3.1 SUBMITTAL DESCRIPTIONS

Applicable submittal descriptions (SD) are as follows:

- **SD-01 Pre-construction Submittals**
 - Certificates of insurance
 - Surety bonds
 - List of proposed subcontractors
 - List of proposed products
 - Construction progress schedule
 - Submittal schedule
 - Schedule of values
 - Health and Safety Plan
 - Work Plan
 - Quality Control Plan
 - Environmental Protection Plan

- **SD-02 Shop Drawings**
 - Drawings, diagrams, and schedules specifically prepared to illustrate some portion of the work

- Diagrams and instructions from a manufacturer or fabricator for use in producing the product and as aids to the contractor for integrating the product or system into the project
 - Drawings prepared by or for the contractor to show how multiple systems and interdisciplinary work will be coordinated
- **SD-05 Design Data**
 - Calculations, mix designs, analyses, or other data pertaining to a part of work
- **SD-06 Test Reports**
 - Report signed by authorized official of testing laboratory that a material, product, or system identical to the material, product, or system to be provided, has been tested in accordance with specified requirements (testing must have been within 3 years of date of contract award for the project)
 - Report which includes findings of a test required to be performed by the contractor on an actual portion of the work or prototype prepared for the project before shipment to job site
 - Report which includes finding of a test made at the job site or on sample taken from the job site, on portion of work during or after installation
 - Investigation reports
 - Daily checklists
 - Final acceptance test and operational test procedure
- **SD-07 Certificates**
 - Statements signed by responsible officials of manufacturer of product, system, or material attesting that product, system, or material meets specification requirements (must be dated after award of project contract and clearly name the project)
 - Document required of Contractor, or of a supplier, installer, or subcontractor through Contractor, the purpose of which is to further quality of orderly progression of a portion of the work by documenting procedures, acceptability of methods, or personnel qualifications
 - Confined space entry permits
- **SD-08 Manufacturer's Instructions**
 - Preprinted material describing installation of a product, system or material, including special notices and Material Safety Data Sheets (MSDSs) concerning impedances, hazards, and safety precautions

- **SD-09 Manufacturer's Field Reports**
 - Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions
- **SD-10 Operation and Maintenance Data**
 - Data intended to be incorporated in operations and maintenance manuals
- **SD-11 Closeout Submittals**
 - Documentation to record compliance with technical or administrative requirements or to establish an administrative mechanism
 - As-built drawings
 - Special warranties
 - Posted operating instructions
 - Training plan

3.2 SUBMITTAL REQUIREMENTS

The following requirements apply to submittals:

- Units of weights and measures will match those used in the construction drawings.
- Each submittal will be complete and in sufficient detail to allow determination of compliance with plans, specifications, and applicable codes.
- Each submittal will be reviewed by the PQCM or an approved reviewer.
- A transmittal form certifying compliance with all contract requirements will accompany each submittal.
- Proposed deviation from the contract requirements will be clearly identified.
- Submittals will include items such as applicable drawings, descriptive literature, test reports, samples, operations and maintenance (O&M) manuals, certifications, and warranties.
- All spatial data, including computer-assisted drafting (CAD) drawings, will conform to the Tri-Service Spatial Data Standard (SDS) and be submitted as AutoCAD version 14, Microstation version 5.0, or a later, compatible format.
- Global Information System (GIS) data will conform to the Tri-Service SDS, and be submitted as ARCInfo Export Format or MGE Export format.
- The State Plane Coordinate System, North American Datum 83 and Lambert Zones 1 through 6 will be used.
- The vertical reference elevation is mean sea level, with the relevant control data provided.
- Catalog Cut/Shop Drawing Transmittal and Approval (Attachment 3) will be used.

3.3 REVIEW OF SUBMITTALS

Submittals will be reviewed to ensure completeness, accuracy, and contract compliance. All items will be approved by the PQCM. Any submittals requiring modifications or changes will be returned to the originating organization for correction and then resubmitted for review and approval by the PQCM prior to acceptance. Approval of the submittal will be indicated by stamping, signing, or initialing, in addition to dating the submittal form. The PQCM or designee will perform a check to ensure that all materials and equipment have been tested, submitted, and approved during the preparatory phase of the QC inspections; construction activities will not be performed prior to the required approval of applicable submittals.

3.4 SUBMITTAL PROCESS

The PQCM will provide all submittals to the ROICC/NTR and forward them to the required DON personnel as an "information only" submittal. Each submittal will have a unique document control number. All possible attempts will be made to schedule submittals to allow for approval time noted in the contract and project scope of work. However, certain submittals will require accelerated processing to maintain the construction schedule.

The PQCM will update the submittal register regularly. A transmittal form will accompany each submittal. Each transmittal and submittal register, except sample panel and sample installation, will be identified with the following information permanently adhered to or noted on each separate component.

- Contract number and DO number
- Project title and location
- Name, address, and phone number of subcontractor, supplier, manufacturer, and any other second tier contractor associated with submittal
- Date of submittal
- Description of item being submitted, including reference to specification section and SD number
- Approval of submitting organization indicating conformance to the requirements
- SD number of each component of submittal
- Product identification and location in project
- Submittals to be reviewed by the PQCM or an approved reviewer; the submittal will indicate that it either conforms to contract requirements or does not conform to contract requirements

Format of each submittal type is described in the following sections.

3.4.1 Format of Administrative Submittals

Administrative submittals will be formatted as follows:

- When the submittal includes a document which is to be used in a project or become part of project record, other than as a submittal, do not apply contractor's approval stamp to document. Rather, apply contractor's approval to a separate sheet accompanying document.
- O&M Manual Data: submit in accordance with Section 01781.

3.5 REVIEW AND PROCESSING OF SUBMITTALS THAT DO NOT REQUIRE DON APPROVAL

Submittals will be reviewed by the PQCM or an approved reviewer. The submittal will indicate that it either conforms to established requirements or does not conform to established requirements. The PQCM will advise submitter of the results of the review. The submittal log will be updated to indicate status.

Conforming submittals will be certified by the PQCM for approval and forwarded to the required DON personnel as an "information only" submittal.

Nonconforming submittals are returned to the submitter for correction, resolution of comments, and resubmittal.

3.6 REVIEW AND PROCESSING OF SUBMITTALS THAT REQUIRE DON APPROVAL

Submittals will be reviewed by the PQCM or approved reviewer. The submittal will indicate that it conforms to established requirement, or does not conform to contract requirements. Reviewed and certified submittals will be forwarded to the contracting officer utilizing the transmittal and approval form (Attachment 3). Each form will indicate item transmitted, date and signature of PQCM and submittal reviewer (when applicable), and QC-certifying statement. The QC-certifying statement is as follows:

"I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is that proposed to be incorporated with Contract Number N44255-95-D-6030, is in compliance with the contract drawings and specifications, can be installed in the allocated spaces, and is submitted for government approval."

Upon completion of review, the ROICC (or ROICC's Representative) may return the transmittal sheet to the PQCM for further action.

The PQCM will advise submitter of the results of the review in writing and include any comments. The submittal log will be updated to indicate status.

Nonconforming submittals may be returned to the submitter for correction, resolution of comments, and resubmittal if required. Work will not begin until submittals for that work have been returned as "Approved" or "Approved as Noted".

3.7 REVISED SUBMITTALS

Revised submittals will be logged, reviewed, and processed in a manner identical with the initial submittal. When resubmitting disapproved transmittals or transmittals noted for resubmittal, a copy of previously submitted transmittal including all reviewer comments for use by approving authority will be provided.

The submittal register used for the original submittal will be used for each resubmittal followed by a sequential alpha suffix to indicate resubmission.

4.0 TESTING

The PQCM shall ensure the performance of all tests specified or required by the project specifications and drawings to verify that control measures are adequate to provide a product conforming to contract specifications. General requirements for testing procedures to be implemented for this project are included in the Focused RI Work Plan and the Standard Operating Procedures (SOPs). The type, number, and frequency of required tests are specified in the Testing Plan and Log (Attachment 3). The SUXOS is responsible for conducting the required tests. These tests include both operational and acceptance testing as appropriate. For all testing activities, the PQCM shall:

- Verify that testing procedures comply with contract requirements.
- Verify that facilities and testing equipment are available and comply with testing standards.
- Check test instrument calibration data against certified standards.
- Verify that recording forms and the test identification control number system have been prepared.

4.1 DOCUMENTATION

All test results, both passing and failing, will be recorded on the CQCR for the day the results are obtained. Specific paragraph reference, location where tests were taken, and the sequential control number identifying the test will be recorded. The actual test reports may be submitted later to the DON RPM and ROICC. An information copy of tests performed by off-site facilities will be provided directly to the PjM or designee.

4.2 LABORATORY SERVICES

An independent testing laboratory will provide laboratory services as needed. The laboratory will be selected and qualified in accordance with applicable project requirements and accredited/certified as described below. Name of the laboratory and proof of accreditation will be submitted after procurement has been completed and prior to the field activities.

4.2.1 Accreditation for Non-Environmental Projects

Acceptable accreditation programs for non-environmental projects are the National Institute of Standards and Technology, National Voluntary Laboratory Accreditation Program, the American Association of State Highway and Transportation Officials Program, and the American Association for Laboratory Accreditation Program.

A copy of the certificate of accreditation, scope of accreditation, and latest directory of the accrediting organization for accredited laboratories will be submitted to the Contracting Officer or designated representative. The scope of the laboratory's accreditation shall include the test methods required by the project. Any deviation from the above requirements must be approved in writing by the ROICC.

4.2.2 Accreditation for Environmental Projects

Laboratories performing Installation Restoration Program (IRP) work funded by the Defense Environmental Restoration Account (DERA) or Base Realignment and Closure (BRAC) must successfully complete the DON Laboratory Evaluation Program. Unless otherwise specified, sampling and analysis shall be performed using current U.S. Environmental Protection Agency (EPA) procedures and QC. Any deviation from the above requirements must be approved in writing by the SWDIV Quality Assurance (QA) Officer.

On-site chemical analysis by mobile laboratories must be performed by laboratories certified by the California Department of Health Services through the Environmental Laboratory Accreditation Program.

5.0 FIELD INSPECTION PLAN

Project CQC Plan is the means by which FWENC ensures that all field activities, including activities of subcontractors and suppliers, comply with the requirements of the contract. The Definable Feature of Work (DFW) is defined as an activity or task which is separate and distinct from other activities, and which requires separate control activities. In general, each work discipline or specification division would be considered a DFW. In addition, sub-activities or tasks within a work discipline or specification division could be considered a DFW if determined that separate and distinct control requirements exist for these activities or tasks.

The DFWs establish the measures required to verify both the quality of work performed and compliance with specified requirements, and includes inspecting materials and workmanship before, during, and after each DFW. The DFWs for this project are:

- Initial screening (hazardous)
- Temporary facilities
- Site preparation
- OEW investigation
- Time-Critical Removal Action
- Geotechnical drilling
- Seismic evaluation
- Shipping
- Site restoration
- Demobilization

Detailed descriptions of each definable feature of work are presented in Table 5-1. The controls defined shall be adequate to cover all construction operations and are keyed to the proposed construction sequence. Project CQC includes implementing the following three control phases for all aspects of the work specified:

- Preparatory phase
- Initial phase
- Follow-up phase

**TABLE 5-1
DEFINABLE FEATURES OF WORK**

CONTRACT NUMBER: N44255-95-D-6030

PROJECT TITLE AND LOCATION: IR Site 2 Characterization, Alameda Point

CONTRACTOR: FWENC

ACTIVITY	PREPARATORY	DONE	INITIAL	DONE	FOLLOW-UP	DONE
Initial Screening (hazardous)	Operation shall be carried out in accordance with approved RI Work Plan, Health and Safety Plan, and procedures including SOPs.		<ul style="list-style-type: none"> • Notification to NAS Alameda Environmental Compliance Manager (ECM). • Segregation and staging. 		Ongoing inspections of staging area.	
Temporary Facilities	Equipment and Material meets specification requirements.		<ul style="list-style-type: none"> • Proper installation. 		Area restored.	
Site Preparation	Operation to be carried out in accordance with approved procedures.		<ul style="list-style-type: none"> • Preparation of work zones (vegetation removed, exclusion zone established and marked). • Temporary fencing and barricade installation. • Corners surveyed, grid network established. • Proper equipment mobilization on as-needed basis. 		Ongoing inspection of material and equipment.	
OEW Characterization and Removal	Operation to be carried out in accordance with approved Work Plan and procedures including SOPs. Certification of Surface Clearance Team(s).		<ul style="list-style-type: none"> • Aboveground Sweep. • Surface Clearance Effectiveness Tests. • Marking (when OEW is located). • Disposition options (OEW status determination). • Notification to ECM. • Final disposition. 		Ongoing inspection and proper staging and disposal.	
OEW Time-Critical Removal Action	Operation to be carried out in accordance with approved Work Plan and procedures including SOPs.		<ul style="list-style-type: none"> • Survey establishes perimeter of Possible OEW Burial Site and ground elevations. 		Ongoing inspection and proper staging and disposal	
Geotechnical Drilling	Operation to be carried out in accordance with approved procedures.		<ul style="list-style-type: none"> • Soil Classification. 		Ongoing inspection.	

TABLE 5-1

DEFINABLE FEATURES OF WORK

CONTRACT NUMBER: N44255-95-D-6030

PROJECT TITLE AND LOCATION: IR Site 2 Characterization, Alameda Point

CONTRACTOR: FWENC

ACTIVITY	PREPARATORY	DONE	INITIAL	DONE	FOLLOW-UP	DONE
Seismic Evaluation	Operation to be carried out in accordance with approved procedures.		<ul style="list-style-type: none"> Establish boreholes/test pit locations for offshore and upland areas. Obtain samples. Sample evaluation. Data processing. Bathymetric survey. 		Ongoing inspection.	
Site Restoration	Operation to be carried out in accordance with approved procedures.		<ul style="list-style-type: none"> The backfilled area will be graded to a condition consistent with the surrounding areas. Site cleanup shall include repair of any erosion or runoff related damage. Restoration activities will be coordinated with the ROICC. Remaining wastes generated during construction activities will be transported off site and disposed in accordance with the RI Work Plan. 		Ongoing inspection of site restoration activities.	
Shipping	Operation to be carried out in accordance with approved procedures.		<ul style="list-style-type: none"> Proper packaging and labeling (when required). Checking seals and certifications. 		Ongoing inspection of project control activities.	
Demobilization	Operation to be carried out in accordance with approved procedures.		<ul style="list-style-type: none"> Demobilization consists of decontamination of all equipment, cleaning the project site, inspection and certification of completion. All demobilization activities shall be conducted in accordance with approved RI Work Plan. 		Ongoing inspection of demobilization activities and joint DON/FWENC final inspection shall be conducted.	

Notes:

DON -- U.S. Department of the Navy

ECM -- Environmental Compliance Manager

FWENC -- Foster Wheeler Environmental Corporation

IR -- Remedial Investigation

NAS -- Naval Air Station

OEW -- Ordnance and explosive waste

ROICC -- Resident Officer in Charge of Construction

SOP -- Standard Operating

5.1 COORDINATION AND MUTUAL UNDERSTANDING MEETING

Prior to start of site work, a Coordination and Mutual Understanding meeting with the ROICC will be held to discuss the QC program required by this contract. The purpose of this meeting is to develop a mutual understanding of the QC details, including forms to be used, administration of on-site and off-site work, and coordination of the Contractor's management, production, and the PQCM duties with the ROICC. At a minimum, the Contractor's personnel required to attend will include the DO Manager, Project Superintendent, and PQCM. Minutes of the meeting will be prepared by the PQCM and signed by both the Contractor and the Contracting Officer. This meeting may be held in conjunction with other meetings (that is, pre-construction meeting).

5.2 QC MEETINGS

After the start of field activities, the PQCM will conduct QC meetings once every week or as required by the ROICC. The meetings will be held at the project site and will be attended by the Site Superintendent. The PQCM will notify the ROICC at least 48 hours in advance of each meeting. One copy of the QC meeting minutes will be sent to all attendees within 2 calendar days of the meeting. The following will be accomplished at each meeting:

- Review the minutes of the previous meeting.
- Review the schedule and the status of work.
 - Work, inspection, or testing accomplished since last meeting
 - Rework items identified since last meeting
 - Rework items completed since last meeting
- Review the status of submittals.
 - Submittals reviewed and approved since last meeting
 - Submittals required in the near future
- Review the work to be accomplished in the next 2 weeks and documentation required. Schedule the three phases of control and testing.
 - Establish completion date for rework items
 - Preparatory phases required
 - Initial phases required
 - Follow-up phases required
 - Testing required
 - Status of off-site work or testing
 - Documentation required
 - Discuss upcoming Activity Hazard Analyses
- Resolve QC and production problems.

- Address items that may require revisions to the CQC Plan.
 - Changes in QC organization personnel
 - Changes in procedures

5.3 PREPARATORY PHASE INSPECTION

The PQCM will conduct preparatory phase inspections prior to starting the DFWs listed in the RI Work Plan and the SOPs. These inspections shall include:

- Review each paragraph of applicable SOPs.
- Review the RI Work Plan and drawings.
- Ensure that all materials and/or equipment have been tested, submitted, and approved.
- Ensure that provisions have been made to provide required control inspection and testing.
- Examine the work area to ensure that all required preliminary work has been completed and is in compliance with the approved RI Work Plan requirements.
- Physically examine the required materials and equipment to ensure that they are properly delivered to the site, conform to approved shop drawings or specifications, and are properly stored.
- Review the appropriate Activity Hazard Analysis to ensure safety requirements are met.
- Discuss procedures for constructing the work, including potential repetitive deficiencies.
- Document construction tolerance and workmanship standards for the particular phase of work.
- Ensure that the Project CQC Plan for the work to be performed has been accepted by the DON.

The PjM, DON RPM, and ROICC shall be notified at least 2 working days in advance of preparatory phase activity. This phase shall include a meeting conducted by the PQCM and attended by other responsible construction personnel, such as the Construction Superintendent.

The issues discussed during the preparatory phase meetings will be documented on the Inspection Checklist and will be reported on the CQCR with the Preparatory Inspection Checklist included in Attachment 3. The PQCM will direct personnel performing work activities as to the acceptable level of workmanship required.

Preparatory phase inspections will be performed as summarized in the following section.

5.3.1 Standard Penetration Testing Quality Control

QC procedures shall be performed in accordance with the American Society for Testing and Materials (ASTM) Test Method D-1586-84, Section 5. Prior to fieldwork commencement, the drilling company shall provide supplier specifications for any and all equipment used in drilling. This shall include, but not be limited to, the hammer, samplers, drilling rig, and augers. The site QC representative shall use the specifications to certify that the equipment is the proper weight and dimension.

5.4 INITIAL PHASE INSPECTION

An initial inspection will be performed at the beginning of a DFW and will include:

- A check of preliminary work to ensure that it is in compliance with contract requirements
- A review of the Inspection Checklist documenting results of the preparatory meeting
- Verification of full contract compliance, including required control inspection and testing
- Establishment of the required level of workmanship, and verification to ensure work meets minimum acceptable standards
- Resolution of all differences
- A check of safety requirements to include compliance with and upgrading of the SHSP and Activity Hazard Analysis
- A review of the Activity Hazard Analysis with project personnel

The PjM, the DON RPM, and ROICC will be notified at least 2 working days in advance of any initial phase activity. The PQCM will document initial inspections for each item using the Initial Inspection Checklist and attach it to the CQCR. The exact location of the initial phase inspection will be indicated for future reference and comparison with follow-up inspections.

An initial phase inspection will be conducted each time a new crew arrives on-site or any time acceptable, specified quality standards are not being met.

Initial phase inspections will be performed as summarized in the following section.

5.4.1 Excavation Elevation Check

The Possible OEW Burial Site will be surveyed before and after excavation of the site. The survey prior to excavation shall be used as a control to compare to the survey that will be performed after the excavation. The comparison shall be used to determine if the targeted 1-foot depth has been met.

5.5 FOLLOW-UP PHASE INSPECTION

During the completion of a particular work feature, follow-up inspections will be conducted to ensure continued compliance with contract requirements. The frequency of the follow-up inspections will depend on the extent of the work being performed on each particular feature. Each follow-up inspection will be documented on the Follow-Up Inspection Checklist, which will be attached to the CQCR. A final follow-up check will be conducted on any completed work phase prior to the commencement of a subsequent phase. Any deficiencies will be corrected prior to starting additional phases of work or will be identified on a list of items that do not conform to the specified requirements or are incomplete.

Follow-up phase inspections will be performed as summarized in the following section.

5.5.1 Surface Clearance Effectiveness Test

After team certification and documentation of surface clearance operations, surface clearance effectiveness tests will be conducted periodically for each surface clearance team to determine the continued effectiveness of surface clearance operations. Initially, surface clearance effectiveness tests should be performed twice per month for each surface clearance team. The frequency of these tests may be increased or decreased based upon the performance of the individual teams. This determination will be made by the PjM, or SUXOS with concurrence of the Site UXO QC Representative. Unless otherwise specified in the contract, our objective for surface clearance is 85 percent probability of detection (PD) with 90 percent confidence level (CL) of removal.

Prior to surface clearance operations beginning in a grid that has been selected as a surface clearance effectiveness test grid, QC personnel will seed the grid with a predetermined number of target items. These items will be marked to identify them as QC test items. After the team completes surface clearance operations in the grid, they will separate all QC test items from other items recovered during the surface clearance. QC will be notified that the grid has been completed. QC personnel will determine if the number of QC test items recovered is sufficient to meet the 85 percent PD with 90 percent CL criteria. If the team fails to achieve the 85 percent PD with 90 percent CL, the team will be decertified from conducting surface clearance operations. The cause will be identified and corrective action initiated. After corrective action, the decertified team will be processed through the surface clearance test grid to demonstrate the ability to achieve an 85 percent PD with 90 percent CL prior to conducting surface clearance operations.

5.5.2 Standard Penetration Testing Quality Control

Prior to fieldwork commencement, the drilling company shall provide supplier specifications for any and all equipment used in drilling. This shall include, but not be limited to, the hammer, samplers, drilling rig, and augers. The Site QC representative shall use the specifications to certify that the equipment is the proper weight and dimension.

During drilling activities, the overseeing geologist/engineer shall confirm that the hammer height is 30 inches from the auger head prior to performing the standard penetration testing. The geologist shall perform a measure check at least twice a day. Standard penetration testing procedures will be performed in accordance with ASTM Test Method D-1586.

Two cone penetrometer tests (CPTs) shall be advanced near two borings to compare CPT test results (soil stratification and penetration resistance) to boring log information. CPT soundings will be performed in accordance with ASTM Test Method D-3441.

5.6 ADDITIONAL PREPARATORY AND INITIAL PHASES

The PQCM may conduct additional preparatory and initial inspections on the same definable features of work under the following circumstances:

- 1) If the quality of ongoing work is unacceptable as determined by the PjM, or designee, or the DON RPM, and ROICC
- 2) If there are changes in the staff, on-site supervision, or work crew
- 3) If work on a definable feature is resumed after a substantial period of inactivity
- 4) If other problems develop

5.7 COMPLETION INSPECTION

Completion inspections will be performed as summarized in this section.

5.7.1 Field Quality Control Completion Inspections

The PQCM, or designated FWENC QC inspection personnel, will conduct a detailed inspection prior to the pre-final inspection, when all of the work or an increment of work is deemed to be substantially complete. The PjM, the DON RPM, and ROICC, and Environmental Compliance Manager (ECM) may also participate and will be notified in advance of the inspection date. The work will be inspected for conformance to plans, specifications, quality, workmanship, and completeness. The PQCM will prepare an itemized list of work not properly completed, inferior workmanship, or work that does not conform to plans and specifications. The list will also include outstanding administrative items, such as record (as-built) drawings, O&M manuals, and spare parts. The list will be included in the QC documentation and submitted to the PjM, or designee, the DON RPM, ROICC, and ECM within 5 working days following the inspection and will specify an

estimated date for correction of each deficiency. The completion inspection will be documented on the Completion Inspection Checklist, shown in Attachment 3 and attached to the CQCR.

5.7.2 Pre-Final Inspection

The PQCM will conduct the pre-final inspection. The DON RPM, ROICC, ECM, PQCM, FWENC QC personnel, or other project representatives, as applicable, will attend. The PjM, or designee, will schedule the pre-final inspection in response to notification from the PQCM prior to the planned inspection date. The PQCM ensures that all specific items previously identified on the Rework Items List, along with all remaining project work, will be complete and acceptable by the scheduled date for the pre-final inspection. At this inspection, the PjM, or designee, will develop a list of incomplete and/or unacceptable work performed under the contract and will provide this list to PjM.

5.7.3 Final Acceptance Inspection

The PjM will schedule the final acceptance inspection based on notification from the PQCM of readiness. The inspection will include the QC inspection personnel, PQCM, or other primary management personnel, the PjM, the DON RPM, or ROICC. Notification will be given to the ROICC at least 14 days prior to the planned final acceptance inspection date and must include verification that all specific items previously identified as being unacceptable, along with all remaining work performed under the contract, will be complete and acceptable by the date scheduled for the final acceptance inspection.

Upon completion of work under a DO, the Project QC Manager will furnish a completion certificate to the ROICC attesting that the work has been completed, inspected, and tested, and is in compliance with the contract.

5.8 INSPECTION DOCUMENTATION

The PQCM is responsible for the maintenance of the inspection records. Inspection records will be legible and clearly provide all necessary information to verify that the items or activities inspected conform to the specified requirements or, in the case of nonconforming conditions, provide evidence that the conditions were brought into conformance or otherwise accepted by the ROICC. All inspection records will be made available to the DON.

6.0 DOCUMENTATION

Preparation, review, approval, and issuance of documents affecting quality will be controlled to the extent necessary to determine that the documents meet specified requirements.

6.1 CONTRACTOR QUALITY CONTROL REPORT

The PQCM is responsible for maintenance of current records of QC operation, activities, and tests performed, including the work of subcontractors and suppliers. The records will include factual evidence that required QC activities and tests were performed. A CQCR will be completed to document construction activities covered by the Project CQC Plan and will include:

- Record inspection and/or testing performed
- Identification and location of each DFW and its current phase (preparatory, initial, and follow-up) of completion
- Results of inspections/testing
- Location and description of deficiencies
- Deficiencies corrected as of the date of the report
- Rework items
- Deviations from plans, difficulties, and resolution
- Test and/or control activities performed with results and references to specifications/plan requirements, including the control phase (preparatory, initial, follow-up) and deficiencies (along with corrective action)
- Material received with statement as to its acceptability and storage
- Submittals reviewed, with contract reference, by whom, and action taken
- Off-site surveillance activities, including actions taken
- Contractor's verification statement
- Site visitors/purpose, deviations from plans, difficulties, and resolution

The records will indicate a description of both conforming and nonconforming features which will be covered with a statement that equipment and materials incorporated in the work and workmanship comply with the contract. The CQCR attached to the Contractor Production Report will be furnished to the DON ROICC on the first workday following the date covered by the report, except that reports need not be submitted for days during which no work is performed. At a minimum, one report shall be prepared and submitted for every 7 days of no work and on the last day of a no-work period. All calendar days shall be accounted for throughout the life of the contract. The first report following a day of no work will summarize work for that day only. Reports will be signed and dated by the PQCM and other appropriate personnel, including

subcontractors responsible for completion of activities. The report will include copies of test reports and copies of reports prepared by all subordinate QC personnel. The report will be provided to the ROICC for review by 10:00 a.m. on the working day following the day the work was performed or as agreed by the DON ROICC.

6.2 CONTRACTOR PRODUCTION REPORT

The Contractor Production Report will be prepared for each day the work is performed and will be attached to the daily CQCR prepared for the same day. The Contractor Production Report will be prepared, signed, and dated by the Site Superintendent and will contain the following information:

- Contractor and subcontractor and their area of responsibility
- Location and description of work performed
- Trades working on the project that day and number of personnel
- Operating equipment, with hours worked, idle, or down for repair
- Work performed that day giving location, description, weather conditions, and by whom work was done
- Any delays encountered
- Site visitors/purpose
- Job safety evaluations stating checked items, results, and instructions, or corrective actions
- A list of instructions given/received and conflicts in plans and/or specifications
- Contractor's verification statement

6.3 CONFERENCE NOTES AND CONFIRMATION NOTES

In addition to other required documentation, the PQCM is responsible for taking notes and preparing the reports of all conferences. Conference notes will be typed and the original report furnished to the DON within 5 days after the date of the conference for concurrence and subsequent distribution to all attendees. At a minimum, this report will include:

- Date and place the conference was held
- List of attendees, including name, organization, and telephone number
- Written comments presented by attendees attached to each report with the conference action noted: "A" for an approved comment, "D" for a disapproved comment, "W" for a comment that has been withdrawn, and "E" for a comment that has an exception noted
- Comments made during the conference and decisions affecting criteria changes
- Conference notes that augment the written comments

The PjM or his designee is also responsible for providing a record of all discussions, verbal directions, telephone conversations, and so forth, that FWENC personnel or their representatives participate in on matters relating to this contract and work. These records, entitled "Confirmation Notices," will be numbered sequentially and will fully identify participating personnel, subject discussed, and any conclusions reached. The PjM or his designee will forward a reproducible copy of the confirmation notices to the DON RPM or designee and ROICC within 5 workdays.

6.4 TESTING PLAN AND LOG

As tests are performed, the PQCM will record on the Testing Plan and Log (Attachment 3) the date the test was conducted, the date the test results were forwarded to the ROICC, and remarks and acknowledgement that an accredited testing laboratory was used. The updated Testing Plan and Log will be attached to the last daily CQCR of each month.

6.5 CERTIFICATION OF SURFACE CLEARANCE TEAMS

Each team conducting surface clearance operations will be certified in the Surface QC Test Grid using the Search Effectiveness Probability (SEP) Test. In order to gain certification in surface clearance operations, each surface clearance team must demonstrate the ability to achieve an 85 percent PD with a 90 percent CL of removal of target items. The cumulative binomial probability will be applied in determining 85 percent PD at a 90 percent CL.

A test grid will be established and seeded with 34 target items that are representative of the target items being searched for. A mixture of inert UXO items and fragments should be used to seed the test grid. In order to achieve 85 percent PD at a 90 percent CL, 32 of the 34 target items must be located by the team in the test grid. 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 new team members that have not previously been certified in surface clearance operations are added to a team, the entire team must process 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 teams through the test grid is a function of QC and must remain separate and independent from operations.

6.6 REWORK ITEMS LIST

The PQCM will maintain a list of work that does not comply with the contract, identifying what items need to be reworked, the date the item was originally discovered, the date the item will be corrected by, and the date the item was corrected. A rework item that is corrected the same day it is discovered will not be reported. The Rework Items List will be attached to the last daily CQCR of each month.

7.0 NONCONFORMANCES

The PQCM documents any work or materials not conforming to the technical specifications or project/contract requirements on an NCR. The NCR will detail the nonconforming condition, the recommended corrective action(s), and the disposition of the corrective action(s). Qualified representatives from Engineering, QA, and Construction will review the NCR and either accept or reject the recommended corrective action or disposition. The NCR will remain open until the nonconforming condition has been satisfactorily resolved and verified by PQCM. Upon receipt of notification of detected nonconformance, NCRs for each item will be completed.

7.1 IDENTIFICATION OF NONCONFORMING ITEMS

Items identified as nonconforming will be documented on an NCR that will include the following information:

- Description of nonconforming item or activity indicating root causes of nonconformance to help prevent future occurrences
- Detailed description of nonconformance
- Referenced criteria
- Recommended disposition and corrective action to prevent recurrence (as applicable)
- Affected organization
- Anticipated completion date

Deficient conditions have been divided into three categories:

- In-process deficiencies
- Installed deficiencies
- Conditions that require Stop Work

7.1.1 In-Process Deficiencies

In-process deficiencies are those conditions discovered during the course of QC inspections that are intended to be corrected or brought into conformance with requirements. The PQCM will notify the Site Superintendent of the problem or deficiency. Items not solved or corrected will be noted as in-process deficiencies and will be noted briefly on the daily CQCR, detailed on a NCR, and added to the Rework Items List. Items on the punch list that cannot be corrected will be considered as installed deficiencies.

7.1.2 Installed Deficiencies

Installed deficiencies are those conditions discovered during the course of QC inspection of completed work that do not meet established acceptance criteria or requirements, and are not intended to or cannot be brought into conformance. These conditions will be noted on a Rework Items List in addition to a NCR for evaluation and disposition. The PQCM will issue the NCR summarizing discrepancies within 24 hours of discovery.

In the event NCR is not resolved within 7 calendar days after issuance, a notice of non-response will be issued to the PjM. Each report will be consecutively numbered, logged, and updated by the PQCM. Resolution of installed deficient conditions will be approved by the PQCM. Copies of completed reports will be sent to the ROICC.

7.1.3 Condition Requiring Stop Work

If corrective actions are insufficient, resolution cannot be reached, or a notice of non-response issued, or results of prior work are indeterminate, work may be stopped by by PQCM. An immediate Stop Work Order can be issued by anyone for health and safety issues. The PQCM, DO Manager, or ROICC can issue a Stop Work Order in writing to the Project Superintendent who will direct site activities to stop.

The conditions of the Stop Work Order will be noted in the CQCR and described in detail on a NCR in addition to the Rework Items List to allow evaluation of the problem(s) and proper corrective action(s). Work will not continue until the Stop Work Order has been resolved by the PjM and documented.

7.1.4 NCR Log

The PQCM will maintain an NCR log (Attachment 3) which provides the NCR number, a brief description of the nonconforming condition, date of issue, point of contact to resolve, date of anticipated corrective action, and date closed.

7.2 NONCONFORMING ITEMS

The nonconforming items will be controlled to prevent inadvertent use of material or workmanship quality. All items noted as nonconforming will be clearly identified and segregated from acceptable items when practical.

7.3 DISPOSITION

The disposition of NCRs will include the necessary actions required to bring the nonconforming condition to an acceptable condition and may include reworking, replacing, retesting, or re-inspecting. Implementation of the disposition may be done in accordance with the original procedural requirements, a specific instruction, or a FCR.

7.3.1 Field Change Requests and Design Change Notices

The Field Engineer initiates FCRs to document a change to the approved plans, specifications, and drawings that occur in the field.

Changes will be qualified as follows:

- **Major Change**—one that affects the intent of the original design, including equipment, component, system, or structure that relates to function, operation, or safety of the designed product and/or personnel safety.
- **Minor Change**—one that does not affect the intent of the original design or product, including equipment, component, system, or structure that relates to function, operation, or safety.

Where the FCR is marked “Minor Change,” the Field Engineer may execute the change and, in parallel, obtain concurrence from the PjM that the change was indeed “minor.”

Where the FCR is marked “Major Change,” disposition must be sought before execution. An appropriately executed DCN will be issued for approval by the PjM and ROICC. A DCN will not be issued for a “minor change” FCR. An example of a DCN is provided in Attachment 3.

7.4 CORRECTIVE ACTIONS

Upon detection of a nonconforming condition, the PQCM will immediately take corrective action. In addition to resolving identified nonconforming conditions, corrective action records will also address the initial cause of adverse conditions and establish methods and controls to prevent recurrence of the same or similar types of nonconformance. The PQCM will monitor the corrective actions to verify that they were properly implemented and accepted and that the NCR was closed out.

8.0 QUALITY MANAGEMENT

In addition to the required QC field inspections, the FWENC Quality Program requires a Quality Management overview of the site QA/QC Program implementation. The PQCM will perform regular internal QC checks on the site implementation of the QA/QC Program. Reports of any deficiencies will be reported to the PjM for corrective action.

Inspection will be performed and checked for the following:

- Possession and use of approved procedures, standards, and project specifications
- Conformance with appropriate procedures, standards, and instructions
- Thoroughness of performance
- Identification and completeness of documentation generated during performance
- Recommended changes to continually improve project efficiency and effectiveness
- Personnel ensured that they have been provided with instructions necessary to perform quality-related activities. A Training Program will be structured to emphasize correct performance of work and provide for the following:
 - Achievement of initial proficiency
 - Maintenance of proficiency
 - Adaptation to changes in technology, methods, or job responsibilities

9.0 REFERENCES

- Foster Wheeler Environmental Corporation (FWENC). 1999. *Field Contractor Quality Control Program Plan*. April 26.
- Naval Facilities Engineering Command. 1999a. *Guide Specification, NFGS-01450H*. September.
- Naval Facilities Engineering Command. 1999b. *Guide Specification, NFGS-01330F*. September.
- Southwest Division Naval Facilities Engineering Command (SWDIV). 1996. *Contractor's Guide*. February.

ATTACHMENT 1
DELEGATION OF AUTHORITY LETTER



FOSTER WHEELER ENVIRONMENTAL CORPORATION

January 3, 2002

Mr. Tony Crino
Foster Wheeler Environmental Corporation
1230 Columbia Street, Suite 640
San Diego, CA 92101

Subject: Project Quality Control Manager

Reference: Contract No. N44255-95-D-6030.
Naval Facilities Engineering Command, EFA Northwest
Environmental Remediation Contract, Delivery Order (DO) No. 0095,
Former Naval Air Station Alameda, California

Dear Mr. Crino,

In accordance with the terms of Foster Wheeler Environmental Corporation's (FWENC) Contract No. N44255-95-D-6030, this letter notifies you of your appointment as the Project Quality Control Manager for DO No. 0095, Ordnance and Explosives Waste Characterization, and Geotechnical and Seismic Evaluations at Installation Restoration Site 2 at the Former Naval Air Station Alameda, California.

As the designated Project Quality Control Manager, you will be responsible for managing the site-specific quality control requirements in accordance with Project Contractor Quality Control Plan. You will be responsible for conducting quality control meetings, perform the three phases of control, and perform submittal review. You will be required to be present during all quality control testing to ensure that any and all testing is conducted in accordance with required specifications. In addition, you will be required to prepare the necessary quality control certification and documentation.

You have the authority and responsibility for suspending work when conditions adverse to quality are identified and for directing the correction of all nonconforming work.

This letter is effective immediately until modified by the Program Quality Control Manager with concurrence of the Foster Wheeler Environmental DO Manager, the Southwest Division Remedial Project Manager, and the Resident Officer in Charge of Construction.

Sincerely,

Mary Schneider
Program Quality Control Manager
Foster Wheeler Environmental Corporation

cc: A. Loan, Project Manager



ATTACHMENT 2

RESUME

EXPERIENCE SUMMARY

Senior UXO Supervisor who supervises field activities and teams doing geo-physical and GPS data collection, UXO intrusive investigation, surface clearance demolition operations, and brush cutting and removal operations. Filled Site Health and Safety and UXO Quality Control positions.

EDUCATION

Completed Basic EOD School, January 1990

TRAINING

Hazwoper OSHA 1910.120 Supervisor Training
40 CFR 265.16 Waste Management Training Program
Environmental and Safety Supervisor Course
Construction Quality Management for Contractors

FOSTER WHEELER ENVIRONMENTAL CORPORATION EXPERIENCE

**UXO Supervisor, Health and Safety Officer and Assistance Quality Control,
May 2000 – September 2001**

Foster Wheeler Environmental, Adak, AK

UXO Lead for geo-physical survey teams using EM-61 and Leica GPS systems. Performed Health and Safety and Quality Control duties for all Foster Wheeler personnel. Ordnance encountered: bombs, mortars, grenades, projectiles, and small arms.

**UXO Supervisor, Assistant Health and Safety and Quality Control, October 2000 – May 2001
Foster Wheeler Environmental, Yuma, AZ**

UXO lead for team doing range residue removal and certification of range scrap. Supervised sub-contractors in the day-to-day activities of processing. Certified inert ordnance and shipping to off site processing plants. Ordnance encountered: MK 5 single carts for BDU 106 and 76.

**UXO Supervisor, Assistant Health and Safety and Quality Control, May 2000 – October 2000
Foster Wheeler Environmental, Adak, AZ**

UXO lead for geo-physical survey team, using EM-61 and Leica DGPS system. Performed Health and Safety and Quality Control duties for Foster Wheeler personnel. Ordnance encountered: bombs, mortars, grenades, projectiles, and small arms.

**UXO Supervisor, Health and Safety and Quality Control, April 2000 – May 2000
Foster Wheeler Environmental, Otis AFB, MA**

Performed UXO avoidance and escort duties for archeological survey. Performed surface clearance of future storage tank sites. Responsible for over-all Health and Safety and Quality Control activities. Ordnance encountered: flares, small arms.



Health and Safety and Quality Control, April 2000 – April 2000

Foster Wheeler Environmental, Stennis, MS

Performed Health and Safety and Quality Control duties for the following operations, heavy equipment, UXO intrusive operations, ordnance disposal. Assisted in Quality Control of drilling, geo-technical sampling, and testing. Ordnance encountered: projectiles, mortars, grenades, flares and small arms.

UXO Supervisor, February 2000 – April 2000

Foster Wheeler Environmental, Fort McClellan, AL

Supervised a team doing reconnaissance work on UXO saturation levels and land features that may hamper geo-science investigations. Produced accurate maps to be used in writing work plan for Fort McClellan reclamation project. Ordnance encountered: projectiles, mortars, grenades, flares and small arms.

UXO Supervisor and Health and Safety Officer, January 2000 – February 2000

Foster Wheeler Environmental, Stennis, MS

Performed UXO avoidance and escort duties for the drilling of test wells at two sites. Collected field samples and screening for explosives, energetics and reactives. Ordnance encountered: projectiles, small arms.

UXO Supervisor, December 1999 – January 2000

Foster Wheeler Environmental, MCAS Miramar, CA

Performed UXO avoidance and escort duties. Responsible for teams' site security and loss prevention during removal of USTs.

UXO Supervisor, April 1999 – October 1999

Foster Wheeler Environmental, Adak, AK

UXO lead for geo-physical survey team. Geo-physical data was collected with EM-61 and Leica DGPS systems. Ordnance encountered: projectiles, mortars, grenades, and small arms.

UXO Supervisor, December 1998 – April 1999

UXB International, Kahoolawe, HA

UXO lead for sweep team. Conducted surface and sub-surface clearance operations for UXO. Ordnance encountered: bombs, projectiles and rockets.

UXO Team Member, April 1998 – November 1998

Foster Wheeler Environmental, Adak, AK

Performed UXO surface clearance and archive and historical information search. Performed intrusive UXO investigation of five suspect minefields. Ordnance encountered: small arms, fire bombs and 20mm projectiles.

PREVIOUS EXPERIENCE

EOD Supervisor, February 1995 – January 1998

MWSS-372, MWSG-37 EOD Camp Pendleton, CA

EOD Supervisor, provided EOD support to local law enforcement, Secret Service, FBI, ATF, and State Department. Supervised and directed up to 30 EOD personnel in numerous demolition, inerting and range clearance operations at MCAS El Toro, CA, MCB 29 Palms, CA, MCAS Miramar, CA, MCAS Yuma, AZ and Nellis AFB NV. Ordnance encountered: rockets, missiles, small arms, grenades, bombs, mines, and dispensers, sub-munitions, mortars, and bulk explosives.

EOD Specialist, January 1992 – February 1995

MSSG-15, 1st FSSG, EMFPAC Camp Pendleton, CA

EOD Specialist, served on 4 man EOD team. Participated in operation Southern Watch (Kuwait), Sea Solder (Oman), Vigilant Warrior (Rwanda), Restore Hope (Somalia) and Operation Cease-Fire (Iraq). Provided extensive EOD Training to foreign EOD personnel and U.S. Provided technical evaluation, temporary storage disposal to first seen foreign military ordnance. Encountered: missiles, bombs, cannon systems and ordnance, grenades, rockets, mortars, IED, small arms, aircraft and tank systems.

EOD Team Member, January 1991 – January 1992

1st Plt EOD 1st FSSG, ENGRSPTDET, Camp Pendleton, CA

EOD team member participated in range clearance and inerting operations. Provided all EOD services involving procedures for rendering safe, clearance, temporary storage and disposal of hazardous explosive ordnance and bulk explosives. Supported Secret Service, FBI, ATF, and local law enforcement. Encountered: bombs, grenades, mortars, small arms, hoax IEDs, rockets and missiles

RELATED COMPANY INFORMATION

Daytime Telephone: 619-823-6654

E-mail Address: Acrino@FWENC.com



ATTACHMENT 3
QUALITY CONTROL FORMS

CONTRACTOR QUALITY CONTROL REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

DATE
REPORT
NO

PHASE	CONTRACT NO N44255-95-D-6030, DO No. 0095	CONTRACT TITLE
-------	---	----------------

PREPARATORY	WAS PREPARATORY PHASE WORK PERFORMED TODAY? YES <input type="checkbox"/> NO <input type="checkbox"/>		
	IF YES, FILL OUT AND ATTACH SUPPLEMENTAL PREPARATORY PHASE CHECKLIST.		
	Schedule Activity No.	Definable Feature of Work	Index #

INITIAL	WAS INITIAL PHASE WORK PERFORMED TODAY? YES <input type="checkbox"/> NO <input type="checkbox"/>		
	IF YES, FILL OUT AND ATTACH SUPPLEMENTAL INITIAL PHASE CHECKLIST.		
	Schedule Activity No.	Definable Feature of Work	Index #

FOLLOW-UP	WORK COMPLIES WITH CONTRACT AS APPROVED DURING INITIAL PHASE? YES <input type="checkbox"/> NO <input type="checkbox"/>		
	WORK COMPLIES WITH SAFETY REQUIREMENTS? YES <input type="checkbox"/> NO <input type="checkbox"/>		
	Schedule Activity No.	Description of Work, Testing Performed & By Whom, Definable Feature of Work, Specification Section, Location and List of Personnel Present	

REWORK ITEMS IDENTIFIED TODAY (NOT CORRECTED BY CLOSE OF BUSINESS)		REWORK ITEMS CORRECTED TODAY (FROM REWORK ITEMS LIST)	
Schedule Activity No.	Description	Schedule Activity No.	Description

REMARKS (Also Explain Any Follow-Up Phase Checklist Item From Above That Was Answered "NO"), Manuf. Rep On-Site, etc	
Schedule Activity No.	Description

AUTHORIZED QC MANAGER AT SITE DATE

GOVERNMENT QUALITY ASSURANCE REPORT

DATE

QUALITY ASSURANCE REPRESENTATIVE'S REMARKS AND/OR EXCEPTIONS TO THE REPORT	
Schedule Activity No.	Description

GOVERNMENT QUALITY ASSURANCE MANAGER DATE

Submittal Status Register

DO 0095

Due	Document	Version	Forecast	Actual	DCN	Comment
3/30/01	Draft Base-Wide Health and Safety Plan	Draft	3/30/01	4/2/01	01-0096	
3/30/01	Draft Site-Specific Health and Safety Plan, Ordnance Explosive, Geotechnical, and Seismic Characterization	Draft	3/30/01	4/2/01	01-0097	
3/30/01	Pre-Draft Focused Remedial Investigation Work Plan, Ordnance and Explosives Characterization, and Geotechnical and Seismic Evaluations at Installation Restoration Site 1	Pre Draft	4/13/01	4/13/01	01-0098	Submittal date extended to 4/13/01 per RPM concurrence
3/30/01	Pre-Draft Focused Remedial Investigation Work Plan, Ordnance and Explosives Characterization, and Geotechnical and Seismic Evaluations at Installation Restoration Site 2	Pre Draft	4/13/01	4/13/01	01-0119	Submittal date extended to 4/13/01 per RPM concurrence
5.2/01	Draft Focused Remedial Investigation Work Plan, Ordnance and Explosives Characterization, and Geotechnical and Seismic Evaluations at Installation Restoration Site 1, June 1, 2001	Draft	6/1/01	6/1/01	01-0223	

Submittal Status Register

DO 0095

Due	Document	Version	Forecast	Actual	DCN	Comment
6/1/01	Response to Comments, Preliminary Draft Focused Remedial Action Work Plan, Ordnance and Explosives Characterization, and Geotechnical and Seismic Evaluations at Installation Restoration Site 1, June 1, 2001	Final	6/1/01	6/1/01	01-0226	
8/22/01	Draft Final Focused Remedial Investigation Work Plan, Ordnance and Explosives Waste Characterization, and Geotechnical and Seismic Evaluations at Installation Restoration Site 1, August 20, 2001	Draft-Final	8/20/01	8/20/01	01-0299	
8/22/01	Response to Comments, Draft Focused Remedial Investigation Work Plan, Ordnance and Explosives Characterization, and Geotechnical and Seismic Evaluations at Installation Restoration Site 1, August 17, 2001	Final	8/20/01	8/20/01	01-0313	
8/29/01	Draft Focused Remedial Investigation (RI) Work Plan, Ordnance and Explosives Waste Characterization, Time-Critical Removal Action, and Geotechnical and Seismic Evaluations at Installation Restoration Site 2, August 29, 2001	Draft	8/27/01	8/27/01	01-0316	

Submittal Status Register

DO 0095

Due	Document	Version	Forecast	Actual	DCN	Comment
8/27/01	Response to Comments, Pre-Draft Focused Remedial Investigation Work Plan, Ordnance and Explosives Waste Characterization, Time Critical Removal Action and Geotechnical and Seismic Evaluations at Installation Restoration Site 2, August 29, 2001	Final	8/27/01	8/27/01	01-0332	
	Final Focused Remedial Investigation Work Plan, Ordnance and Explosives Waste Characterization, and Geotechnical and Seismic Evaluations at Installation Restoration Site 1, September 28, 2001. Revision 1.	Final	9/28/01	9/28/01	01-0299	
5/11/01	Final Site-Specific Health and Safety Plan for the Ordnance and Explosives Waste Characterization, and Geotechnical and Seismic Evaluations at Installation Restoration Site 1	Final	10/18/01	10/18/01	02-0010	
10/18/01	Response to Comments on the Draft Site-Specific Health and Safety Plan for the Ordnance and Explosives Waste Characterization, and Geotechnical and Seismic Evaluations at Installation Restoration Site 1	Final	10/18/01	10/18/01	02-0017	

Submittal Status Register

DO 0095

Due	Document	Version	Forecast	Actual	DCN	Comment
6/15/01	Final Base Wide Health and Safety Plan for the Ordnance and Explosives Waste Characterization, and Geotechnical and Seismic Evaluations at Installation Restoration Site 1	Final	10/30/01	10/30/01	02-0019	
1/15/02	Draft-Final Focused Remedial Investigation (RI) Work Plan, Ordnance and Explosives Waste Characterization, Time-Critical Removal Action, and Geotechnical and Seismic Evaluations at Installation Restoration Site 2, Alameda Point, Alameda, California	Draft-Final	12/31/02	1/07/02	02-0073	
1/28/02	Final Focused Remedial Investigation (RI) Work Plan, Ordnance and Explosives Waste Characterization, Time-Critical Removal Action, and Geotechnical and Seismic Evaluations at Installation Restoration Site 2, Alameda Point, Alameda, California, Revision 1	Final	2/8/02	2/8/02	02-0132	
2/2/02	Draft Explosives Safety Remediation Plan (ESRP), Ordnance and Explosives Waste Characterization, Time-Critical Removal Action, and Geotechnical and Seismic Evaluations at Installation Restoration Site 2, Alameda Point, Alameda, California	Draft	2/02/02	1/22/02	02-0099	

Submittal Status Register

DO 0095

Due	Document	Version	Forecast	Actual	DCN	Comment
1/22/02	Draft Action Memorandum (AM), CERCLA Time-Critical Removal Action, Installation Restoration Site 2, Alameda Point, Alameda, California	Draft	1/22/02	1/22/02	02-0083	
2/12/02	Final Explosives Safety Remediation Plan (ESRP), Ordnance and Explosives Waste Characterization, Time-Critical Removal Action, and Geotechnical and Seismic Evaluations at Installation Restoration Site 2, Alameda Point, Alameda, California	Final	2/8/02	2/8/02	02-0110	
2/22/02	Final Action Memorandum (AM), CERCLA Time-Critical Removal Action, Installation Restoration Site 2, Alameda Point, Alameda, California	Final	2/8/02	2/8/02	02-0083	
4/8/02	Report of Findings IR Site 2	Pre-Draft				
7/31/02	FS Attachment IR Site 2	Pre-Draft				
8/1/02	FS Attachment IR Site 1	Pre-Draft				
2/8/02	OE/Geotechnical Characterization (GC) Report Site 1	Pre-Draft				
5/20/02	Report of Findings IR Site 2	Draft				
8/26/02	FS Attachment IR Site 1	Draft				

Submittal Status Register

DO 0095

Due	Document	Version	Forecast	Actual	DCN	Comment
3/8/02	OE/GC Report Site 1	Draft				
6/12/02	FS Attachment IR Site 2	Draft				
8/12/02	Report of Findings IR Site 2	Final				
12/26/02	FS Attachment IR Site 1	Draft-Final				
6/7/02	OE/GC Report Site 1	Draft-Final				
1/24/03	FS Attachment IR Site 1	Final				
10/24/02	FS Attachment IR Site 2	Draft-Final				
7/8/02	OE/GC Report Site 1	Final				
11/22/02	FS Attachment IR Site 2	Final				
5/13/02	OE/GC Report Site 2	Pre-Draft				
5/30/02	Removal Action Closeout Report IR Site 1 or 2	Pre-Draft				
6/18/02	OE/GC Report Site 2	Draft				
7/12/02	Removal Action Closeout Report IR Site 1 or 2	Draft				
9/9/02	Removal Action Closeout Report IR Site 1 or 2	Draft-Final				
9/11/02	OE/GC Report Site 2	Draft-Final				

Submittal Status Register

DO 0095

Due	Document	Version	Forecast	Actual	DCN	Comment
10/9/02	OE/GC Report Site 2	Final				
10/23/02	Removal Action Closeout Report IR Site 1 or 2	Final				

SUBMITTAL NO.	CQC CLAUSE <input type="checkbox"/> IS APPLICABLE <input type="checkbox"/> IS NOT APPLICABLE							
REFERENCES TO USE WHEN CQC CLAUSE IS APPLICABLE	PART I - FOR CONTRACTOR USE	REFERENCES TO USE WHEN CQC CLAUSE IS NOT APPLICABLE						
(A) ROICC/REICC	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; vertical-align: top;">FROM (Contractor) Foster Wheeler Environmental Corporation 1230 Columbia Street, Suite 640 San Diego, CA 92101</td> <td style="width:50%; vertical-align: top;">TO (A)</td> </tr> <tr> <td style="vertical-align: top;">CONTRACT NO</td> <td style="vertical-align: top;">CONTRACT TITLE</td> </tr> </table>	FROM (Contractor) Foster Wheeler Environmental Corporation 1230 Columbia Street, Suite 640 San Diego, CA 92101	TO (A)	CONTRACT NO	CONTRACT TITLE	(A) DESIGNER		
FROM (Contractor) Foster Wheeler Environmental Corporation 1230 Columbia Street, Suite 640 San Diego, CA 92101	TO (A)							
CONTRACT NO	CONTRACT TITLE							
(B) (Check one) <input type="checkbox"/> RECORD <input type="checkbox"/> APPROVAL	THE FOLLOWING ITEM IS SUBMITTED FOR (B) PER SPECIFICATION SECTION NUMBER CERTIFICATION (This form shall not be used to forward proposed substitutions) IT IS HEREBY CERTIFIED THAT THE <input type="checkbox"/> EQUIPMENT <input type="checkbox"/> MATERIAL SHOWN AND MARKED IN THIS SUBMITTAL IS THAT PROPOSED TO BE INCORPORATED INTO CONTRACT N68711-98-D-5713, CTO 0011 IS IN COMPLIANCE WITH THE CONTRACT DRAWINGS AND SPECIFICATIONS AND CAN BE INSTALLED IN THE ALLOCATED SPACES.	(B) APPROVAL						
(C) AUTHORIZED CONTRACTOR QUALITY CONTROL REPRESENTATIVE	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; vertical-align: top;">CERTIFIED BY (C)</td> <td style="width:50%; vertical-align: top;">DATE</td> </tr> </table>	CERTIFIED BY (C)	DATE	(C) PERSON DESIGNATED BY CONTRACTOR AS HAVING AUTHORITY TO SIGN CERTIFICATION				
CERTIFIED BY (C)	DATE							
PART II - FOR DESIGNER USE								
(D) CURSORY REVIEW REQUIRED ON RECORD COMES - REPLY TO ROICC ONLY IF APPROPRIATE. DETAILED REVIEW REQUIRED ON SUBMITTALS FOR GOVERNMENT APPROVAL STAMP AND MARK EACH COPY AS APPROPRIATE.	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; vertical-align: top;">FROM (Designer)</td> <td style="width:50%; vertical-align: top;">TO (ROICC/REICC)</td> </tr> <tr> <td colspan="2" style="vertical-align: top;">THIS SUBMITTAL HAS BEEN REVIEWED (D). THE FOLLOWING RECOMMENDATION IS MADE:</td> </tr> <tr> <td style="vertical-align: top;">SIGNATURE</td> <td style="vertical-align: top;">DATE</td> </tr> </table>	FROM (Designer)	TO (ROICC/REICC)	THIS SUBMITTAL HAS BEEN REVIEWED (D). THE FOLLOWING RECOMMENDATION IS MADE:		SIGNATURE	DATE	(D) DETAILED REVIEW REQUIRED. STAMP AND MARK EACH COPY AS APPROPRIATE
FROM (Designer)	TO (ROICC/REICC)							
THIS SUBMITTAL HAS BEEN REVIEWED (D). THE FOLLOWING RECOMMENDATION IS MADE:								
SIGNATURE	DATE							
(E) DESIGNER (Copy to ROICC)	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; vertical-align: top;">FROM (ROICC/REICC)</td> <td style="width:50%; vertical-align: top;">TO (E)</td> </tr> <tr> <td colspan="2" style="vertical-align: top;">ENCLOSURES ARE RETURNED WITH THE FOLLOWING COMMENTS:</td> </tr> <tr> <td style="vertical-align: top;">SIGNATURE</td> <td style="vertical-align: top;">DATE</td> </tr> </table>	FROM (ROICC/REICC)	TO (E)	ENCLOSURES ARE RETURNED WITH THE FOLLOWING COMMENTS:		SIGNATURE	DATE	(E) CONTRACTOR (Copy to ROICC)
FROM (ROICC/REICC)	TO (E)							
ENCLOSURES ARE RETURNED WITH THE FOLLOWING COMMENTS:								
SIGNATURE	DATE							

INSTRUCTIONS

Enter submittal number.
Check applicable CQC clause.

CONSTRUCTION CONTRACTOR – PART I

From: Construction contractor's name and address.
To: Designer's name and address or ROICC/REICC as applicable.

Enter contract number.

Enter title of contract and location.

Describe item being transmitted. A separate form must be used for each set of catalog cuts or shop drawings. Include name of manufacturer, catalog sheets, drawing no., name of item, and number of copies forwarded.

Check submittal for record or approval purposes.

Type date and name.

Sign original and one.

Distribution (as applicable to CQC clause):

Send to designer: original and four transmittal forms with the seven copies of catalog cuts or shop drawings.
When factory inspection is required, send eight copies.

Send to ROICC/REICC: one carbon copy of form.

Send to ROICC/REICC (CQC): Original and three copies of catalog cuts or shop design.

Retain one copy for your files.

DESIGNER (A&E CONTRACTOR, SOUTHWESTNAVFACENCOM) OR OICC RESPONSIBLE FOR DESIGN – PART II

From: Designer's name and address.
To: ROICC/REICC and address.

Enter recommended action (i.e., approval recommended or disapproved, with appropriate comments)

Type date and name.

Sign original and one.

Distribution:

Send to ROICC/REICC: original and three copies with six (or seven when factor inspection is required) copies of catalog cuts or shop drawings.

Retain one copy of form and one copy of cuts or drawings for your files.

ROICC OR REICC – PART III

From: ROICC or REICC and address.
To: Construction contractor's name and address.

Enter action taken (i.e., approved subject to, etc.).

Type date and name.

Sign original and one.

Distribution:

Send to construction contractor: original with three copies of cuts or drawings

Send to OICC one carbon copy of form with one copy of cut or drawings.

Retain two copies of form and two copies of cuts or drawings: one for field use and one for ROICC/REICC file.

NOTE: When factory inspection is required, forward one approved copy of cuts or drawings to the OICC, Construction Division. Cover transmittal should state the information is forwarded for factory inspection.

CONTRACTOR PRODUCTION REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

DATE

CONTRACT NO N44255-95-D-6030	TITLE AND LOCATION DO No. 0095, Alameda Point, Alameda, CA	REPORT NO
---------------------------------	---	-----------

CONTRACTOR FOSTER WHEELER ENVIRONMENTAL CORPORATION	SUPERINTENDENT
--	----------------

AM WEATHER	PM WEATHER	MAX TEMP (F)	MIN TEMP (F)
------------	------------	--------------	--------------

WORK PERFORMED TODAY

WORK LOCATION AND DESCRIPTION	EMPLOYER	NUMBER	TRADE	HRS

JOB SAFETY	WAS A JOB SAFETY MEETING HELD THIS DATE? (If YES attach copy of the meeting minutes)	<input type="checkbox"/> YES	<input type="checkbox"/> NO	TOTAL WORK HOURS ON JOB SITE, THIS DATE, INCL CON'T SHEETS
	WERE THERE ANY LOST TIME ACCIDENTS THIS DATE? (If YES attach copy of completed OSHA report)	<input type="checkbox"/> YES	<input type="checkbox"/> NO	CUMULATIVE TOTAL OF WORK HOURS FROM PREVIOUS REPORT
	WAS CRANE/MANLIFT/TRENCHING/SCAFFOLD/HV ELEC/HIGH WORK/ HAZMAT WORK DONE? (If YES attach statement or checklist showing inspection performed.)	<input type="checkbox"/> YES	<input type="checkbox"/> NO	TOTAL WORK HOURS FROM START OF CONSTRUCTION
	WAS HAZARDOUS MATERIAL/WASTE RELEASED INTO THE ENVIRONMENT? (If YES attach description of incident and proposed action.)	<input type="checkbox"/> YES	<input type="checkbox"/> NO	

LIST SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED SAFETY REQUIREMENTS HAVE BEEN MET.

EQUIPMENT/MATERIAL RECEIVED TODAY TO BE INCORPORATED IN JOB (INDICATE SCHEDULE ACTIVITY NUMBER)

Submittal #	Description of Equipment/Material Received

CONSTRUCTION AND PLANT EQUIPMENT ON JOB SITE TODAY. INDICATE HOURS USED AND SCHEDULE ACTIVITY NUMBER.

Owner	Description of Construction Equipment Used Today (incl Make and Model)	Arrival	Off Rent Date	Actual Demob Date	Hours Idle	Hours Used	Reason for Idle

REMARKS

CONTRACTOR/SUPERINTENDENT _____
DATE

PREPARATORY PHASE CHECKLIST

(CONTINUED ON SECOND PAGE)

SPEC SECTION

DATE

CONTRACT NO

DEFINABLE FEATURE OF WORK

SCHEDULE ACT NO

INDEX #

PERSONNEL PRESENT	GOVERNMENT REP NOTIFIED _____ HOURS IN ADVANCE. YES <input type="checkbox"/> NO <input type="checkbox"/>		
	NAME	POSITION	COMPANY/GOVERNMENT

SUBMITTALS	REVIEW SUBMITTALS AND/OR SUBMITTAL REGISTER. HAVE ALL SUBMITTALS BEEN APPROVED? YES <input type="checkbox"/> NO <input type="checkbox"/> IF NO. WHAT ITEMS HAVE NOT BEEN SUBMITTED? _____	
	ARE ALL MATERIALS ON HAND? YES <input type="checkbox"/> NO <input type="checkbox"/> IF NO. WHAT ITEMS ARE MISSING? _____	
	CHECK APPROVED SUBMITTALS AGAINST DELIVERED MATERIAL. (THIS SHOULD BE DONE AS MATERIAL ARRIVES.) COMMENTS: _____	

MATERIAL STORAGE	ARE MATERIALS STORED PROPERLY? YES <input type="checkbox"/> NO <input type="checkbox"/> IF NO. WHAT ACTION IS TAKEN? _____	

SPECIFICATIONS	REVIEW EACH PARAGRAPH OF SPECIFICATIONS. _____	
	DISCUSS PROCEDURE FOR ACCOMPLISHING THE WORK. _____	
	CLARIFY ANY DIFFERENCES. _____	

PRELIMINARY WORK & PERMITS	ENSURE PRELIMINARY WORK IS CORRECT AND PERMITS ARE ON FILE. IF NOT, WHAT ACTION IS TAKEN? _____	

INITIAL PHASE CHECKLIST

SPEC SECTION

DATE

CONTRACT NO

DEFINABLE FEATURE OF WORK

SCHEDULE ACT NO.

INDEX #

N44255-95-D-6030, DO No. 0095

PERSONNEL PRESENT

GOVERNMENT REP NOTIFIED _____ HOURS IN ADVANCE

YES NO

NAME	POSITION	COMPANY/GOVERNMENT

PROCEDURE COMPLIANCE

IDENTIFY FULL COMPLIANCE WITH PROCEDURES IDENTIFIED AT PREPARATORY. COORDINATE PLANS, SPECIFICATIONS, AND SUBMITTALS

COMMENTS: _____

PRELIMINARY WORK

ENSURE PRELIMINARY WORK IS COMPLETE AND CORRECT. IF NOT, WHAT ACTION IS TAKEN?

WORKMANSHIP

ESTABLISH LEVEL OF WORKMANSHIP.

WHERE IS WORK LOCATED? _____

IS SAMPLE PANEL REQUIRED? YES NO

WILL THE INITIAL WORK BE CONSIDERED AS A SAMPLE? YES NO

(IF YES, MAINTAIN IN PRESENT CONDITION AS LONG AS POSSIBLE AND DESCRIBE LOCATION OF SAMPLE) _____

RESOLUTION

RESOLVE ANY DIFFERENCES.

COMMENTS: _____

CHECK SAFETY

REVIEW JOB CONDITIONS USING EM 385-1-1 AND JOB HAZARD ANALYSIS

COMMENTS: _____

OTHER

OTHER ITEMS OR REMARKS

QC MANAGER _____

DATE _____

FOLLOW-UP PHASE CHECKLIST

Date

Report No.

Contract No.: N44255-95-D-6030, DO No. 0095

Contract Title: Ordnance and Explosives Waste Characterization, Time-Critical Removal Action, and Geotechnical and Seismic Evaluations at Installation Restoration Site 2, Alameda Point, Alameda, CA

Project Name/Number

Item/Activity Inspected

Drawing Reference	Rev.	Drawing Reference	Rev.

Inspection Attribute	Specification Reference	Acceptance Criteria	Inspection Result	Accept/Reject

Requests For Information Issued/Subject	Reference No.

--	--

FCRs Issued/Subject	Reference No.

--	--

Nonconformances Issued/Subject	Reference No.

--	--

Reinspection Required	Yes	No

Comments

QC MANAGER

DATE

MATERIALS INSPECTION CHECKLIST

Date

Report No.

Contract No.: N44255-95-D-6030, DO No. 0095

Contract Title: Ordnance and Explosives Waste Characterization, Time-Critical Removal Action, and Geotechnical and Seismic Evaluations at Installation Restoration Site 2, Alameda Point, Alameda, CA

Contract Specifications:

Material/Equipment Certifications:

Preparatory Site Conditions:

Contract Variance:

Comments:

Attendees:

QC Representative

Date

QCSM

Date

COMPLETION INSPECTION CHECKLIST

Date

Report No.

Contract No.: N44255-95-D-6030, DO No. 0095

Contract Title: Ordnance and Explosives Waste Characterization, Time-Critical Removal Action, and Geotechnical and Seismic Evaluations at Installation Restoration Site 2, Alameda Point, Alameda, CA

Contract Specifications:

Major Definable Features of Work:

A. Open Punchlist Items From Follow-Up Phase Checklist:

	Item	Date of Completion
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____
6.	_____	_____
7.	_____	_____
8.	_____	_____
9.	_____	_____

B. New Punchlist Items Noted:

	Item	Date of Completion
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____
6.	_____	_____
7.	_____	_____
8.	_____	_____
9.	_____	_____

C. ROICC NOTIFIED? Yes No

On behalf of Foster Wheeler Environmental Corporation, I certify this activity is completely in accordance with the Contract Documents, based upon the information available to me.

Project Quality Control Manager

FIELD CHANGE REQUEST FORM

Contract No. N44255-95-D-6030	DO No. 0095	Field Change Request Form No. FCRF-
To	Location	Date

RE: Drawing No. _____	Title _____
Specification Section _____	Title _____
Other _____	

Description (items involved, submit sketch, if applicable):

Reason for Change

Recommended Disposition (submit sketch, if applicable):

Minor change
 Major change (impacts cost, schedule or technical)

Will this change result in a contract cost or time change Yes No

Estimate of contract cost or time charge (if any) _____

Preparer (signature)	Date	Preparer's Title	Site Superintendent (Signature)	Date
----------------------	------	------------------	---------------------------------	------

Disposition

Not approved (give reason).

Considered minor change – approved per Recommended Disposition – Documents will not formally be revised, field to maintain as-built records.

Considered major change – Design Change Notice Form to be completed.

FWENC Project Engineer (signature) (if engineering related)	Date	FWENC Project Manager (signature)	Date
<input type="checkbox"/> Comments (attached) <input type="checkbox"/> No Comments		<input type="checkbox"/> Comments (attached) <input type="checkbox"/> No Comments	

CIH (signature) (if health and safety related)	Date	Project Scientist(signature) (if science related)	Date
<input type="checkbox"/> Comments (attached) <input type="checkbox"/> No Comments		<input type="checkbox"/> Comments (attached) <input type="checkbox"/> No Comments	

Distribution: _____ Date _____ PjM: Abid Loan _____ APjM: Lance Humphrey _____ SUXOS: James Cocchiola _____ QCM: Mary Schneider _____ Site Superintendent: Vince Richards _____ Navy RPM: Rick Weissenborn _____ ROICC: Izzat Ahmadiyya _____ Subcontractor: _____	QC Program Manager (signature) (if science related) _____ Date _____ <input type="checkbox"/> Comments (attached) <input type="checkbox"/> No Comments
--	--

DESIGN CHANGE NOTICE FORM

Contract No. N44255-95-D-6030	DO No. 0095	Design Change Notice Form No. DCNF-
To	Location	Date

RE: Drawing No. _____	Title _____
Specification Section _____	Title _____
Other _____	

Description of Change

Engineering "HOLD" placed on all activities in area defined herein pending receipt of formally revised document(s) and/or DCNF.

Released for construction on basis of modifications prescribed by this DCNF.

<p>Reason for Change</p> <p><input type="checkbox"/> Field Change Request (FCRF-_____)</p> <p><input type="checkbox"/> Required Modifications to Drawings or Specifications</p> <p><input type="checkbox"/> Other _____</p>	<p>Exhibits Attached</p> <p><input type="checkbox"/> Copies of marked-up area of drawing(s)</p> <p><input type="checkbox"/> Field Change Request (FCRF-_____)</p> <p><input type="checkbox"/> Other (describe) _____</p>
--	---

Preparer (signature)	Date	Preparer's Title	Site Superintendent (Signature)	Date
----------------------	------	------------------	---------------------------------	------

Comments

FWENC Project Engineer (signature) (if engineering related)	Date	FWENC Project Manager (Signature)	Date
<input type="checkbox"/> Comments (attached) <input type="checkbox"/> No Comments		<input type="checkbox"/> Comments (attached) <input type="checkbox"/> No Comments	

CIH (Signature) (if health and safety related)	Date	Project Scientist (Signature) (if science related)	Date
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<p>Distribution: _____ Date _____</p> <p>PjM: Abid Loan _____</p> <p>APjM: Lance Humphrey _____</p> <p>SUXOS: James Cocchiola _____</p> <p>QCM: Mary Schneider _____</p> <p>Site Superintendent: Vince Richards _____</p> <p>Navy RPM: Rick Weissenborn _____</p> <p>ROICC: Izzat Ahmadiyya _____</p> <p>Subcontractor: _____</p>	<p>QC Program Manager (signature) (if science related)</p> <p>_____</p> <p>_____</p> <p>_____</p> <p><input type="checkbox"/> Comments (attached) <input type="checkbox"/> No Comments</p>
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NONCONFORMANCE REPORT

Contract No. N44255-95-D-6030	DO No. 0095	Nonconformance Report No.
To	Location	Date
RE: Drawing No. _____ Title _____ Specification Section _____ Title _____ Other _____ Supplier or Contractor _____ Description of Component, Part or System _____		
Description of Nonconformance (items involved, specifications, code or standard to which items do not comply, submit sketch, if applicable): 		
Name and signature of person reporting nonconformance		Title/Company
Date		
Recommended Disposition (submit sketch, if applicable): 		
Name and signature of person reporting nonconformance		Title/Company
Date		
Evaluation of Disposition by Foster Wheeler Environmental Corporation. Reason of disposition: 		
Corrective Action <input type="checkbox"/> Required <input type="checkbox"/> Not Required		
Engineering (signature)	Date	Quality Assurance (signature)
Date		Date
<input type="checkbox"/> Accepted <input type="checkbox"/> Rejected <input type="checkbox"/> Accepted w/comments		<input type="checkbox"/> Accepted <input type="checkbox"/> Rejected <input type="checkbox"/> Accepted w/comments
Construction (signature)	Date	Other (signature)
Date		Date
<input type="checkbox"/> Accepted <input type="checkbox"/> Rejected <input type="checkbox"/> Accepted w/comments		<input type="checkbox"/> Accepted <input type="checkbox"/> Rejected <input type="checkbox"/> Accepted w/comments
Distribution: _____ Date _____ PjM: Abid Loan _____ APjM: Lance Humphrey _____ SUXOS: James Cocchiola _____ QCM: Mary Schneider _____ Site Superintendent: Vince Richards _____ Navy RPM: Rick Weissenborn _____ ROICC: Izzat Ahmadiyya _____ Subcontractor: _____		Verification of Disposition <input type="checkbox"/> Required <input type="checkbox"/> Not Required By : Signature _____ Title _____ Date _____

PHOTOGRAPH LOG SHEET

Date Submitted

Roll No.

Contract No.: N44255-95-D-6030, DO No. 0095

Contract Title: Ordnance and Explosives Waste Characterization, Time-Critical Removal Action, and Geotechnical and Seismic Evaluations at Installation Restoration Site 2, Alameda Point, Alameda, CA

Photographer:

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APPENDIX B
STANDARD OPERATING PROCEDURES

STANDARD OPERATING PROCEDURE
(SOP-1)
**ORDNANCE AND EXPLOSIVES WASTE/
UNEXPLODED ORDNANCE DISPOSAL DISPOSITION**

Southwest Division
Naval Facilities Engineering Command
Contracts Department
1220 Pacific Highway, Building 127, Room 112
San Diego, CA 92132-5190

CONTRACT NO. N44255-95-D-6030
DO No. 0095

FINAL
STANDARD OPERATING PROCEDURE
**ORDNANCE AND EXPLOSIVES WASTE/
UNEXPLODED ORDNANCE DISPOSAL
DISPOSITION**
(SOP-1)
Revision 0
February 8, 2002

**ORDNANCE AND EXPLOSIVES WASTE CHARACTERIZATION,
TIME-CRITICAL REMOVAL ACTION, AND
GEOTECHNICAL AND SEISMIC EVALUATIONS
AT INSTALLATION RESTORATION SITE 2
ALAMEDA POINT
ALAMEDA, CALIFORNIA**

DCN: FWSD-RACII-02-0132

Prepared by:



FOSTER WHEELER ENVIRONMENTAL CORPORATION

1230 Columbia Street, Suite 640
San Diego, CA 92101



Dave Keller
UXO Operations Manager

TABLE OF CONTENTS

	<u>PAGE</u>
ABBREVIATIONS AND ACRONYMS	iii
DEFINITIONS.....	v
1.0 PURPOSE	1-1
2.0 SCOPE	2-1
2.1 SURFACE CHARACTERIZATION	2-1
3.0 PERSONNEL REQUIREMENTS.....	3-1
3.1 TRAINING REQUIREMENTS.....	3-2
4.0 OPERATIONAL CONSIDERATIONS	4-1
4.1 NOTIFICATION, SCHEDULING, AND COORDINATION.....	4-1
4.2 EQUIPMENT/MATERIAL REQUIREMENTS	4-2
4.3 UXO/OEW IDENTIFICATION.....	4-2
4.4 EXPLOSIVES OR MUNITIONS EMERGENCY RESPONSE.....	4-2
4.5 HANDLING, TRANSPORTATION, AND STORAGE.....	4-3
4.5.1 Explosive Transport Vehicle.....	4-3
4.5.2 Inspection and Certification.....	4-4
4.5.3 Packaging.....	4-4
4.5.4 UXO/OEW Storage	4-4
4.5.5 Inventory.....	4-5
4.6 PACKAGING	4-5
4.7 COMMUNICATIONS.....	4-5
4.8 FIRE FIGHTING	4-5
4.9 EMERGENCY MEDICAL SUPPORT	4-5
4.10 FIRE SUPPORT.....	4-6
4.11 PERSONAL PROTECTIVE EQUIPMENT.....	4-6
4.12 RECORDKEEPING.....	4-6
4.13 TWO-MAN RULE.....	4-6
4.14 OEW SCRAP	4-6
4.15 ENGINEERING CONTROLS.....	4-6
4.16 CONTINGENCY PLAN FOR LARGE OEW	4-7
5.0 QUALITY CONTROL	5-1
6.0 GENERAL SAFETY PRECAUTIONS	6-1
7.0 REFERENCES.....	7-1

TABLE OF CONTENTS

(Continued)

ATTACHMENTS

Attachment 1	Field Supervisor Review Sheet
Attachment 2	Field Team Review Sheet
Attachment 3	Daily Equipment Checklist
Attachment 4	Daily Health and Safety Equipment Checklist
Attachment 5	UXO Acquisition and Accountability Log
Attachment 6	Ordnance Accountability Inventory

ABBREVIATIONS AND ACRONYMS

AFB	Air Force Base
BIP	blow-in-place
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CQC	Contractor Quality Control
DoD	Department of Defense
DON	U.S. Department of the Navy
DOT	Department of Transportation
DTSC	Department of Toxic Substances Control
ECM	Environmental Compliance Manager
EMER	explosives or munitions emergency response
EO	expended ordnance
EOD	explosive ordnance disposal
EODB	explosive ordnance disposal basic
EOR	Explosive Ordnance Reconnaissance
EPA	U.S. Environmental Protection Agency
ESS	Environmental Safety Specialist
EZ	Exclusion zone
FWENC	Foster Wheeler Environmental Corporation
GIS	Geographical Information System
HERO	Hazardous of Electromagnetic Radiation to Ordnance
IR	Installation Restoration
NAS	Naval Air Station
NAVEOD	Naval Explosive Ordnance Disposal
NAVSEA	Naval Sea Systems Command
OD	open detonation
OE	ordnance and explosives
OEW	ordnance and explosive waste
OU	Operable Unit
PjM	Project Manager
PPE	personal protective equipment
QA	quality assurance
QC	Quality Control

ABBREVIATIONS AND ACRONYMS

(Continued)

RI	Remedial Investigation
ROICC	Resident Officer in Charge of Construction
RPM	Remedial Project Manager
RWQCB	Regional Water Quality Control Board
SHSP	Site-Specific Health and Safety Plan
SHSS	Site Health and Safety Specialist
SOP	Standard Operating Procedure
SUXOS	Senior UXO Supervisor
USACE	U. S. Army Corps of Engineers
USAF	United States Air Force
UXO	unexploded ordnance

DEFINITIONS

Exclusion zone (EZ)—Areas where contamination (hazards) is known or likely to be present, or areas that, because of activity, have the potential to cause harm to personnel. Once ordnance and explosives waste (OEW) are detected, the EZ will be expanded to 1,250 feet for non-fragmenting explosive materials, 2,500 feet for fragmenting explosive materials, or 4,000 feet for bombs and projectiles with 5-inch and greater caliber. The EZ shall be large enough to protect other personnel from the blast and fragmentation hazards of accidental detonation. The minimum EZ for unexploded ordnance (UXO) operations will be 300 feet.

Expended ordnance (EO)—Ordnance that has functioned as designed, leaving the shell or container behind. This shell or container may or may not contain explosive/pyrotechnic/toxic residue. This material would not be considered inert and could not be salvaged as scrap without appropriate visual inspection, sampling, and/or treatment.

Explosive Ordnance Disposal (EOD) Personnel— Active-duty military personnel who have graduated from the U.S. Naval School for EOD, Eglin Air Force Base, Florida, the U.S. Bomb Disposal School, Indian Head, Maryland, or are graduates of the EOD Assistant Course, Redstone Arsenal, Alabama, and are currently assigned to a military facility or activity.

Foster Wheeler Environmental Command Center—A designated location staffed by personnel to relay and control all communications/activities of field personnel and other units.

Inert ordnance—Ordnance that never contained explosives (that is, munitions manufactured as classroom training aids) or ordnance that has had all explosive components removed and has been certified as safe.

Intrusive Investigation—Excavating for suspected UXO items or for plotted anomalies. Excavation will be by hand or will be done using heavy equipment as deemed appropriate.

Non-Intrusive Investigation—Locating/investigating UXO on the surface of the ground where excavation is not required.

Non-ordnance and explosive metal debris—Metal debris recovered during operations which is not ordnance related, such as metal rebar, angle iron, sheet metal and bar stock, and so forth.

Open detonation (OD)—A method of disposal for explosive ordnance where a donor explosive charge is detonated in contact with the ordnance to achieve a high-order detonation of the energetic materials contained within the ordnance.

Ordnance and explosives (OE)—Bombs, guided and ballistic missiles, artillery, mortars, rocket ammunition, small arms ammunition, anti-personnel and anti-tank mines, demolition charges, pyrotechnics, grenades, sea mines, torpedoes, depth charges, containerized and non-containerized high explosives and propellants, depleted uranium rounds, military chemical agents, and all similar components related to munitions that were designed to cause damage to personnel or material through explosive force, incendiary action, or toxic effects. Non-containerized high explosives, propellants, or soils contaminated with explosive constituents are

DEFINITIONS

(Continued)

considered explosives if the concentration of explosive material is 10 percent or higher, by weight.

Ordnance and explosive metal debris—Ordnance materials which have not been in direct contact with the energetic materials of the ordnance, such as bomb fins, grenade spoons, shipping containers, and so forth. These shells or containers may or may not contain explosive, pyrotechnic, or toxic residues. Materials will not be considered inert, and will not be salvaged as scrap, without appropriate visual inspection, sampling, and/or treatment.

Ordnance and Explosive Waste (OEW)—Ordnance materials which have been in direct contact with the energetic materials of the ordnance, such as expended rocket motors, shell casings, warhead fragments, powder containers, and so forth.

Practice ordnance—Munitions that demonstrate characteristics similar to their high explosive counterparts and that may or may not contain pyrotechnic, explosive, or chemical (that is, titanium tetrachloride) spotting charges.

Unexploded ordnance (UXO)— Military munitions that have been primed, fused, armed, or otherwise prepared for action that have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installation, personnel, or material, and that remain unexploded either by malfunction, design, or any other cause. This term is used many times in place of OE as an all-encompassing term.

UXO personnel— Contractor personnel who have completed specialized EOD military or U.S. Department of Defense (DoD)-approved civilian training in EOD methods. Various grades and contract positions are established based on skills and experience.

1.0 PURPOSE

The purpose of this standard operating procedure (SOP) is to establish procedures for the disposition of recovered ordnance and explosive waste (OEW) in support of characterization and Time-Critical Removal Action activities at Installation Restoration (IR) Site 2, Operable Unit (OU) 4A of former Naval Air Station (NAS) Alameda, Alameda Point, Alameda, California, by Foster Wheeler Environmental Corporation (FWENC). The primary consideration of this SOP is the protection of human health and the environment.

2.0 SCOPE

Initial activities involved in the OEW surface characterization and Time-Critical Removal Action in the Possible OEW Burial Site area will consist of cutting site vegetation to a height of 4 inches or less and establishing a grid network to identify relative positions of OEW, if any is found. When those activities are complete, a surface characterization of the entire site will be conducted. The removal action will require the removal and sifting of the top 1 foot of material in the Possible OEW Burial Site.

2.1 SURFACE CHARACTERIZATION

The vegetation on IR Site 2 will be cut to a height of 4 inches (or less) prior to the beginning of the surface OEW investigation. FWENC unexploded ordnance (UXO) personnel will proceed ahead of the mowing equipment to prevent encountering OEW. Following the locating, marking, and mapping of the corner points of the site using existing Geographical Information System (GIS) data, a local Cartesian Coordinate grid system will be established to enable the UXO Specialists conducting the surface investigation to identify relative positions of OEW, if any are located. The coordinate axes will have an origin on the southwestern corner of the site and will be spaced 200 feet apart, creating a network of 200- by 200-foot grids. The Y-axis will run north-to-south, the X-axis east-to-west, and the points where grid lines intersect will be marked with surveyors flags. UXO Specialists will prosecute the site in a line abreast, spaced sufficiently near one another to ensure complete visual coverage as the sweep line navigates systematically through the grid. If any OEW is encountered, its location will be referenced by an abscissa/ordinate intersection point using the appropriate alphanumeric label of the grid's placement within the coordinate system.

3.0 PERSONNEL REQUIREMENTS

The key operational, on-site FWENC personnel involved in the performance of explosive demolition operations include the Project Manager (PjM), Site Superintendent/Senior UXO Supervisor (SUXOS), Site Health and Safety and Specialist (SHSS), Project Quality Control Manager, UXO Supervisor, and UXO Specialists. For this project, the SUXOS will act as the Site Superintendent.

Project Manager

The PjM will be the main point of contact with the DON for all project-related matters and he will be responsible for the overall conduct and performance of the project. The FWENC PjM will interface directly with the U.S. Department of the Navy's (DON's) Remedial Project Manager (RPM). The PjM is primarily responsible for the development and implementation of the Focused Remedial Investigation (RI) Work Plan, which includes coordination among the task leads and support staff, acquisition of engineering or specialized technical support, and all other aspects of the day-to-day activities associated with the project. The PjM identifies staff requirements, directs and monitors project progress, ensures implementation of quality procedures and compliance with applicable codes and regulations, and is responsible for performance within the established budget and schedule.

Site Superintendent

FWENC is ultimately responsible for the on-site health and safety of FWENC personnel working on this project. The Site Superintendent, with the support of FWENC's SHSS, is responsible for implementation of the Focused RI Work Plan, Site-Specific 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 PjM.

Senior UXO Supervisor

The SUXOS 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 execution of instructions received from the FWENC PjM and the DON RPM, documentation of site conditions, photographing UXO recovery, preparation of all project reports, and identifying any effort required to accomplish the scope of work. The SUXOS is responsible for all aspects of explosive safety.

Site Health and Safety Specialist

The SHSS will be UXO-qualified with at least 10 years of experience and have completed the FWENC Environmental Safety Specialist (ESS) cross training. The SHSS will be responsible for the implementation of 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 has stop work authority for safety conditions and evaluates and analyzes any potential safety problems, implements safety-related corrective actions, and maintains a daily safety log.

Project Quality Control Manager

The Project Quality Control (QC) Manager, Anthony Crino, is responsible for implementing the *Project Contractor Quality Control (CQC) Plan* (FWENC, 2001).

UXO Quality Control Representative

This individual will be UXO qualified and have completed the U. S. Army Corps of Engineers (USACE) Contractor Quality Management course of instruction, report to the Project QC Manager and will be responsible for the field execution of the Project CQC Plan. This individual will have stop work authority. This individual will also perform the duties of the SHSS.

UXO Supervisor

The UXO Supervisor, James Cocchiola, is responsible for the field work assigned to his team. He reports directly to the SUXOS Supervisor.

UXO Specialist

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

All personnel involved in demolition operations will become familiar with and follow the procedures outlined in this SOP and applicable references.

3.1 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 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

- Review Focused RI Work Plan
- Review SHSP
- Review SOP
- Safety precautions
- Equipment training
- Quality assurance (QA)/QC training
- Emergency procedures
- Review of emergency response equipment
- Talk/walk through of emergency procedures
- Emergency drill

All personnel assigned to the project are responsible for reading and understanding the Focused RI Work Plan. After reading the Focused RI Work Plan, the Site Superintendent/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 filed in project files.

4.0 OPERATIONAL CONSIDERATIONS

4.1 NOTIFICATION, SCHEDULING, AND COORDINATION

Coordination of all personnel involved in the IR Site 2 characterization will be vital to the safe conduct of site activities. The OEW characterization effort by FWENC will ensure that OEW-associated risks on IR Site 2 will not affect the proposed use of the site. Coordination activities will begin with a series of meetings 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 OEW characterization and time-critical removal action 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:
 - DON [RPM and Resident Officer in Charge of Construction (ROICC)]
 - Former NAS Caretaker/Environmental Compliance Manager (ECM)
 - U.S. Environmental Protection Agency (EPA)
 - Regional Water Quality Control Board (RWQCB)
 - Department of Toxic Substances Control (DTSC)
 - The City of Alameda
 - FWENC

- **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 (EZ) procedures
 - Emergency procedures

- **Notifications**—The FWENC SUXOS will notify the appropriate personnel prior to scheduled characterization activities as far in advance as possible to facilitate timely coordination arrangements for establishing the EZ and closing required roads. The SUXOS will ensure that the following activities/agencies are informed of the planned field activities:
 - Alameda Hospital (510) 522-3700
 - Alameda Fire Department (510) 522-2423 (Dispatch)
 - Alameda Police Department (510) 522-2423
 - NAS Alameda (ECM) (510) 772-8832

- **Daily Verification**—Prior to beginning each day's activities, the FWENC Command Center will verify daily that the following activities have been performed:
 - Emergency response activities have been notified and are available
 - EZs have been set and evacuated as required

4.2 EQUIPMENT/MATERIAL REQUIREMENTS

The SUXOS will inspect health and safety equipment prior to commencing operations. Two equipment checklists will be used to ensure a proper load-out is accomplished before departing for investigative operations. A Daily Equipment Checklist is provided in Attachment 3, and a Daily Health and Safety Equipment Checklist is provided in Attachment 4. It is anticipated that all tasks will be performed in Level D PPE. The following publications are required to be on site:

- Approved RI Work Plan with this SOP
- Explosive ordnance disposal basic (EODB) 60A-1-1-4, *Protection of Personnel and Property* [Naval Explosive Ordnance Disposal (NAVEOD), 1990]
- EODB 60A-1-1-31, *General Information on Explosive Ordnance Disposal (EOD) Procedures* (NAVEOD, 1994)
- Naval Sea Systems Command (NAVSEA) OP5 Volume 1 (NAVSEA, 1997)

4.3 UXO/OEW IDENTIFICATION

The SUXOS will perform Explosive Ordnance Reconnaissance (EOR) procedures and assessment of all suspect UXO/OEW to determine conditions and potential hazards. If the UXO/OEW encountered is unsafe to move/transport, it will be detonated in place, if possible. The SUXOS will notify the Alameda ECM and the United States Air Force (USAF) EOD Detachment located on Travis Air Force Base (AFB) to dispose of all unsafe to move/transport items encountered during the field investigation. If the UXO/OEW is safe to move/transport, it will be transported to the magazine area for consolidation and shipment by FWENC UXO personnel.

4.4 EXPLOSIVES OR MUNITIONS EMERGENCY RESPONSE

If it is determined that encountered OEW is unsafe to move or transport and that it poses an immediate threat to human health, public safety, property or the environment, the USAF EOD Detachment from Travis AFB will be called to conduct an explosives or munitions emergency response (EMER) to control, mitigate, or eliminate the threat [40 Code of Federal Regulations (CFR), Part 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 OEW encountered
- The site will be clearly marked with stakes and surveyor tape

- Gates to the site will be closed and barriers placed in front of them
- The SUXOS will contact the following personnel/agencies:
 - Alameda Hospital (510) 522-3700
 - Alameda Fire Department (510) 522-2423
 - Alameda Police Department (510) 522-2423
 - Alameda Point ECM (Doug DeLong) (510) 772-8832
 - Travis AFB Command Post (707) 424-5517
 - Travis AFB EOD Detachment (707) 424-2040/3146
 - RPM (Rick Weissenborn) (619) 532-0952
 - Project Manager (Abid Loan) (949) 756-7514
 - Associate Project Manager (Lance Humphrey) (619) 471-3519
 - EPA (Anna-Marie Cook) (415) 744-2367
 - DTSC (Daniel Murphy) (510) 540-3772

FWENC UXO Technicians will assist the Alameda ECM and the USAF EOD Detachment as required.

4.5 HANDLING, TRANSPORTATION, AND STORAGE

All UXO/OEW declared safe to move will be consolidated in the grid found and transported to on-site storage magazines in adherence to all applicable federal and state regulations, licensing, standards, and protocols. It should be noted that safe-to-move does not always mean safe-to-transport. The SUXOS will make this determination.

4.5.1 Explosive Transport Vehicle

The explosive transport vehicle will be a pick-up truck (for example, Ford F-150) equipped with sandbags and wood boxes to prevent explosive items from coming into contact with spark producing materials. The vehicle shall be inspected prior to transporting any explosive ordnance items to ensure the following:

- Brakes are set and the wheels chocked while loading and unloading.
- The vehicle's engine is turned off during any loading or unloading process.
- Four appropriate Department of Transportation (DOT) warning placards are temporarily attached to the vehicle prior to any transport of explosive items.
- A cellular telephone and a two-way radio that are compatible with any escort vehicle that may be assigned during transport of explosives will be available.
- Emergency warning triangles, barricade tape, first aid kit, wheel chocks, 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 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.

4.5.2 Inspection and Certification

Each explosive item scheduled for transport to the magazine area shall be inspected, certified, and documented by the SUXOS as safe to transport.

4.5.3 Packaging

Explosive items will be placed within a wooden container. A typical container would be a rectangular box with rope-type grab handles. The container will be over-packed to a zero head space with No. 2 granulated all-purpose sand to prevent a single item from moving within the confines of the container. The sand is added to all sides, front, and bottom to act as a shock stabilizer, heat insulator, and friction eliminator. A minimum of 3 inches of sand will surround each item secured within the container. The container will then be hand-loaded into the truck bed. Sandbags will be placed around the sides to chock the wooden container in place and additional sandbags will be placed on top of the container to prevent movement of the container during transport.

4.5.4 UXO/OEW Storage

Recovered UXO/OEW that has been deemed safe to move and safe to transport will be transported to magazine M353 area for consolidation and temporary storage. The magazine will be certified for the storage of Class/Division 1.1 materials and it will be used for the storage of mixed compatibility materials. Physical separation within the magazine will be used for non-compatible items (that is, physical barriers will be constructed using sandbags to isolate the different compatibility groups recovered) and the material will be stowed on pallets. At no time will the rated explosive capacity of the magazine be exceeded. The magazines will be locked with Sargent & Greenleaf Model 833 high security padlocks that meet MIL-P-43607G specifications for high security key locking padlocks. The SUXOS will maintain custody of the keys. The fenced compound that encloses the magazines will also be padlocked and the two access gates that provide access to the magazine compound will be locked as well. Access to the area is restricted to Base Caretaker Personnel.

4.5.5 Inventory

An inventory of the recovered UXO/OEW will be maintained inside the storage magazines and at the on-site office trailer using the Ordnance Accountability Inventory found in Attachment 6. The inventory will be updated each time a recovered item is placed in a magazine or is removed from a magazine. The period of temporary storage for encountered OEW will be less than 90 days.

4.6 PACKAGING

Upon the completion of investigative activities at IR Site 2, if any OEW has been encountered, it will be packaged and manifested in accordance with applicable federal and state requirements, and shipped to NAVSEA Crane, Indiana, for final disposition. The following documentation is required for shipment:

- Section 1 of the Hazardous Waste Profile Sheet completed (with documentation used to establish composition of the waste)
- Land Disposal Restriction Certification completed
- Documentation establishing DOT Hazard classification, proper shipping name, and packaging requirements

Accredited and pre-approved subcontractors will be used for the packaging and shipping of the OEW. Amplifying information concerning the shipment of waste military munitions will be maintained by the SUXOS in project files maintained in the site trailer.

4.7 COMMUNICATIONS

Communications equipment consisting of cellular telephones and hand-held radios will be available for emergency communications with fire and medical support activities.

4.8 FIRE FIGHTING

- Do not fight any fires that involve explosives.
- Notify the Alameda Fire Department prior to conducting demolition operations and contact them immediately upon the discovery of a fire.
- Ensure that the fire fighting equipment listed on Attachment 4 (Daily Health and Safety Checklist) is loaded into the vehicles prior to departing for site activities.

4.9 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.

4.10 FIRE SUPPORT

The Alameda Fire Department located on NAS Alameda will be notified (510-522-2423) prior to the daily operations. No attempt will be made to extinguish a fire involving explosives until the explosives have been consumed.

4.11 PERSONAL PROTECTIVE EQUIPMENT

All demolition operations will be conducted in Level "D" PPE with safety glasses.

4.12 RECORDKEEPING

If any OEW is encountered during the surface investigation, the first section of the UXO Acquisition and Accountability Log form found in Attachment 6 will be completed detailing the type and location of the OEW. The OEW will be photographed and the photograph attached to the form. When disposition of the OEW is accomplished, the form will be completed, either for transfer or destruction.

4.13 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 OEW is handled or transported.

4.14 OEW SCRAP

OEW scrap (shrapnel, fins, expended munitions) will be controlled and accounted for from discovery to disposal. Items identified as OEW scrap will be inspected, removed from the site, containerized, and kept in the OEW scrap storage area between Magazines M353 and 354 until it is shipped to an approved processing facility (recycler). All OEW scrap will be documented on the UXO Acquisition and Accountability Log (Attachment 5) and on the Ordnance Accountability Inventory (Attachment 6) when it is transferred to the storage area.

4.15 ENGINEERING CONTROLS

Engineering controls (tamping, wetting the soil, tarpaulin-tenting, and so forth) will be used to limit/control the spread of dust and soil-borne contaminants (if present) and to control fragmentation during emergency blow-in-place (BIP) operations. The FWENC SUXOS and USAF EOD personnel will determine the type of controls that will be used based on the situation encountered. FWENC UXO Technicians will assist EOD personnel in the emplacement of those controls.

4.16 CONTINGENCY PLAN FOR LARGE OEW

Should large OEW be encountered that is unsafe to move, the EZ will be expanded and evacuated prior to conducting BIP procedures. The SUXOS will adjust the EZ as the situation dictates, but the size and type of OEW will generally determine the size of the EZ. For fragmenting explosive materials, the EZ will be established at 2,500 feet. For bombs and projectiles greater than 5 inches in caliber, the EZ will be expanded to 4,000 feet. If an OEW item is encountered that can be positively identified, the EZ for that item can be determined by using Table 13-2 in NAVSEA OP5 Volume 1 (NAVSEA, 1997).

If an evacuation of an EZ of 2,500 to 4,000 feet is required, the Alameda Fire and Police Departments will be notified and their assistance requested in conducting the evacuation. The following agencies/personnel will be notified if an evacuation is required:

- Alameda Hospital (510) 522-3700
- Alameda Fire Department (510) 522-24231(Police/Fire Dispatch)
- Alameda Police Department (510) 522-2423
- Alameda Point ECM (Doug DeLong) (510) 772-8832
- Travis AFB Command Post (707) 424-5517
- Travis AFB EOD Detachment (707) 424-2040/3146
- RPM (Rick Weissenborn) (619) 532-0952
- EPA (Anna Marie-Cook) (415) 744-2367
- DTSC (Daniel Murphy) (510) 540-3772
- Project Manager (Abid Loan) (949) 756-7514
- Associate Project Manager (Lance Humphrey) (619) 471-3519

The Alameda Police/Fire Dispatch Office will coordinate all evacuation efforts and will contact other fire and police agencies as required. FWENC UXO personnel will assist the responding military EOD unit and the law enforcement agencies in preparing for the BIP operation and evacuating the EZ. The FWENC SUXOS and EOD Commander will brief the police department officials on the planned BIP procedures and activities will not commence until the Alameda Police Department Watch Commander has verified the evacuation of the EZ and given the EOD unit permission to proceed with the operation.

Engineering controls will be used to control fragmentation, if possible. The FWENC SUXOS and the EOD Commander will determine the type of control(s) used and FWENC UXO Technicians will assist EOD personnel in the emplacement of those controls.

5.0 QUALITY CONTROL

QC is performed to ensure that encountered OEW was transported and stored in accordance with applicable regulations and directives. The SUXOS, SHSS, and Project QC Manager will ensure that procedures are implemented as listed below:

- Certify UXO team conducting surface investigation operations in accordance with procedures described in the CQC plan.
- Conduct Surface Clearance Effectiveness Tests during investigative operations as prescribed in the Contractor Quality Control (CQC) Plan.
- Perform follow-up QC for on-site packaging, transportation, and storage.
- Complete data entry on the UXO Acquisition and Accountability Log (Attachment 5).
- Complete data entry on the Ordnance Accountability Inventory (Attachment 6).

6.0 GENERAL SAFETY PRECAUTIONS

This section provides the following general safety precautions for EOD operations:

- Know and observe federal, state, and local laws and regulations which apply to the transportation, storage, and usage of explosives.
- Do not permit metal, except approved metal truck bodies, 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 person, in vehicles containing explosives.
- Do not store explosives, fuse, or fuse lighters in a wet or damp place, or near oil, gasoline, cleaning solution or solvents, or near radiators, steam pipes, exhaust pipes, stoves, or other sources of heat.
- 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 OEW where they may be exposed to flame, excessive heat, sparks or impact.
- Do not expose OEW or devices containing OEW, to the direct rays of the sun. Such exposure increases sensitivity and deterioration.
- Ensure that OEW are returned to their proper containers and the containers are closed after use.
- Do not carry OEW or explosive components in pockets or elsewhere on the body.
- Do not insert anything but fuse or detonating cord into the open end of a blasting cap.
- Carefully load and unload OEW from vehicles. Never throw or drop OEW from the vehicle.
- Do not drive vehicles containing OEW through cities, towns, or villages, or park them near such places as restaurants, garages, and filling stations, unless absolutely necessary.
- Store OEW only in a magazine that is clean, dry, well ventilated, reasonably cool, properly located, substantially constructed, bullet and fire resistant, and securely locked.

- Ensure the EZ is clear of any unauthorized personnel before beginning investigative activities.
- Do not handle, use, or remain near OEW during the approach or progress of an electrical storm.
- Do not transmit on a radio within the Hazardous of Electromagnetic Radiation to Ordnance (HERO) distance of that radio. Do not turn on a cellular telephone within 10 feet of any OEW.

The two-man rule shall apply whenever OEW is handled or transported and during disposal operations on or off the range.

7.0 REFERENCES

- Foster Wheeler Environmental Corporation (FWENC). 2001. *Draft Final Project Contractor Quality Control Plan, Visual Surface Characterization and Geotechnical and Seismic Evaluations at Installation Restoration Site 2, Alameda Point, Alameda, California*. San Diego, California.
- Navy Explosive Ordnance Disposal (NAVEOD). 1990. *Explosive Ordnance Disposal Procedures, Protection of Personnel and Property*. (Publication 60A-1-1-4, Revision 2). Indian Head, Maryland: Naval Explosive Ordnance Disposal Technology Division.
- NAVEOD. 1994. *Explosive Ordnance Disposal Procedures, General Information on EOD Disposal Procedures*. (Publication 60A-1-1-31). Indian Head, Maryland: Naval Explosive Ordnance Disposal Technology Division.
- Naval Sea Systems Command (NAVSEA). 1997. *Ammunition and Explosives Ashore; Safety Regulations for Handling, Storing, Production, Renovation, and Shipping*. (NAVSEA OP5, Volume 1, Seventh Revision). Indian Head, Maryland: Naval Ordnance Center.

ATTACHMENT 1
FIELD SUPERVISOR REVIEW SHEET

ATTACHMENT 1

FIELD SUPERVISOR REVIEW SHEET

I have read the Project Work Plan and Standard Operating Procedure 1 (SOP-1) for OEW/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 OEW/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
DAILY
EQUIPMENT CHECKLIST

ATTACHMENT 3

DAILY EQUIPMENT CHECKLIST

Date: _____ **Disposal Supervisor:** _____

Equipment	Quantity	Comments
Explosive transport 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	3	
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	

ATTACHMENT 4
DAILY HEALTH AND SAFETY
EQUIPMENT CHECKLIST

ATTACHMENT 4

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	

ATTACHMENT 5
UXO ACQUISITION
AND ACCOUNTABILITY LOG

ATTACHMENT 5

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 6
ORDNANCE ACCOUNTABILITY INVENTORY

**STANDARD OPERATING PROCEDURE
(SOP-2)
DRILLING, GEOTECHNICAL SAMPLING,
AND TESTING**

Southwest Division
Naval Facilities Engineering Command
Contracts Department
1220 Pacific Highway, Building 127, Room 112
San Diego, CA 92132-5190

CONTRACT NO. N44255-95-D-6030
DO No. 0095

FINAL
STANDARD OPERATING PROCEDURE
DRILLING, GEOTECHNICAL
SAMPLING, AND TESTING
(SOP-2)
Revision 0
February 8, 2002

**ORDNANCE AND EXPLOSIVES WASTE CHARACTERIZATION,
TIME-CRITICAL REMOVAL ACTION, AND
GEOTECHNICAL AND SEISMIC EVALUATIONS
AT INSTALLATION RESTORATION SITE 2
ALAMEDA POINT
ALAMEDA, CALIFORNIA**

DCN: FWSD-RACII-02-0132

Prepared by:



FOSTER WHEELER ENVIRONMENTAL CORPORATION

1230 Columbia Street, Suite 640
San Diego, CA 92101


for Vincent Richards
Senior Project Geologist

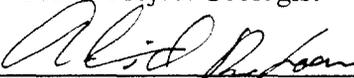

Abid Loan
Project Manager

TABLE OF CONTENTS

	<u>PAGE</u>
ABBREVIATIONS AND ACRONYMS	ii
1.0 PURPOSE	1-1
2.0 SCOPE	2-1
3.0 DRILLING/GEOTECHNICAL SAMPLING	3-1
3.1 GEOTECHNICAL EQUIPMENT REQUIREMENTS	3-1
3.2 TYPICAL PROCEDURES FOR UPLAND DRILLING/GEOTECHNICAL SAMPLING	3-1
3.3 TYPICAL PROCEDURES FOR UPLAND TEST PIT EXCAVATIONS AND GEOTECHNICAL SAMPLING	3-3
4.0 SHIPPING AND HANDLING OF SAMPLES	4-1
4.1 REQUIRED EQUIPMENT FOR SHIPPING AND HANDLING OF MATERIALS	4-1
4.2 TYPICAL PROCEDURES FOR SHIPPING AND HANDLING OF SAMPLES	4-1
5.0 GEOTECHNICAL TESTING	5-1
5.1 GEOTECHNICAL TESTING	5-1

ABBREVIATIONS AND ACRONYMS

AHA	Activity Hazard Analysis
ASTM	American Society for Testing and Materials
COC	chain-of-custody
EMM	Earth Moving Machinery
FWENC	Foster Wheeler Environmental Corporation
HSA	hollow-stem auger
IR	Installation Restoration
NAS	Naval Air Station
OU	Operable Unit
SOP	Standard Operating Procedure
SPT	standard penetration test
UXO	unexploded ordnance

1.0 PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to establish procedures for drilling operations, geotechnical sampling activities, and testing methods in support of characterization activities at Installation Restoration (IR) Site 2, Operable Unit (OU) 4A of former Naval Air Station (NAS) Alameda, Alameda Point, Alameda, California, by Foster Wheeler Environmental Corporation (FWENC).

Specific objectives of this SOP are:

- Drilling of boreholes using a hollow-stem auger (HSA) or other specialized drill rigs (if needed)
- Sampling of soil from boreholes and test pits
- Geotechnical testing of soil samples

2.0 SCOPE

Field investigations will be conducted to collect geotechnical data, which will involve drilling 12 soil borings and excavating 12 test pits at IR Site 2. Five of the borings will be completed off the coast of IR Site 2 in conjunction with geotechnical activities conducted on IR Site 1. Representative disturbed and undisturbed soil samples will be collected from exploration borings and test pits for visual examination and classification in the field and subsequent laboratory testing. Laboratory tests will be used for testing analysis. Geotechnical testing will be performed on selected soil samples and will consist of moisture/density, water contents, particle-size analysis with hydrometer, Atterberg Limits, organic content, Modified Proctor compaction, triaxial permeability, saturated hydraulic conductivity (if necessary), and consolidated undrained and consolidated drained triaxial shear tests. Unexploded ordnance (UXO) avoidance procedures will be followed when drilling within landfill boundaries. Drilling locations outside landfill boundaries do not require UXO avoidance procedures.

3.0 DRILLING/GEOTECHNICAL SAMPLING

The general requirements and procedures are designed to provide consistent and representative guidance while performing drilling and geotechnical sampling activities. This section describes equipment requirements and specific procedures for both upland and offshore borehole drilling.

3.1 GEOTECHNICAL EQUIPMENT REQUIREMENTS

1. Field logbook, sample logbook, boring log forms, sample tags/labels, and chain-of-custody (COC) forms
2. Indelible ink pens and markers
3. Bubble wrap, newspaper, or other packing material
4. Bulk, moisture-proof sample bags (weight contained: 75 pounds)
5. Bulk, moisture-proof sample bags (weight contained: 20 pounds)
6. Ziploc bags
7. Camera
8. Film
9. Drill rig equipped for standard penetration test (SPT), Shelby tube sampling, and piston sample
10. Magnetometer (for upland drilling sites)
11. Split-spoon samplers
12. Sample containers (Shelby tubes and plastic sample jars)
13. Sampling equipment to include sample
14. Assorted geology supplies (for example, hand lens, grain-size card, and Munsell color chart)

3.2 TYPICAL PROCEDURES FOR UPLAND DRILLING/GEOTECHNICAL SAMPLING

1. Conduct site health and safety meeting with Activity Hazard Analysis (AHA).
2. Calibrate field instrumentation.
3. Take pre-activity photographs for documentation.
4. UXO Technicians will clear the work site of metal debris. After finding a location the magnetometer indicates is free of detectable metal, the drill hole will be started with a hand-held auger. At a depth of 6 inches, the magnetometer probe will be inserted into the borehole and checked for metal. This procedure will be repeated every 6 inches until the depth of the hand-held auger is reached, about 4 feet.

5. If clear metal debris and with the UXO supervisor's approval, mobilize equipment and supplies to drilling location and begin sampling activities per Steps 8 through 22.
6. At potential UXO locations, as determined by the UXO supervisor, position the drill rig over the borehole and auger down to maximum depth of 8 feet.
7. Pull the drill string and relocate the drilling rig at least 20 feet away from the borehole. The magnetometer probe will be lowered into the hole to check for metal. If clear of metal, reposition the drilling rig over the hole and commence drilling.

(This procedure will be repeated every 4 feet until a depth of 20 feet is reached, or to the first sampling depth (less than 20 feet), as determined by the on-site geotechnical engineer/geologist. After reaching 20 feet, drill to sampling depth, as determined by the on-site geologist. If boring location is not clear of metal, drilling shall cease and the continuation or relocation of the boring will be evaluated by the UXO supervisor and geotechnical engineer.

8. Record necessary data in field logbook, including weather and type of equipment used.
9. If split-spoon sampling is to be performed at this depth, place decontaminated split-spoon sampler on center rods.
10. Drive split-spoon sampler as specified in the American Society for Testing and Materials (ASTM) Method D-1586. Drive the length of the entire sampler or to refusal (as defined in ASTM D-1586). Record blow counts on boring log form.
11. Open the split-spoon sampler and record the length of sample recovered. Take photographs of representative and unique samples.
12. Describe sample in accordance with ASTM D-2488-93 on the boring log form. If the soil type changes within the length of sample, describe each type and record the lengths of each sample type.
13. Place each type of soil into 8-ounce plastic jars or plastic resealable bags.
14. For Shelby tube samples, drill to the sampling depth, and push the Shelby tube the length of the entire sampler to refusal. Retrieve tube, measure length of soil recovered, record soil types in the end of the tube, cap the ends, and label ends with up arrow and appropriate depths.
15. For bulk samples, place each soil type into moisture-proof bags.
16. Split sample of about one pound and place in a plastic Ziploc bag or 8-ounce sample jar.
17. Twist and tape the bags closed.
18. Affix a sample identification label.
19. Decontaminate all equipment used during terrestrial drilling activities by dry brushing or with a water rinse. If equipment is in contact with hazardous waste or hazardous refuse, use a combination of Alconox, deionized water, and a water rinse.

20. Repeat steps 4 through 19 to a maximum depth of 50 feet, or greater, when applicable.
21. Document activities in the field logbook.
22. Take post-activity photographs of the exploration location to document any changes in environmental conditions as a result of drilling/excavation activities.

3.3 TYPICAL PROCEDURES FOR UPLAND TEST PIT EXCAVATIONS AND GEOTECHNICAL SAMPLING

1. Conduct site health and safety meeting with AHA.
2. Take pre-activity photographs for documentation.
3. Mobilize Earth Moving Machinery (EMM) and supplies to the test pit location.
4. UXO Technicians will clear the work site of metal debris. After finding a location the magnetometer indicates is free of detectable metal, the soil will be removed in approximately 6-inch lifts. UXO Technicians will check the pit with the magnetometer after each lift. Metal detected within 6 inches of the surface will be hand-excavated.
5. Record necessary data in field logbook, including weather and type of equipment used.
6. Use a hand trowel to sample soil from the backhoe bucket. Do not enter the test pit.
7. Place each soil type into moisture-proof bags.
8. Split sample of about one pound and place in a plastic Ziploc bag or 8-ounce sample jar.
9. Twist and tape the bags closed.
10. Affix a sample identification label.
11. Describe sample in accordance with ASTM D-2488-93 on the boring log form. If the soil type changes within the bucket, describe each type and record on the test pit form.
12. Describe test pit walls on test pit form. Take photographs of test pit walls and record wall direction(s).
13. Decontaminate all equipment used during terrestrial drilling activities with a water rinse. If equipment is in contact with hazardous waste or refuse, use a combination of Alconox, deionized water, and a water rinse.
14. Repeat steps 4 through 13 to a maximum depth of 4 feet.
15. Document activities in the field logbook.
16. Take post-activity photographs of the exploration location to document any changes in environmental conditions as a result of drilling/excavation activities.

4.0 SHIPPING AND HANDLING OF SAMPLES

The general requirements and procedures are designed to provide consistent and representative guidance while shipping and handling geotechnical samples. This section describes equipment requirements and specific procedures for shipping and handling samples.

4.1 REQUIRED EQUIPMENT FOR SHIPPING AND HANDLING OF MATERIALS

1. Field logbook, sample logbook, sample tag, and labels
2. COC forms
3. Indelible ink pens and markers
4. Bubble wrap, newspaper, or other packing material
5. Bulk, moisture-proof sample bags (weight contained: 20 pounds)
6. Ziploc bags

4.2 TYPICAL PROCEDURES FOR SHIPPING AND HANDLING OF SAMPLES

1. Place each sample in appropriate containers and align the label so it can be easily read.
2. Wrap each sample with bubble wrap, newspaper, or other packing material.
3. Complete a COC form.
4. Notify laboratory of the approximate time and date of sample arrival.
5. Ship samples in a sturdy container.

5.0 GEOTECHNICAL TESTING

The general requirements and methods are designed to provide consistent and representative guidance while adhering to required geotechnical testing activities. This section describes specific methodology required for geotechnical testing.

5.1 GEOTECHNICAL TESTING

The laboratory shall follow the following ASTM Standards for geotechnical testing:

Atterberg Limits	ASTM D-4318-95a
Compaction characteristics using Modified Proctor (if needed)	ASTM D-1557-91
Moisture/Density	ASTM D-2937-00 ASTM D-2216
Organic Content	ASTM D-2974-00
Particle Size with Hydrometer	ASTM D-422-63
Saturated Hydraulic Conductivity (if needed)	ASTM D-5084-90
Unconsolidated, Undrained Triaxial Shear	ASTM D-2850-95
Consolidated, Undrained Triaxial Shear	ASTM D-4767
Water Contents	ASTM D-2216-92

Southwest Division
Naval Facilities Engineering Command
Contracts Department
1220 Pacific Highway, Building 127, Room 112
San Diego, CA 92132-5190

CONTRACT NO. N44255-95-D-6030
DO No. 0095

FINAL
STANDARD OPERATING PROCEDURE
CONE PENETROMETER TESTING
(SOP-3)

Revision 0
February 8, 2002

ORDNANCE AND EXPLOSIVES WASTE CHARACTERIZATION,
TIME-CRITICAL REMOVAL ACTION, AND
GEOTECHNICAL AND SEISMIC EVALUATIONS
AT INSTALLATION RESTORATION SITE 2
ALAMEDA POINT
ALAMEDA, CALIFORNIA

DCN: FWSD-RACII-02-0132

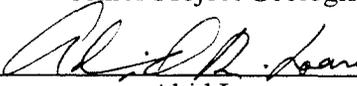
Prepared by:



FOSTER WHEELER ENVIRONMENTAL CORPORATION

1230 Columbia Street, Suite 640
San Diego, CA 92101


for Vincent Richards
Senior Project Geologist


Abid Loan
Project Manager

**STANDARD OPERATING PROCEDURE
(SOP-3)
CONE PENETROMETER TESTING**

TABLE OF CONTENTS

	<u>PAGE</u>
ABBREVIATIONS AND ACRONYMS	ii
1.0 PURPOSE	1-1
2.0 SCOPE	2-1
3.0 CONE PENETROMETER TESTING.....	3-1
3.1 EQUIPMENT REQUIREMENTS.....	3-1
3.2 TYPICAL PROCEDURES.....	3-1

ABBREVIATIONS AND ACRONYMS

CPT	cone penetrometer test
ft/min	feet per minute
FWENC	Foster Wheeler Environmental Corporation
IR	Installation Restoration
mm/s	millimeters per second
NAS	Naval Air Station
OU	Operable Unit
SOP	Standard Operating Procedure
UXO	unexploded ordnance

1.0 PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to establish procedures for cone penetrometer test (CPT) and installations in support of characterization activities at Installation Restoration (IR) Site 2, Operable Unit (OU) 4A of former Naval Air Station (NAS) Alameda, Alameda Point, Alameda, California, by Foster Wheeler Environmental Corporation (FWENC).

2.0 SCOPE

Soil types and strengths shall be measured by 14 CPTs if soil conditions warrant a Phase 2 evaluation to support further seismic characterization. It is anticipated that CPT soundings will be obtained to an initial depth of 50 feet. Unexploded ordnance (UXO) avoidance procedures will be followed when drilling within landfill boundaries. Drilling locations outside landfill boundaries do not require UXO avoidance procedures.

3.0 CONE PENETROMETER TESTING

The general requirements and procedures are designed to provide consistent and representative guidance while performing CPT soundings. This section describes equipment requirements and specific procedures for CPT.

3.1 EQUIPMENT REQUIREMENTS

1. Field logbook and boring log forms
2. Indelible ink pens and markers
3. Camera
4. Push rods
5. Inner rods
6. Cone penetrometer
7. Measuring equipment (hydraulic or electric load cell or proving ring)
8. Thrust machine
9. Metal detector (magnetometer)
10. Assorted geology supplies (for example, hand lens, grain-size card, and scales)

3.2 TYPICAL PROCEDURES

1. Conduct site activity/health and safety briefing.
2. Calibrate field instrumentation.
3. UXO Technicians will clear the work site of metal debris. After finding a location that the magnetometer indicates is free of detectable metal, the drill hole will be started using a hand-held auger. At a depth of 6 inches, the magnetometer probe will be inserted into the borehole and checked for metal. This procedure will be repeated every 6 inches until the depth of the hand-held auger is reached, about 4 feet.
4. If clear of metal debris, and upon the UXO supervisor's approval, the thrust machine will be mobilized at designated locations and work will continue per steps 7 through 14.
5. At potential UXO locations, as determined by the UXO supervisor, position the drill rig over the borehole and drill down to maximum depth of 8 feet. Pull the drill string and relocate the drilling rig at least 20 feet away from the borehole. The magnetometer probe will be lowered into the hole to check for metal. If clear of metal, reposition the drilling rig over the hole and commence drilling.

(This procedure will be repeated every 4 feet until a depth of 20 feet is reached, or to the first sampling depth (less than 20 feet), as determined by the on-site geotechnical engineer/geologist. If boring location is not clear of metal, drilling shall cease and the continuation or relocation of the boring will be evaluated by the UXO supervisor and geotechnical engineer.)

6. Set up the thrust machine for a thrust direction as near vertical as practical.
7. Maintain a rate of depth penetration of 2 to 4 feet per minute (ft/min) [10 to 20 millimeters per second (mm/s)] +/- 25%.
8. Advance penetrometer tip to the required test depth by applying sufficient thrust on the push rods.
9. Apply sufficient thrust on the inner rods to extend the penetrometer tip.
10. Obtain the cone resistance at a specific point during the downward movement of the inner rods relative to the stationary push rods.
11. Record only those thrust readings that occur at a well-defined point during the downward movement of the top of the inner rods relative to the inner rods (this is the point just before the cone engages the friction sleeve).
12. Repeat steps 7 through 11 to a maximum depth as determined by the geotechnical engineer.
13. Decontaminate all equipment with a water rinse. If equipment is in contact with hazardous waste or refuse, use a combination of Alconox, deionized water, and alcohol rinses.
14. Document activities in the field logbook.

**STANDARD OPERATING PROCEDURE
(SOP-4)
GEOTECHNICAL LABORATORY TESTING**

Southwest Division
Naval Facilities Engineering Command
Contracts Department
1220 Pacific Highway, Building 127, Room 112
San Diego, CA 92132-5190

CONTRACT NO. N44255-95-D-6030
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FINAL
STANDARD OPERATING PROCEDURE
GEOTECHNICAL LABORATORY TESTING
(SOP-4)
Revision 0
February 8, 2002

**ORDNANCE AND EXPLOSIVES WASTE CHARACTERIZATION,
TIME-CRITICAL REMOVAL ACTION, AND
GEOTECHNICAL AND SEISMIC EVALUATIONS
AT INSTALLATION RESTORATION SITE 2
ALAMEDA POINT
ALAMEDA, CALIFORNIA**

DCN: FWSD-RACII-02-0132

Prepared by:



FOSTER WHEELER ENVIRONMENTAL CORPORATION

1230 Columbia Street, Suite 640
San Diego, CA 92101



65 Vincent Richards
Senior Project Geologist



Abid Loan
Project Manager

TABLE OF CONTENTS

	<u>PAGE</u>
ABBREVIATIONS AND ACRONYMS	ii
1.0 PURPOSE	1-1
2.0 SCOPE	2-1
3.0 LABORATORY TESTING.....	3-1
3.1 TESTING EQUIPMENT REQUIREMENTS	3-1
3.2 QUALIFICATIONS.....	3-1
3.3 QUALITY MANAGEMENT	3-1
3.4 EQUIPMENT CALIBRATION AND VERIFICATION.....	3-1
3.4.1 Typical Procedures for Geotechnical Laboratory Tests.....	3-2
4.0 REPORTING OF RESULTS.....	4-1
4.1 REQUIREMENTS FOR REPORTING AND RECORDING RESULTS	4-1

ABBREVIATIONS AND ACRONYMS

ASTM	American Society for Testing and Materials
FWENC	Foster Wheeler Environmental Corporation
IR	Installation Restoration
NAS	Naval Air Station
NICET	National Institute for Certification in Engineering Technologies
OU	Operable Unit
SOP	Standard Operating Procedure

1.0 PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to establish procedures for performing geotechnical laboratory testing in support of characterization activities at Installation Restoration (IR) Site 2, Operable Unit (OU) 4A of former Naval Air Station (NAS) Alameda, Alameda Point, Alameda, California, by Foster Wheeler Environmental Corporation (FWENC).

The objectives of this SOP are to identify requirements, establish procedures, and define parameters for conducting geotechnical laboratory tests.

2.0 SCOPE

Representative, disturbed and undisturbed soil samples will be collected from exploratory borings and test pits for visual examination and classification in the field and for subsequent laboratory testing. Laboratory test results will be used for analysis. Geotechnical laboratory testing will be performed on selected soil samples and will consist of moisture/density, water contents, particle-size analysis with hydrometer, Atterberg Limits, organic content, Modified Proctor compaction, saturated hydraulic conductivity (if needed), and unconsolidated undrained and consolidated undrained triaxial shear tests.

3.0 LABORATORY TESTING

The general requirements and procedures are designed to provide consistent and reliable guidelines for performing geotechnical laboratory tests and analyses. This section describes equipment requirements and specific procedures for testing.

3.1 TESTING EQUIPMENT REQUIREMENTS

The laboratory performing geotechnical testing shall have suitable test equipment and laboratory facilities for storing, preparing samples for tests, and testing. The laboratory shall ensure that personnel used to perform the specified tests are adequately trained, qualified, and certified in accordance with applicable test method standards and specifications.

3.2 QUALIFICATIONS

The geotechnical laboratory shall be certified according to American Society for Testing and Materials (ASTM) D-5255, guidelines on certification. The Manager and Supervisor directing the geotechnical laboratory services shall have a minimum of 5 years of soil testing experience and be certified under a National Institute for Certification in Engineering Technologies (NICET) Level IV Certification in Construction Material Testing—Soils, Geotechnical Engineering Technology, or Transportation Engineering.

The Supervising Laboratory and Field Technicians shall also have a minimum of 5 years of soil testing experience and have a current NICET Level III Certification in Construction Materials Testing, subfields in Soils, Geotechnical Engineering Technology, or Transportation Engineering.

The Inspecting or Testing Technician shall have a high school diploma or equivalent and have had sufficient on-the-job training to adequately perform the test or inspection assigned. The Inspecting or Testing Technician must also have a current NICET Level II Certification in Construction Materials, subfields in Soils, Geotechnical Engineering Technology, or Transportation Engineering.

3.3 QUALITY MANAGEMENT

The laboratory shall maintain a Quality Manual, which shall follow the guidelines specified in ASTM 3740.

3.4 EQUIPMENT CALIBRATION AND VERIFICATION

The laboratory's Quality Manual and ASTM D-3740 will be used to calibrate all applicable testing equipment required to complete the testing in this scope.

3.4.1 Typical Procedures for Geotechnical Laboratory Tests

Geotechnical laboratory testing shall be performed according to the procedures outlined in the following respective ASTM Standards:

Atterberg Limits	ASTM D-4318-95a
Compaction characteristics using Modified Proctor (if needed)	ASTM D-1557-91
Moisture/Density	ASTM D-2937-00 ASTM D-2216
Organic Content	ASTM D-2974-00
Particle Size with Hydrometer	ASTM D-422-63
Saturated Hydraulic Conductivity (if needed)	ASTM D-5084-90
Unconsolidated, Undrained Triaxial Shear	ASTM D-2850-95
Consolidated, Undrained Triaxial Shear	ASTM D-4767
Water Contents	ASTM D-2216-92

4.0 REPORTING OF RESULTS

This section provides guidance and describes requirements for consistent and representative recording and reporting results.

4.1 REQUIREMENTS FOR REPORTING AND RECORDING RESULTS

The laboratory shall record and report results according to ASTM D-3740. The report shall include a transmittal letter stating that quality assurance guidelines have been followed and requirements have been met. Problems encountered during the analyses and the methods used to address them will also be specified in the report.

**STANDARD OPERATING PROCEDURE
(SOP-5)
SEISMIC EVALUATION**

Southwest Division
Naval Facilities Engineering Command
Contracts Department
1220 Pacific Highway, Building 127, Room 112
San Diego, CA 92132-5190

CONTRACT NO. N44255-95-D-6030
DO No. 0095

FINAL
STANDARD OPERATING PROCEDURE
SEISMIC EVALUATION
(SOP-5)
Revision 0
February 8, 2002

**ORDNANCE AND EXPLOSIVES WASTE CHARACTERIZATION,
TIME-CRITICAL REMOVAL ACTION, AND
GEOTECHNICAL AND SEISMIC EVALUATIONS
AT INSTALLATION RESTORATION SITE 2
ALAMEDA POINT
ALAMEDA, CALIFORNIA**

DCN: FWSD-RACII-02-0132

Prepared by:

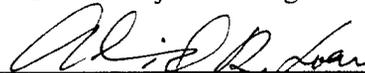


FOSTER WHEELER ENVIRONMENTAL CORPORATION

1230 Columbia Street, Suite 640
San Diego, CA 92101



for Vincent Richards
Senior Project Geologist



Abid Loan
Project Manager

TABLE OF CONTENTS

	<u>PAGE</u>
LIST OF TABLES.....	ii
ABBREVIATIONS AND ACRONYMS.....	iii
1.0 PURPOSE.....	1-1
2.0 SCOPE.....	2-1
3.0 SEISMIC EVALUATION.....	3-1
3.1 FIELD PROCEDURES AND ANALYSES.....	3-1
4.0 REFERENCES.....	4-1

LIST OF TABLES

	<u>PAGE</u>
Table 3-1 Slope Stability Analysis Cases and Minimum Requirements.....	3-2

ABBREVIATIONS AND ACRONYMS

FWENC	Foster Wheeler Environmental Corporation
IR	Installation Restoration
NAS	Naval Air Station
OU	Operable Unit
SOP	Standard Operating Procedure
USACOE	U.S. Army Corps of Engineers

1.0 PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to establish procedures for performing a seismic evaluation in support of characterization activities at Installation Restoration (IR) Site 2, Operable Unit (OU) 4A of former Naval Air Station (NAS) Alameda, Alameda Point, Alameda, California, by Foster Wheeler Environmental Corporation (FWENC).

Specific objectives of this SOP are to:

- Determine static and dynamic soil parameters
- Evaluate landfill/dike static and seismic slope stability
- Evaluate site liquefaction potential

2.0 SCOPE

Seismic evaluation shall consist of using site geology information to determine static and dynamic soil parameters for assessing site liquefaction potential and seismic stability and deformations. This includes faulting and seismicity, and geotechnical data collected (soil boring data, seismic wave velocities, and cone penetrometer and laboratory test results). Seismic refraction geophysical methods will be used to determine seismic wave velocities. The obtained information will be used as input to analytical and empirical methods to evaluate the site liquefaction potential and static and seismic stability of the landfill/dike slopes.

3.0 SEISMIC EVALUATION

The general requirements and procedures are designed to provide consistent and representative guidance for seismic evaluation. This section describes procedural guidance and minimum requirements for the analyses.

3.1 FIELD PROCEDURES AND ANALYSES

A site-specific seismic hazard analysis (ground motion parameters, liquefaction potential, and slope stability evaluations) will be performed based on the site geology including faulting and seismicity and the site static and dynamic soil parameters and topography. The hazard evaluation consists of the following steps:

1. Perform geotechnical field testing including cone penetrometer tests, soil sampling, and laboratory testing described in SOP-2 (Drilling, Geotechnical Sampling, and Testing), SOP-3 (Cone Penetrometer Testing), and SOP-4 (Geotechnical Laboratory Testing) to estimate soil parameters for analysis. Measure sound wave velocities of the site soils using seismic refraction while performing cone penetrometer tests.
2. Based on the site geology, including faulting and seismicity, perform probabilistic and deterministic seismic hazard analyses to estimate site design earthquake ground motion parameters.
3. Assess static and seismic stability of the landfill/dike slopes using traditional limit equilibrium slope stability analysis methods (for example, but not limited to, PCSTABL 5M or UTEXAS3 computer programs). The landfill/dike stability will be evaluated according to U.S. *Army Corps of Engineers (USACOE) Manual EM 1110-2-1913* (USACOE, 2000) stability analysis conditions and Table 3-1 (Slope Stability Analysis Cases and Minimum Requirements) of this document.
4. Evaluate site liquefaction potential using empirical procedures (for example, but not limited to, Seed and Idriss, 1971; Robertson and Wride, 1997).

TABLE 3-1

**SLOPE STABILITY ANALYSIS CASES
AND MINIMUM REQUIREMENTS**

Case No. ^a	Design Condition	Slope Analyzed	Shear Strength	Minimum Factor of Safety, F _s
I	End of construction (new levees)	Riverside and landside ^b slopes	Q or S ^c	1.3 (static) 1.0 (seismic)
II	Sudden drawdown from 100-year flood level	Riverside slopes	S where $< R$, R where $< S^d$	1.0
III	Intermediate river stage (long-term static condition) - Riverside slopes	Riverside slopes	S where $< R$, R+S/2, where $R < S^d$	1.4 (static) 1.0 (seismic)
IV	Steady seepage from full flood stage (100-year flood level)	Landside slopes	S where $< R$, R+S/2, where $R < S^d$	1.4 (static) 1.0 (seismic)
VII	Earthquake stability - Cases I, III, and IV with seismic loading	Riverside and landside slopes	e	1.0

Notes:

- ^a Numbers correspond to cases described in Paragraph 6-6 and Table 6-1a of EM 1110-2-1913 (USACOE, 2000).
- ^b If high groundwater can occur while this case applies, include additional driving forces due to the water in landside slope analysis.
- ^c Where no excess pore pressure is anticipated, use S strength.
- ^d Composite shear strength envelope.
- ^e Use shear strength applicable to case analyzed.

F_s - Minimum Factor of Safety

4.0 REFERENCES

- Robertson, P.K., and Wride, C.E. 1997. *Cyclic Liquefaction and its Evaluation Based on SPT and CPT*. Proc., NCEER Workshop on *Evaluation of Liquefaction Resistance of Soils*. Tech Rep. NCEER 97-0022, T.L. Youd and I.M. Idriss, eds., National Center for Earthquake Engineering Research, State University of New York at Buffalo, Buffalo, 41-87.
- Seed, H.B. and Idriss, I.M. 1971. *Simplified Procedure for Evaluating Soil Liquefaction Potential*. Journal of Mechanics, Foundations Division, ASCE, 97: SM9, September, 1249-1273.
- United States Army Corps of Engineers (USACOE). 2000. *USACOE Manual EM – 1110-2-1913*.

APPENDIX C

**JURISDICTIONAL DELINEATION REPORT
FOR WEST BEACH WETLANDS
(APPENDIX TO SECTION 6.0)**

TABLE OF CONTENTS

	<u>PAGE</u>
1. Purpose	1
2. Methods	1
3. Definitions	2
4. Jurisdictional Wetlands	2
5. Project Impacts to Jurisdictional Features	4
6. Literature Cited	5

ATTACHMENTS

Attachment 1	IR Site 2 Wetlands Location Map
Attachment 2	Delineation Data Sheets

JURISDICTIONAL DELINEATION REPORT FOR WEST BEACH WETLANDS

IR SITE 2 - ALAMEDA POINT ALAMEDA, CALIFORNIA

1. Purpose

Foster Wheeler Environmental Corporation biologists Lenny Malo and Eric Htain are assisting the Navy with a focused time critical Remedial Investigation (RI) and an Ordnance and Explosives Waste (OEW) characterization evaluation at Installation Restoration (IR) Site 2, Operable Unit (OU) 4A of the former Naval Air Station Alameda, Alameda Point, Alameda, California. The Navy is conducting this remedial investigation at IR Site 2 with oversight from the United States Fish and Wildlife Service (USFWS), United States Environmental Protection Agency (EPA), the California Department of Toxic Substances Control (DTSC), and the California Regional Water Quality Control Board (RWQCB) for the San Francisco Region.

IR Site 2 is located on the western coastline of Alameda Point, Alameda, California, and includes the West Beach Landfill (the landfill), and the associated interior and coastal margins. The landfill is sited on approximately 77 acres in the extreme southwestern end of Alameda Point. It was used as the main disposal area for the former Naval Air Station (NAS) Alameda from approximately 1952 through 1978. An estimated 1.6 million tons of waste were deposited there (Ecology and Environment, Inc. 1983). A seawall was constructed along the southern and western edges of the site and a 36-inch culvert was installed in the seawall to hydraulically connect the San Francisco Bay to waters within the seawall. A substantial (10- to 15-foot) dike was installed around the perimeter of the site when disposal operations ceased. The coastal margin is a thin strip of land between the landfill, and the bay. It acts as a buffer for the landfill and is composed of the perimeter dike and a riprap seawall. Materials in the coastal margin differ from those in the landfill.

The purpose of this study was to determine the potential impacts on wetland and water resources from the time critical Remedial Investigation (RI) and Ordnance and Explosives Waste (OEW) characterization evaluation at IR Site 2. This delineation report illustrates the location and boundaries of all jurisdictional wetlands and waters within the proposed work area subject to jurisdiction by the U.S. Army Corps of Engineers (Corps) under Section 404 (b)(1) of the Clean Water Act.

2. Methods

Wetlands and waters of the U.S. are subject to jurisdiction by the Corps under Section 404 (b)(1) of the Clean Water Act. A wetland delineation evaluating vegetation, soil, and hydrology of potentially jurisdictional areas was conducted in accordance with the procedures of the U.S. Army Corps of Engineers Wetlands Delineation Manual (Corps 1987). IR Site 2 Wetlands Location Map is located in Attachment 1. Delineation data sheets are located in Attachment 2.

3. Definitions

The United States Army Corps of Engineers (Corps) and the United States Environmental Protection Agency (U.S. EPA) regulate the discharge of dredge and fill material into "waters of the United States" under Section 404 of the Clean Water Act.

The Corps jurisdiction over non-tidal "waters of the United States" extends to the "ordinary high water mark provided the jurisdiction is not extended by the presence of wetlands" (33 CFR Part 328 Section 328.4). Waters of the United States are defined as:

All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide, all interstate waters including interstate wetlands, all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which would affect interstate or foreign commerce, including such waters which are or could be used by interstate or foreign travelers for recreational or other purposes, or from which fish or shellfish are or could be taken and sold in interstate or foreign commerce, or which are used or could be used for industrial purposes by industries in interstate commerce; all impoundment of waters otherwise defined as waters of the United States interstate commerce, tributaries of waters identified in paragraphs 1-4 of this section, the territorial sea; and wetlands adjacent to waters (40 CFR 230.3).

Wetlands are defined for regulatory purposes as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Wetlands generally include swamps, marshes, bogs, and similar areas (33 CFR 328.3, 40 CFR 230.3).

The Corps will typically take jurisdiction over the portion of a project site that contains waters of the United States and adjacent or isolated wetlands. The Corps will typically not take jurisdiction over agricultural / irrigation canals and drains or isolated features that lack vegetation or a connection to a natural drainage feature.

4. Jurisdictional Wetlands

Potential jurisdictional wetlands found within the project study area are listed in Table 1. Potential adverse impacts to jurisdictional wetlands occurring in the project corridor will be minimized to the maximum extent feasible.

Table 1. Potential Jurisdictional Wetlands within the Study Area.

Wetland I.D. Number	USGS Quad Name	Acreage of Impact / Acreage of Wetland	Classification / Vegetation
WE1	Oakland West	0 / 29.3	Salt Marsh – Estuarine Intertidal Persistent Emergent Wetland / bermudagrass, salt marsh pickleweed
WE2	Oakland West	0 / 0.2	Seasonal Wetland / bermudagrass, curly dock
WE3	Oakland West	0 / 0.03	Seasonal Wetland / bermudagrass, curly dock

Wetland WE1: Salt Marsh – Estuarine Intertidal Persistent Emergent Wetland Community

This wetland occupies a vegetated space along the western coastline of Alameda Point. The wetland is in Alameda County, California. The wetland is bounded by a landfill to the north and east, and adjacent to the San Francisco Bay on the south and west. The wetland includes approximately 29.3 acres of salt marsh wetland habitat. Due to a prevalence of obligate and facultative hydrophytic vegetation, abrupt wetland boundary, and the direct observation of inundated and saturated soil a hydric soil condition was inferred (ACOE 1987). Hydrology from tidal fluctuations, upland runoff, precipitation and a high ground water table support the hydrophytic vegetation present at this site. Standing water and saturated soils were observed at the surface. The wetland contains two perennial ponds. The northern pond is connected to the bay by a culvert and the southern pond was created by the removal of dredged materials for use as landfill cover. Fresh water has since filled the excavation area and created the existing ponds. The dominant vegetation consists of salt marsh pickleweed (*Salicornia virginica*) [OBL], and Bermudagrass (*Cynodon dactylon*) [FAC]. 100 percent of the dominant plant species observed were obligate, or facultative in nature.

Wetlands WE2 and WE3: Seasonal Wetland Communities

These wetlands occupy a vegetated space approximately 1,600 feet east of the western coastline of Alameda Point. These wetlands are in Alameda County, California. The wetlands are adjacent to the San Francisco Bay on the south and west. Wetland WE2 includes approximately 0.2 acres, and wetland WE3 includes approximately 0.03 acres of seasonal wetland habitat at the northeastern edge of the study area. Soils were identified by digging a soil pit to a depth of 12-inches within a topographic low of a basin positioned to the east of the San Francisco Bay. The soil is a sandy loam with a matrix color 7.5YR 3/1 with mottling color of 2.5YR 4/8. Hydric soils were determined to be present due to low-chroma color of the substrate, and high organic content in the surface layer. Hydrology for this wetland is provided from the low ground water table resulting from these wetlands close proximity to the San Francisco Bay. Hydrology from upland runoff, precipitation, and surface flows also support the hydrophytic vegetation present at this site. The depth to free water is 12", and saturated soils were observed in the first inch of the soil pit. Additionally, sediment deposition, and drainage patterns were observed in these wetlands features. The dominant vegetation consists of Bermudagrass (*Cynodon dactylon*) [FAC], and curly dock (*Rumex crispus*) [FACW-]. One hundred percent of the dominant plant species observed were obligate or facultative in nature.

Wetland Functions and Values

Wetland habitats associated with permanent water sources, as well as intermittent drainage channels, provide food, water, migration and dispersal corridors, nesting and breeding habitat, and contain habitat that is distinct from the adjacent uplands for a variety of wildlife species. Numerous amphibian, reptile, bird, and mammal species are residents or visitors in wetland habitats due to the vegetation's structural diversity. Wetland habitats are essential breeding, rearing, and foraging grounds for many species of wildlife. Wetlands also perform important flood protection and pollution controls.

The study area is currently used as a bird and wildlife sanctuary and will be transferred to the USFWS for use as a National Wildlife refuge. Wildlife species that are federally listed as endangered or threatened could potentially occur on IR Site 2 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 IR Site 2, and they should not be affected by planned activities on the site (US Navy 1997). The open water area adjacent to IR Site 2 is a wintering area for migratory waterfowl and provides resting and feeding habitat for over 1,000 ducks during the winter.

5. Project Impacts to Jurisdictional Features

The proposed project will not result in the permanent loss of any jurisdictional wetlands. More specifically, at the present time no permanent above-grade fills will be constructed within any jurisdictional wetlands. At the present time the proponent doesn't intend to conduct any investigation or characterization activities within the boundaries of any wetland areas. Areas with the potential to provide habitat to species of concern will be identified prior to investigation / characterization activities, and staked for avoidance where necessary. Site selection for project staging areas where hazardous materials and hazardous wastes may be present have considered and avoided wetlands to the maximum extent feasible. However, if investigation or remediation activities are required in wetland areas heavy equipment and test pits will be utilized.

If work is required within wetlands the proponent will minimize the use of heavy equipment, and off - road intrusion to the maximum extent feasible. Jurisdictional wetland areas impacted during investigation or characterization activities will be documented, and additional wetland areas will be created at a 1.5: 1 mitigation to impact ratio.

Created wetland habitat will be intended to be of the same or higher quality than the impacted wetland and will serve to offset wetland losses. Wetland habitat creation will seek to create a self-sustaining system that does not require active management or supplemental water once the establishment phase is complete. Wetland habitat creation will be focused on the area adjacent to existing wetland to the maximum extent feasible. Vegetation will be established in the created wetland through a combination of natural revegetation, salvage of seed bank and vegetation materials from any impacted wetland areas, and if necessary through the collection and application of seed material followed by hand planting of vegetation to mimic natural patterns. Wetland preservation will be considered successful when:

- A dominance of the created wetland acreage exhibits positive field indicators of wetland vegetation, soils, and hydrology (i.e. are functioning as wetlands); and species composition in the created wetland is similar to that of the original impacted habitat.

Please feel free to contact me at (949) 756-7556 with questions or if you require additional information.

Sincerely,

Foster Wheeler Environmental Corporation

Lenny Malo
Project Biologist

6. Literature Cited

Ecology and Environment, Inc. 1983. *Initial Assessment Study, Naval Air Station, Alameda California*. Prepared for the Department of the Navy, Navy Assessment and Control of Installation Pollutants Department, Naval Energy and Environmental Support Activity, Port Hueneme, CA.

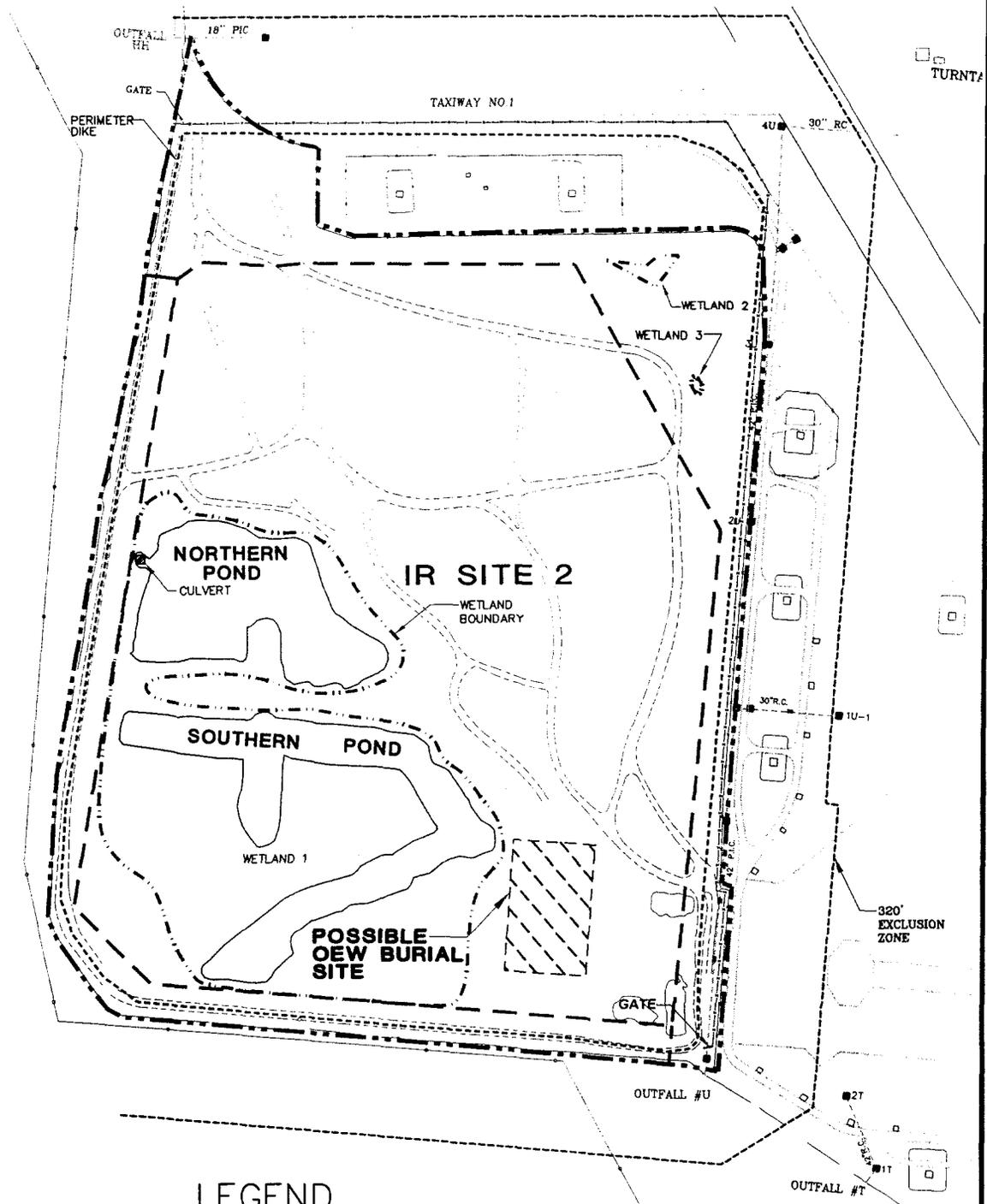
U.S. Army Corps of Engineers (COE). 1987. *Wetland Delineation Manual*. Waterways Experiment Station, Vicksburg, MS.

US Navy 1997. *Biological Assessment for Disposal and Reuse of the Naval Air Station and Fleet and Industrial Supply Center, Alameda Facility and Annex Alameda, California*. Unpublished Report. EFA West Naval Facilities Engineering Command. San Bruno, CA.

ATTACHMENT 1
IR SITE 2 WETLANDS LOCATION MAP

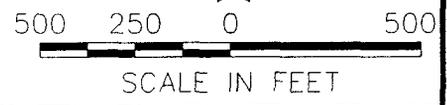
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 CHECKED BY: LH
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 DRAWN BY: MD
 DATE: 02/08/02

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 PLOT/UPDATE: FEB 08 2002 14:51:32



LEGEND

- SITE BOUNDARY
- FENCELINE
- EXCLUSION ZONE



ATTACHMENT 1
IR SITE 2 WETLANDS LOCATION
ALAMEDA, CA

Southwest Division
 Naval Facilities Engineering Command

FOSTER WHEELER
ENVIRONMENTAL CORPORATION

ATTACHMENT 2
DELINEATION DATA SHEETS

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: <u>Site 2</u> Applicant/Owner: <u>NAVY</u> Investigator: <u>LM A. BRAC THAN</u>	Date: <u>12/24/01</u> County: <u>Alameda</u> State: <u>CA</u>
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No Is the site significantly disturbed (Atypical Situation)? <input type="radio"/> Yes <input checked="" type="radio"/> No Is the area a potential Problem Area? <input type="radio"/> Yes <input checked="" type="radio"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Rumex crispus</u>		<u>FACW</u>	9. _____		
2. <u>GERANIUM</u>		<u>UPL</u>	10. _____		
3. <u>GRASS, Ca</u>		<u>UPL</u>	11. _____		
4. <u>BERMUDA GRASS</u>		<u>FAC</u>	12. _____		
5. _____			13. _____		
6. _____			14. _____		
7. _____			15. _____		
8. _____			16. _____		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: Dominance of Rumex / GERANIUM ^{MOSTLY} ARE 10% COVER NOT DOMINANT
& BERMUDA GRASS

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input checked="" type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>NA</u> (in.) Depth to Free Water in Pit: <u>@ 12" NA</u> (in.) Depth to Saturated Soil: <u>@ SURFACE</u> (in.)	Remarks: <u>water @ 12" saturated @ SURFACE, topographic low, H2O influence from proximity to BAI, SURFACE runoff from precipitation</u>

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: <u>SITE 2</u> Applicant/Owner: <u>MMY</u> Investigator: <u>Alamo da, ET al</u>	Date: <u>12/25/01</u> County: <u>Alameda</u> State: <u>CA</u>
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No Is the site significantly disturbed (Atypical Situation)? <input type="radio"/> Yes <input checked="" type="radio"/> No Is the area a potential Problem Area? <input type="radio"/> Yes <input checked="" type="radio"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Pickleweed (<i>Salicornia virginica</i>)		OBL	9. _____		
2. Bermuda grass (<i>Cynodon dactylon</i>)		FAC	10. _____		
3. _____			11. _____		
4. _____			12. _____		
5. _____			13. _____		
6. _____			14. _____		
7. _____			15. _____		
8. _____			16. _____		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100%

Remarks: All of ~~the~~ dominant veg is FAC or OBLIGATE, MULTIPLE ...

HYDROLOGY

Recorded Date (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Date Available	Wetland Hydrology Indicators: Primary Indicators: <input checked="" type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input checked="" type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>less than 1</u> (in.) Depth to Free Water in Pit: <u>less than 1</u> (in.) Depth to Saturated Soil: <u>SURFACE</u> (in.)	Remarks: SURFACE inundated, FREE water @ SURFACE, typical low or depression, APPEARS to influenced BY tidal SURGE, upland runoff, low ground H ₂ O table AS A result of proximity to the SF BAY 3-3

(NE corner)

SOILS

295- 0559271
4182509

Map Unit Name (Series and Phase):		Drainage Class: 246	
Taxonomy (Subgroup):		Field Observations Confirm Mapped Type? Yes No	
Profile Description:			
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)
			Mottle Abundance/Contrast
			Texture, Concretions, Structure, etc.
- SATURATED SOIL, NO SAMPLE COLLECTED, FREE WATER			
INDICATES PIF			
			247 - 0559318 4182504
			248 - 0559324 4182511
			249 - 0559342 4182508
			300 - 0559333 4182494
Hydric Soil Indicators:			
<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input checked="" type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input type="checkbox"/> Gleyed or Low-Chroma Colors		<input type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)	
Remarks: AS A RESULT OF SATURATED SOILS AND THE DAMNANCE OBLIVATE AND FAC WET SOILS WERE INFERED			

246 - 0559273
4182543

247 - 0559318
4182504

248 - 0559324
4182511

249 - 0559342
4182508

300 - 0559333
4182494

301 - 0559321
4182487

302 - 0559309
4182482

303 - 0559294
4182494

- 0558988 289 - 0558964 290 - 0558933
4182270 4182285 4182281

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No (Circle)	Is this Sampling Point Within a Wetland? <input checked="" type="radio"/> Yes <input type="radio"/> No
Wetland Hydrology Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	
Hydric Soils Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	
Remarks: OBS i FAC LEG, INUNDATED & SATURATED SOILS, PRESENCE OF FREE H2O, GROUNDWATER INFLUENCE, UPLAND ROAD DRAINAGE, PIF IS A WETLAND.	

0559057 277 - 0559215 281 - 0559129
4182223 3 - 105 0559249 4181934 282 - 0559104
4181797

Approved by HQUSACE 2/92

286 - 0559094 274 - 0559253 278 - 0559188 4182141
4182229 4181825 4181982 283 - 0559068
287 - 0559028 275 - 0559253 279 - 0559155 4182171
4182260 4181859 3-4 4182019 284 - 0559045
276 - 0559232 280 - 0559125 4182218
4181899 4182055

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

PT 270 105
 0559280
 4181864

Project/Site: <u>SITE 2</u> Applicant/Owner: <u>UAC</u> Investigator: <u>ET, LM</u>	Date: <u>12/24/01</u> County: <u>Alameda</u> State: <u>CA</u>						
Do Normal Circumstances exist on the site? Is the site significantly disturbed (Atypical Situation)? Is the area a potential Problem Area? (If needed, explain on reverse.)	<table style="width: 100%; border: none;"> <tr> <td style="text-align: center;">Yes <input checked="" type="radio"/></td> <td style="text-align: center;">No <input type="radio"/></td> </tr> <tr> <td style="text-align: center;">Yes <input type="radio"/></td> <td style="text-align: center;">No <input checked="" type="radio"/></td> </tr> <tr> <td style="text-align: center;">Yes <input type="radio"/></td> <td style="text-align: center;">No <input checked="" type="radio"/></td> </tr> </table>	Yes <input checked="" type="radio"/>	No <input type="radio"/>	Yes <input type="radio"/>	No <input checked="" type="radio"/>	Yes <input type="radio"/>	No <input checked="" type="radio"/>
Yes <input checked="" type="radio"/>	No <input type="radio"/>						
Yes <input type="radio"/>	No <input checked="" type="radio"/>						
Yes <input type="radio"/>	No <input checked="" type="radio"/>						
Community ID: _____ Transect ID: _____ Plot ID: _____							

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>SALT GRASS</u>		<u>FCW</u>	9. _____		
2. _____			10. _____		
3. _____			11. _____		
4. _____			12. _____		
5. _____			13. _____		
6. _____			14. _____		
7. _____			15. _____		
8. _____			16. _____		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: SAMPLE PT INUNDATED w/ SALT GRASS

HYDROLOGY

Recorded Date (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Date Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: <u>12" Pit not saturated</u> Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	
Remarks: <u>NO SATURATED SOIL; NO STANDING WATER, HYDROLOGIC CONNECTION FROM UPLAND ^{Runoff} RUN-OFF, GROUND WATER INFLUENCE APPEARS TO BE IMPAIRED BY THE OBVIOUS IMPORTED FILL MATERIAL UPON SAMPLE PT.</u>	

3-3

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

272: 105
 0559258
 7181840

Project/Site: <u>SITE 2</u> Applicant/Owner: <u>NAVY</u> Investigator: <u>ET, LM</u>	Date: <u>12/25/01</u> County: <u>Alameda</u> State: <u>CA</u>
Do Normal Circumstances exist on the site? <input type="radio"/> Yes <input checked="" type="radio"/> No Is the site significantly disturbed (Atypical Situation)? <input type="radio"/> Yes <input checked="" type="radio"/> No Is the area a potential Problem Area? <input type="radio"/> Yes <input checked="" type="radio"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>MUSTARD (BRASSICA NITA)</u>		<u>UPL</u>	9. _____		
2. <u>Ke plant (Carpobrotus edulis)</u>		<u>UPL</u>	10. _____		
3. <u>MELUA sp.</u>		<u>UPL</u>	11. _____		
4. <u>Rumex crispus</u>		<u>FACW</u>	12. _____		
5. _____			13. _____		
6. _____			14. _____		
7. _____			15. _____		
8. _____			16. _____		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 0.5%

Remarks: SAMPLE PT CONSISTS ENTIRELY OF UPLAND VEG, w/ SOME VERY SMALL SCATTER BITS OF RUMEX CRISPUS W/TS + THE 0.5% ABSOLUTE TOTAL COVER - RUMEX ISNT DOMINANT

HYDROLOGY

___ Recorded Date (Describe in Remarks): ___ Stream, Lake, or Tide Gauge ___ Aerial Photographs ___ Other <input checked="" type="checkbox"/> No Recorded Date Available	Wetland Hydrology Indicators: Primary Indicators: ___ Inundated ___ Saturated in Upper 12 Inches ___ Water Marks ___ Drift Lines ___ Sediment Deposits ___ Drainage Patterns in Wetlands Secondary Indicators (2 or more required): ___ Oxidized Root Channels in Upper 12 Inches ___ Water-Stained Leaves ___ Local Soil Survey Data ___ FAC-Neutral Test ___ Other (Explain in Remarks)
Field Observations: <u>12"</u> Depth of Surface Water: <u>0</u> (in.) Depth to Free Water in Pit: <u>0</u> (in.) Depth to Saturated Soil: <u>0</u> (in.)	

Remarks: NO SATURATED SOIL, NOT INUNDATED w/ H2O, Hydrology COULD FROM PRECIPITATION and upland/RUNOFF

