DRAFT

MRS-BLM UNITS 1, 2, and 3

MUNITIONS AND EXPLOSIVES OF CONCERN

REMEDIAL ACTION REPORT

FORMER FORT ORD, CALIFORNIA

Prepared For:

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Sacramento District

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February 2018

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FORMER FORT ORD, CALIFORNIA

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Acronyms and Abbreviations

AOI	area of interest
APP	Accident Prevention Plan
ARARs	applicable or relevant and appropriate requirements
Army	U.S. Department of the Army
ASCII	American Standard Code for Information Interchange
BLM	Bureau of Land Management
BO	Biological Opinion
BRA	Basewide Range Assessment
BRAC	Base Realignment and Closure
CAR	corrective action request
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
cm	centimeter
CMC	central maritime chaparral
CQCSM	Contractor Quality Control Systems Manager
DGM	Digital Geophysical Mapping
DMM	Discarded Military Munitions
DTSC	Department of Toxic Substances Control
EPA	U.S. Environmental Protection Agency
FFA	Federal Facility Agreement
FS	feasibility study
FWV	Field Work Variance
GPS	global positioning system
HMP	Habitat Management Plan
ISD	insufficient data
KEMRON	KEMRON Environmental Services
LUC	Land Use Control
MC	munitions constituents
MD	munitions debris
MDAS	material documented as safe

Acronyms and Abbreviations (continued)

MEC	munitions and explosives of concern
mm	millimeter
MMRP	Military Munitions Response Program
MPPEH	Material Potentially Presenting an Explosive Hazard
MQO	measurement quality objective
MR	munitions response
MRA	munitions response area
MRS	munitions response site
OE	ordnance and explosives
QA	quality assurance
QC	quality control
RAO	remedial action objective
RAR	Remedial Action Report
RD/RA	Remedial Design/Remedial Action
RI	remedial investigation
ROD	Record of Decision
RRD	range-related debris
RTK	real-time kinematic
SSWP	Site-Specific Work Plan
SUXOS	Senior Unexploded Ordnance Supervisor
TIP	Technical Information Paper
TM	Technical Memorandum
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
UXO	unexploded ordnance
UXOQCS	Unexploded Ordnance Quality Control Specialist
WERS	Worldwide Environmental Remediation Services

Definitions

Construction Support: Assistance provided by DoD explosive ordnance disposal (EOD) or Unexploded Ordnance (UXO)-qualified personnel and/or by personnel trained and qualified for operations involving chemical agent (CA), regardless of configuration, during intrusive construction activities on property known or suspected to contain UXO, other munitions that may have experienced abnormal environments (e.g., Discarded Military Munitions (DMM)), or munitions constituents in high enough concentrations to pose an explosive hazard, or CA, regardless of configuration, to ensure the safety of personnel or resources from any potential explosive or CA hazards. Source: (7).

Discarded Military Munitions (DMM): Military munitions that have been abandoned without proper disposal or removed from storage in a military magazine or other storage area for the purpose of disposal. The term does not include unexploded ordnance, military munitions that are being held for future use or planned disposal, or military munitions that have been properly disposed of consistent with applicable environmental laws and regulations. (10 U.S.C. 2710 (e)(2)). For the purposes of the Military Munitions Response Program (MMRP) being conducted at the former Fort Ord, DMM does not include small arms ammunition.

Explosive Ordnance Disposal (EOD) Personnel: Military personnel who have graduated from the Naval School, Explosive Ordnance Disposal; are assigned to a military unit with a Service-defined EOD mission; and meet Service and assigned unit requirements to perform EOD duties. EOD personnel have received specialized training to address explosive and certain CA hazards during both peacetime and wartime. EOD personnel are trained and equipped to perform render safe procedures (RSP) on nuclear, biological, chemical, and conventional munitions, and on improvised explosive devices. Source: (7).

Expended: The state of munitions debris (MD) in which the main charge has been expended leaving the inert carrier. Source: (1).

Feasibility Study (FS): A study undertaken to develop and evaluate alternatives for remedial action. Source: (3).

Impact Area: The impact area consists of approximately 8,000 acres in the southwestern portion of former Fort Ord, bordered by Eucalyptus Road to the north, Barloy Canyon Road to the east, South Boundary Road to the south, and General Jim Moore Boulevard to the west. Source: (1).

Institutional Control (IC): (a) Non-engineered instruments such as administrative and/or legal controls that minimize the potential for human exposure to contamination by limiting land or resource use; (b) are generally to be used in conjunction with, rather than in lieu of, engineering measures such as waste treatment or containment; (c) can be used during all stages of the cleanup process to accomplish various cleanup-related objectives; and (d) should be “layered” (i.e., use multiple ICs) or implemented in a series to provide overlapping assurances of protection from contamination. Source: (6).

Land Use Controls (LUCs): Physical, legal, or administrative mechanisms that restrict the use of, or limit access to, real property, to manage risks to human health and the environment. Physical

mechanisms encompass a variety of engineered remedies to contain or reduce contamination, or physical barriers to limit access to real property, such as fences or signs. Source: (7).

Magnetometer: An instrument used to detect ferromagnetic (iron-containing) objects. Total field magnetometers measuring the strength of the earth's natural magnetic field at the magnetic sensor location. Gradient magnetometers, sensitive to smaller near-surface metal objects, use two sensors to measure the difference in magnetic field strength between the two sensor locations. Vertical or horizontal gradients can be measured. Source: (4).

Material Documented as Safe (MDAS): MPPEH that has been assessed and documented as not presenting an explosive hazard and for which the chain of custody has been established and maintained. This material is no longer considered to be MPPEH. Source: (7).

Material Documented as an Explosive Hazard (MDEH): MPPEH that cannot be documented as MDAS, that has been assessed and documented as to the maximum explosive hazards the material is known or suspected to present, and for which the chain of custody has been established and maintained. This material is no longer considered to be MPPEH. Source: (7).

Material Potentially Presenting an Explosives Hazard (MPPEH): Material that, prior to determination of its explosives safety status, potentially contains explosives or munitions (e.g., munitions containers and packaging material; munitions debris remaining after munitions use, demilitarization, or disposal; and range-related debris); or potentially contains a high enough concentration of explosives such that the material presents an explosive hazard (e.g., equipment, drainage systems, holding tanks, piping, or ventilation ducts that were associated with munitions production, demilitarization or disposal operations). Excluded from MPPEH are munitions within the DoD established munitions management system and other hazardous items that may present explosion hazards (e.g., gasoline cans, compressed gas cylinders) that are not munitions and are not intended for use as munitions. Source: (7).

Military Munitions: Military munitions means all ammunition products and components produced for or used by the armed forces for national defense and security, including ammunition products or components under the control of the DoD, the Coast Guard, the Department of Energy, and the National Guard. The term includes confined gaseous, liquid, and solid propellants, explosives, pyrotechnics, chemical and riot control agents, smokes, and incendiaries, including bulk explosives and chemical warfare agents, chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunition, small arms ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, demolition charges, and devices and components thereof. The term does not include wholly inert items, improvised explosive devices, or nuclear weapons, nuclear devices, and nuclear components, other than non-nuclear components of nuclear devices that are managed under the nuclear weapons program of the Department of Energy after all required sanitization operations under the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.) have been completed. (10 U.S.C. 101(e)(4)).

Military Munitions Response Program (MMRP): The MMRP is a program under which munitions responses are conducted. Source: (1)

Mortar: Mortars typically range from approximately 1 inch to 11 inches in diameter or larger, and can be filled with explosives, toxic chemicals, white phosphorus or illumination flares. Mortars generally have thinner metal casing than projectiles but use the same types of fuzing and stabilization. Source: (2).

Munitions Debris (MD): Remnants of munitions (e.g., fragments, penetrators, projectiles, shell casings, links, fins) remaining after munitions use, demilitarization, or disposal. Source: (7).

Munitions and Explosives of Concern (MEC): A term distinguishing specific categories of military munitions that may pose unique explosives safety risks: UXO, as defined in 10 U.S.C. 101(e) (5); DMM, as defined in 10 U.S.C. 2710(e)(2)); or munitions constituents (e.g., TNT, cyclotrimethylenetrinitramine [RDX]), as defined in 10 U.S.C. 2710(e)(3)), present in high enough concentrations to pose an explosive hazard. Source: (7). For the purposes of the MMRP being conducted for the former Fort Ord, MEC does not include small arms ammunition.

Munitions Response: Munitions response means response actions, including investigation, removal actions, and remedial actions, to address the explosives safety, human health, or environmental risks presented by UXO, discarded military munitions (DMM), or munitions constituents (MC), or to support a determination that no removal or remedial action is required. (32 CFR 179.3)

Munitions Response Area (MRA): Any area on a defense site that is known or suspected to contain UXO, DMM, or MC. Examples include former ranges and munitions burial areas. An MRA is comprised of one or more munitions response sites. Source: (7).

Munitions Response Site (MRS): A discrete location within an MRA that is known to require a munitions response. Source: (7).

Operating Grids: Typically, 100-foot by 100-foot parcels of land as determined by survey and recorded by global positioning system (GPS), marked at each corner with wooden stakes. Sites are divided into operating grids prior to the commencement of work by brush removal or MEC sweep teams. A single grid may be occupied by only one team at any time, and the grid system facilitates the maintenance of safe distances between teams. They are identified sequentially using an alphanumeric system (e.g., E-5). Source: (1).

Projectile: An object projected by an applied force and continuing in motion by its own inertia, such as a bullet, bomb, shell, or grenade. Also applied to rockets and to guided missiles. Source: (2).

Range-Related Debris: Debris, other than MD, collected from operational ranges or from former ranges (e.g., target debris, military munitions packaging and crating material). Source: (7).

Remedial Investigation (RI): Process undertaken to determine the nature and extent of the problem presented by a release which emphasizes data collection and site characterization. The RI is generally performed concurrently and in an interdependent fashion with the feasibility study. Source: (3).

Removal Depth: The depth below ground surface to which all ordnance and other detected items are removed. Source: (1).

Small Arms Ammunition: Ammunition, without projectiles that contain explosives (other than tracers), that is .50 caliber or smaller, or for shotguns. Source: (7).

Technology-Aided Surface Removal: A removal of UXO, DMM, or CWM on the surface (i.e., the top of the soil layer) only, in which the detection process is primarily performed visually, but is augmented by technology aids (e.g., hand-held magnetometers or metal detectors) because vegetation, the weathering of UXO, DMM, or CWM, or other factors make visual detection difficult. Source: (7).

Unexploded Ordnance (UXO): Military munitions that: (A) Have been primed, fuzed, armed, or otherwise prepared for action; (B) Have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or materials; and (C) Remain unexploded, whether by malfunction, design, or any other cause. (10 U.S.C. 101 (e) (5)). For the purpose of the MMRP being conducted for the former Fort Ord, UXO does not include small arms ammunition.

UXO-Qualified Personnel: Personnel who have performed successfully in military EOD positions, or are qualified to perform in the following Department of Labor, Service Contract Act, Directory of Occupations, contractor positions: UXO Technician II, UXO Technician III, UXO Safety Officer, UXO Quality Control Specialist, or Senior UXO Supervisor. Source: (7).

UXO Technician: Personnel who are qualified for and filling Department of Labor, Service Contract Act, Directory of Occupations, contractor positions of UXO Technician I, UXO Technician II, and UXO Technician III. Source: (7).

Sources of the Above Definitions:

(1) Non-standard definition developed to describe Fort Ord-specific items, conditions, procedures, principles, etc. as they apply to issues related to the MEC cleanup.

(2) "Unexploded Ordnance (UXO): An Overview", October 1996. DENIX.

(3) Technical Guidance for Military Munitions Response Actions, Environmental and Munitions Center of Expertise Interim Guidance Document (IGD) 14-01, dated December 20, 2013.

(4) Survey of Munitions Response Technologies, June 2006. ITRC (Interstate Technology and Regulatory Council) with ESTCP (Environmental Security and Technology Certification Program) and SERDP (Strategic Environmental Research and Development Program).

(5) Evaluation of Statistical Methodologies used in U.S. Army Ordnance and Explosive Work. September 1999. Ostrouchov, George, Zimmerman, Gregory P., Beauchamp, John J., Federov, Valerii V., and Downing, Darryl J. Prepared by Oak Ridge National Laboratory for the U.S Army Engineering and Support Center.

(6) Institutional Controls: A Site Managers' Guide to Identifying, Evaluating, and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups. US EPA Office of Solid Waste and Emergency Response (OSWER) 9355.0-74FS-P, EPA 540-F-00-005. September 2000.

(7) Department of Defense Manual Number 6055.09-M, Volume 8, February 29, 2008, Administratively Reissued August 4, 2010; Change 1, March 12, 2012.

1.0 Introduction

This Remedial Action Report (RAR) describes the work elements and results for the munitions and explosives of concern (MEC) remedial action conducted at Munitions Response Site (MRS) - Bureau of Land Management (BLM) Units 1, 2, and 3 (Units 1, 2, and 3) (Figure 1) at the former Fort Ord, California. The MEC work conducted at Range 26 was performed by Shaw Environmental prior to soil remediation activities. The work in the remainder of Units 1, 2, and 3 was performed by Gilbane with Shaw Environmental as a subcontractor under the Worldwide Environmental Remediation Services (WERS) Contract # W912DY-10-D-0024 and by KEMRON Environmental Services (KEMRON) with Gilbane as a subcontractor for the U.S. Army Corps of Engineers (USACE) under the WERS Contract # W912DY-10-D-0027, Task Order No. CM 01. The major event milestones of this remedial action are shown in Table 1. This work has been completed in accordance with the:

- *Final Track 3 Record of Decision, Impact Area Munitions Response Area, Track 3 Munitions Response Site, Former Fort Ord, California* (Track 3 ROD; U.S. Department of the Army [Army], 2008),
- *Final Site-Specific Work Plan, Munitions and Explosives of Concern Remedial Action, MRS-BLM Units 1-5, Former Fort Ord, California* (Final Units 1-5 SSWP; Shaw, 2008),
- *Final Work Plan, Remedial Design/Remedial Action (RD/RA), Track 3* (Final RD/RA Work Plan; USACE, 2009), and
- *Final Site-Specific Work Plan, Munitions and Explosives of Concern Remedial Action, Non-Burn Areas, Former Fort Ord, California* (Final Non-Burn SSWP; Shaw, 2010).

In this document, the "project area" does not include the permanent fuel breaks surrounding the units nor the footprint of the 100-foot wide buffer. Subsurface MEC removal within the 100-foot buffer was previously reported in the *Draft Final Impact Area MRA 100-foot Buffer, MEC Remedial Action Technical Information Paper, Former Fort Ord, California* (100-foot Buffer TIP; Gilbane, 2015). This document is provided at Appendix G. The 100-foot buffer is identified in several of the figures, and information about MEC recovered within the buffer within Units 1, 2, and 3 is provided in figures for the purpose of providing complete information.

1.1 Purpose and Scope

This RAR describes the remedial action conducted in MRS-BLM Units 1, 2, and 3, within the Impact Area Munitions Response Area (MRA). The general scope of the remedial action, as defined in the Track 3 ROD (Army, 2008), is to manage "the potential risk to future land users from MEC at the Impact Area MRA."

Track 3 sites are areas at the former Fort Ord where MEC is known or suspected to be present, but MEC investigations have not yet been completed. The Track 3 site, known as the Impact Area MRA, consists of the 6,560-acre portion of the 8,000-acre historical Impact Area that is entirely within the natural resources management area described in the *Installation-Wide Multispecies Habitat Management Plan (HMP) for Former Fort Ord, California* (HMP, [USACE, 1997]) and is currently identified for transfer to the BLM. The Impact Area MRA is designated as a habitat reserve in the Fort Ord Reuse Authority Base Reuse Plan.

The scope of this project, as defined in the Final Units 1-5 SSWP (Shaw, 2008), Final Non-Burn SSWP (Shaw, 2010) and approved field work variances (FWVs), entailed the following:

- Vegetation clearance (manual or mechanical cutting),
- Technology-aided surface MEC removal, and
- Digital Geophysical Mapping (DGM) surveys across Units 1, 2, and 3.

The following additional field work was identified in the *MRS-BLM Units 1, 2, and 3, MEC Remedial Action Technical Memorandum* (Units 1, 2, and 3 TM; KEMRON, 2016), which is provided in Appendix F. This field work was completed and is reported in this RAR:

- subsurface MEC removal in administrative areas where reuse is planned by BLM (Figure 7),
- backfilling of target boxes in 24 grids shown on Figure 7, and
- limited subsurface MEC removal in Unit 3 (a total of 126 subsurface anomalies in the area of interest shown on Figure 8).

An addendum to the Units 1, 2, and 3 DGM Quality Assurance (QA) Report addressing the DGM work is provided at Appendix J.

This RAR details the work completed as part of the MRS-BLM Units 1, 2, and 3 MEC remedial action and provides discussion of the following tasks:

- Mobilization and site setup,
- Vegetation clearance,
- MEC removal area grid and boundary survey,
- Technology–aided surface MEC removal,
- DGM,
- Preparation of a Technical Memorandum (TM), and
- Subsurface MEC removal in selected areas.

1.2 Approval Documents

The work was conducted in accordance with the Final RD/RA Work Plan (USACE, 2009) governing the Track 3 Impact Area MRA. The Final Units 1-5 SSWP (Shaw, 2008) and Final Non-Burn SSWP (Shaw, 2010), detailed the scope and site-specific procedures for the MEC remedial action within the project area. FWVs are included as Appendix A and listed below:

- 03-018 (AR# OE-0626N) - Changed quality control (QC) standards for technology-aided surface MEC removal, increased QC seeding rate from one per four acres to a rate to allow one QC seed per day to be encountered by each Unexploded Ordnance (UXO) team, and updated key sections of the Final Units 1-5 SSWP (Shaw, 2008).

- 03-019 (AR# OE-0626O) - Addressed non functioning range structures in 24 grids in Unit 2 including target boxes, soil backstops, and military targets that precluded 100% completion of surface MEC removal and DGM survey.

- 03-020 (AR# OE-0626P) - Addressed continuation of technology-aided surface MEC removal in Unit 3 in the event of further encounters of 4 inch Stokes mortars or Livens Projectors.

- 005 (AR# OE-0882) - Addressed the possibility for an unknown filler item to be encountered in the subsurface of Unit 3 in the future. Conduct of a limited subsurface removal limited the probability that an unknown filler item would be encountered in the future.

After completing MEC remediation and DGM in the units, the Units 1, 2, and 3 TM (KEMRON, 2016) was prepared providing evaluation of the work completed. The *Range 26 MEC Remedial Action Technical Memorandum, Former Fort Ord, California* (Shaw, 2011) was completed for the MEC remediation and DGM performed at Range 26 to support soil remediation activities. This TM is included in Appendix H. As discussed in Section 11.0 of this document, UXO-qualified personnel support for intrusive work will be provided in all units within the Track 3 Impact Area MRA until all remedial actions are complete.

1.3 Project Personnel and Subcontractors

MEC removal work was performed with qualified UXO technicians who met or exceeded the requirements of *Technical Paper 18, Minimum Qualifications for Personnel Conducting Munitions and Explosives of Concern Related Activities* (Department of Defense Explosives Safety Board [DDESB], 2015), which was the controlling document at the time the work was performed. The key personnel for this project were:

- Senior Unexploded Ordnance Supervisor (SUXOS): Brad Olson (KEMRON)
- UXO Quality Control (QC) Specialist (UXOQCS): Bruce McClain (KEMRON)
- UXO Safety Officer: Val Valdez (KEMRON)
- Contractor QC Systems Manager (CQCSM): Chuck Clyde (Gilbane)
- QC Geophysicist: Alex Kostera (NAEVA)
- Project Manager: Steve Crane (KEMRON)
- Deputy Project Manager: Erin Caruso (Gilbane)
- Task Manager: Kevin Siemann (Gilbane)
- Project Geophysicist: Andrew Gascho (Gilbane)
- The following tasks were subcontracted:
- Mechanical vegetation clearance (Woolery Timber Management)
- Recycling of metallic target debris (A & S Metals)
- Disposal/recycling of munitions debris (MD) (FACT International and Demil Metals)

1.4 Health and Safety

Work performed at the site was conducted and completed in accordance with the *Accident Prevention Plan – Munitions and Explosives of Concern (MEC) Removal and Soil Remediation*

Project, Former Fort Ord, California (ITSI Gilbane Company, 2013). Work was conducted under this plan while an Accident Prevention Plan (APP) was being developed and finalized under KEMRON. Following completion and approval of the *Accident Prevention Plan – Munitions and Explosives of Concern (MEC) Removal and Soil Remediation Project, Former Fort Ord, California* (KEMRON, 2015), work was conducted and completed in accordance with the new plan.

1.5 Report Organization

This RAR was prepared in accordance with the Track 3 RD/RA Work Plan (USACE, 2009) and is consistent with previous RARs for units within the Impact Area MRA at the former Fort Ord. The report also incorporates elements of U.S. Environmental Protection Agency (EPA) guidance for an RAR.

Sections of this RAR are organized as follows:

Section 1.0 Introduction

Section 2.0 Site Background

Section 3.0 Overview of Remedial Action

Section 4.0 Site Preparation

Section 5.0 Analog MEC Removal

Section 6.0 Digital Geophysical Mapping

Section 7.0 Quality Control/Quality Assurance (QC/QA)

Section 8.0 MEC and MD Removal

Section 9.0 Munitions Constituents (MC) Characterization

Section 10.0 Environmental Protection

Section 11.0 Protectiveness Assessment

Section 12.0 References

Appendix A Field Work Variances

Appendix B DD Form 1348-1A (MD and Metal Debris Documentation) from KEMRON led field work

Appendix C Examples of DGM Data Forms

Appendix D USACE Surface Removal Quality Assurance Documentation

Appendix E Explosives Accountability from KEMRON led field work

Appendix F MRS-BLM Units 1, 2, and 3, MEC Remedial Action Technical Memorandum, Former Fort Ord, California (KEMRON, 2016)

Appendix G Draft Final Impact Area MRA 100-foot Buffer, MEC Remedial Action Technical Information Paper, Former Fort Ord, California (Gilbane, 2015)

Appendix H Range 26 MEC Remedial Action Technical Memorandum, Former Fort Ord, California (Shaw, 2011)

Appendix I February 16, 2017 Munitions Assessment Review Board Memorandum regarding non-intrusive assessment of three 4-inch Stokes mortars encountered at Unit 3

Appendix J Addendums to the Units 1, 2, and 3 DGM Quality Assurance (QA) Report (USACE, 2017)

1.6 Applicable or Relevant and Appropriate Requirements

Applicable or relevant and appropriate requirements (ARARs) were outlined in the Track 3 ROD (Army, 2008). The performance of this remedial action was in compliance with the ARARs outlined in that document.

2.0 Site Background

2.1 Site Location

Fort Ord is a former military installation that comprises approximately 46 square miles in northwestern Monterey County, California and is located approximately 120 miles south of San Francisco. Monterey Bay forms the western boundary of the former Fort Ord, and the

Santa Lucia Range bounds the former Fort Ord to the south. The cities of Marina, Seaside, and Salinas are northwest, southwest, and east of the former Fort Ord, respectively. Figure 1 shows the location of the project area in the south western portion of the Impact Area MRA.

Units 1, 2 and 3 are located in the south western section of the Impact Area MRA and fall within the MRS-BLM. Units 1, 2, and 3 are adjacent to the Impact Area MRA boundary (Blue Line Road) to the south and the west. They are bounded to the north and east, respectively, by Watkins Gate Road and Austin/Phoenix Roads. All three units are shown on Figure 1.

2.2 Population, Proximity, and Access

The project area is within the Impact Area MRA, which is currently enclosed by a four- strand barbed wire fence with concertina wire along critical locations. Access is restricted to authorized personnel only. The project area is located on land that is planned to be transferred to the BLM. Danger signs are posted at the perimeters of the Impact Area MRA. Existing access deterrents, such as fencing posted with warning signs approximately every 500 feet along the fencing, discourage, but do not prevent, entry into the area. Personnel from the Fort Ord Base Realignment and Closure (BRAC) office and BLM routinely check the Impact Area MRA fences to ensure that they remain in good condition and to identify/complete needed repairs in a timely manner. The fences are maintained through a services support agreement with the BLM. Potential exposure to MEC by unauthorized persons could occur through intentional trespassing incidents. An *MRS Security Program* (Army, 2016) to mitigate such incidents is currently being implemented by the Army.

2.3 Reuse

The project area is currently designated for transfer to BLM as habitat reserve and development with reserve or restrictions under the HMP (USACE, 1997) which describes special land restrictions and habitat management requirements within habitat reserve areas. Habitat reserve areas support special-status plant and animal species that require implementation of mitigation measures Army cleanup activities identified in the HMP (USACE, 1997) to ensure compliance with the Endangered Species Act and to minimize potential adverse impacts to listed species during Army cleanup activities. Based on information provided by BLM, the reuse of the area as a habitat reserve is anticipated to include a variety of activities including:

- Road and trail management and maintenance,

- Habitat enhancement, including prescribed burning,
- Fuel break management,
- Use of administrative areas,
- Habitat monitoring and educational programs,
- Species-specific monitoring and habitat enhancement, and
- Recreational access on established routes.

2.3.1 Vegetation and Habitat Type

Central maritime chaparral (CMC) is the dominant habitat type within the project area. CMC is a dominant habitat type at Fort Ord and is identified as a protected plant community in the HMP (USACE, 1997). Additionally, limited areas of grassland are present.

The dominant shrub species observed within the project area during the baseline monitoring include chamise (*Adenostoma fasciculata*), shaggy-barked manzanita (*Arctostaphylos tomentosa* ssp. *tomentosa*), sandmat manzanita (*A. pumila*), and silk tassel (*Garrya elliptica*) (Harding Lawson Associates [HLA], 1997 and Tetra Tech, Inc., 2013). These shrub species contribute most of the overall vegetative cover. HMP-listed shrub species present include sandmat manzanita and Monterey ceanothus (*Ceanothus rigidus*). Surveys conducted in 2015 for HMP herbaceous annual species identified populations of Monterey spineflower within all three units, as well as Yadon's piperia in Units 2 and 3, and sand gilia and Seaside bird's-beak within Unit 3 (Burleson Consulting, 2016). Additional Yadon's piperia were observed in Unit 2 in 2017 by the Project Biologist.

Chapter 3 of the HMP (USACE, 1997) describes mitigation measures that must be implemented during MEC investigation and remediation. In addition to the HMP, base closure and reuse activities conducted at the former Fort Ord are required to follow specific protocols approved by the U.S. Fish and Wildlife Service (USFWS) as detailed in multiple Biological Opinions (BOs) (USFWS, 1997, 1999, 2002, 2005, 2007 [amendment], 2011, and 2014). In 2015, the USFWS issued a Programmatic BO that supersedes the previous BOs. The Programmatic BO (USFWS, 2015) contains additional conservation measures and recommendations relating to environmental remediation at former Fort Ord cleanup sites, which are described in further detail in Section 10.0 of this RAR. A new Programmatic BO was subsequently issued in 2017, but did not address this work since it was already completed. Habitat management activities related to the munitions

remedial actions that are required by the HMP and BOs have been conducted for the units. These are also described in further detail in Section 10.0 of this RAR.

2.4 Regulatory Status

Since 1917 until base closure in 1994, Fort Ord primarily served as a training and staging facility for infantry troops. From 1947 to 1974, Fort Ord was a basic training center. The 7th Infantry Division was activated at Fort Ord on October 21, 1974 and was based at Fort Ord until base closure. Fort Ord was selected for closure in 1991. The majority of the soldiers were reassigned to other Army posts in 1993. There is no longer an active Army division stationed at the former Fort Ord.

Fort Ord was placed on the National Priorities List of Superfund sites by the EPA on February 21, 1990, due to evidence of contaminated soil and groundwater. A Federal Facility Agreement (FFA) was signed by the Army, EPA, Department of Toxic Substances Control (DTSC), and the Regional Water Quality Control Board, a part of the California EPA. The FFA established procedures and schedules for conducting remedial investigations (RIs) and feasibility studies (FSs) and requires remedial actions be completed as expeditiously as possible. The former Fort Ord was selected in 1991 for BRAC, and the base was officially closed in September 1994. The Army began investigating and removing MEC at the former Fort Ord after the BRAC listing and a munitions response (MR) RI/FS began in 1998. In April 2000, an agreement was signed between the Army, EPA, and DTSC to evaluate MEC at the former Fort Ord subject to the provisions of the FFA.

Following completion of the *Track 3 Impact Area MRA Munitions Response Remedial Investigation/Feasibility Study, Former Fort Ord, California* (MACTEC, 2007), the Army prepared the Track 3 ROD (Army, 2008), which is the decision document presenting the selected remedial action for MEC in the Impact Area MRA. The remedy was selected following a 60-day public comment period that ended on August 27, 2007, for the *Superfund Proposed Plan Remedial Action is Proposed for Impact Area Munitions Response Area, Track 3 Munitions Response RI/FS* (Army, 2007). The remedy was selected in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986, and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan.

The decision documented in the Track 3 ROD (Army, 2008) is undertaken pursuant to the President's authority under CERCLA Section 104, as delegated to the Army in accordance with Executive Order 12580, and in compliance with the process set out in CERCLA Section 120. The selection of the remedy is authorized pursuant to CERCLA Section 104, and the selected remedy is being carried out in accordance with CERCLA Section 121. The Army and the EPA jointly selected the remedy. The California EPA, as represented by the DTSC, had an opportunity to review and comment on the Track 3 ROD.

2.5 Site Features and History of Military Munitions Use

Since 1917 until base closure in 1994, portions of former Fort Ord were used by cavalry, field artillery, and infantry units for maneuvers, target ranges, and other purposes. Military munitions were fired and used on the facility, including artillery and mortar projectiles, rockets and guided missiles, rifle and hand grenades, land mines, pyrotechnics, bombs, and demolition materials.

Fort Ord was selected in 1991 for decommissioning, but troop reallocation was not completed until 1993, and the base was not officially closed until September 1994. The property remaining in the Army's possession was designated as the Presidio of Monterey Annex on October 1, 1994, and subsequently renamed the Ord Military Community. Although Army personnel still operate parts of the Base, no active Army division is stationed at the former Fort Ord. Since the Base was selected in 1991 for BRAC, site visits, historical and archival investigations, military munitions sampling, and removal actions have been performed and documented in preparation for transfer and reuse of the former Fort Ord property. The Army currently retains the Ord Military Community and the U.S. Army Reserve Center located at the former Fort Ord. The remainder of Fort Ord was identified for transfer to federal, state, and local government agencies and other organizations and, since base closure in September 1994, has been subjected to the reuse process.

The Impact Area MRA is a complex of numerous former military ranges with a variety of historical uses, designs, and characteristics. Over the years, various types of munitions have been used during training activities within the Impact Area MRA including artillery and mortar projectiles, rockets and guided missiles, rifle and hand grenades, land mines, pyrotechnics, bombs, and demolition materials. Select ranges were used for small arms training activities only, while other ranges are characterized as multi-use. In general, the firing points of the ranges were located near the perimeter of the MRA, and firing was directed toward the interior portion of the range complex. Training activities at the Impact Area MRA ceased after the closure of Fort Ord

in 1994. The former ranges within the MRA contain a concentration of similar expended munitions and MEC. The Impact Area MRA is fenced, warning signs are posted, and access is controlled by the Army. The perimeter of the Impact Area MRA is patrolled to detect and prevent trespassing.

The project area is located in the southwestern portion of the Impact Area MRA and the MRS-BLM. The units do not include the 45-foot wide permanent fuel breaks adjacent to and between units. In this document, the project work area does not include the 100-foot buffer.

Several former ranges were identified in the Final Units 1-5 SSWP (Shaw, 2008) to be at least partially contained within the project area. Table 2 provides a list of former ranges which overlap with the project area.

2.6 Summary of MEC-Related Activities and Data Collected Prior to the Remedial Action

MEC investigation work completed within the project area prior to the work addressed in this report resulted in the recovery of two Discarded Military Munitions (DMM) items (an M18 series smoke hand grenade and an M781 practice 40mm cartridge), seven UXO items (an MKI practice 3 inch Stokes mortar projectile, four M6 high explosive anti-tank 2.36" rockets, an MKI 4.5" rocket (model unknown), and a MKI 75mm high explosive projectile and two insufficient data (ISD) items (an M18 series smoke hand grenade and a MKIII point detonating projectile fuze). Table 3 lists the MEC items recovered during previous investigation work within the project area.

3.0 Overview of Remedial Action

3.1 Remedial Action Objectives

The remedial action objective (RAO) for the Track 3 remedy is to protect human health and the environment in a manner that complies with the ARARs. The RAO will be achieved by implementing the selected remedy of Technology-Aided Surface MEC Remediation, with Subsurface MEC Remediation in Selected Areas and Land Use Controls (LUCs). The selected remedy is designed to achieve both substantial risk reduction through MEC remediation and risk management through implementation of LUCs. The selected remedy best balances the risk reduction and associated environmental impacts in supporting the anticipated future use of the

site as a habitat reserve. The presence of MEC in the Impact Area MRA was not identified as a concern in terms of explosives safety risks to ecological receptors.

Further statements regarding the RAOs are provided in the Final RD/RA Work Plan (USACE, 2009):

- "The selected remedy addresses current or potential explosives safety risks to human health and the environment from MEC within the Impact Area MRA."
- "The most significant short term objective is to remove surface MEC and prevent public access until MEC removal is completed."
- "The long-term objective is to make the property safe for required habitat management activities by supplementing the remedial action with appropriate institutional controls … that will effectively manage risk from any potentially residual MEC after the remedial action is completed."

The selected remedy for the Impact Area MRA identified in the Track 3 ROD (Army, 2008) includes the following components:

- Clearing of vegetation, primarily by planned prescribed burning, to provide access for MEC remediation.
- Technology-aided surface MEC removal. The method consists of a technology-aided visual search to identify MEC at the ground surface. Technology aids include Schonstedt magnetometers to facilitate detection of surface MEC in areas where the ground surface is not visible. Recovered MEC would be detonated, using engineering controls.
- DGM to provide a record of anomalies to assist future property users in identifying areas where explosives safety support (e.g., onsite construction support) may be required for activities involving ground disturbance or intrusive work.
- Subsurface MEC removal in selected areas. Areas of subsurface removal include regularly maintained fuel breaks and access roads, a minimum 100-foot buffer area between habitat and development areas, and other areas to address specific risk and/or land use needs. Examples include proposed future habitat restoration sites and areas where there are high density of

- anomalies associated with impact areas where military munitions with sensitive fuzes were fired. Recovered MEC would be detonated, using engineering controls.

- Implementation of LUCs, including MEC recognition and safety training, construction support for ground disturbing or intrusive activities and UXO-qualified personnel support, access management measures including regular security patrols of the Impact Area MRA perimeter and maintenance of fences and signs, helicopter support for future prescribed burns in selected areas for future habitat management purposes, weed abatement support, and property transfer documentation that outlines land use restrictions, including prohibition of unrestricted land use.

3.2 MEC Remedial Action

3.2.1 Remedial Action Chronology

As outlined in the Final RD/RA Work Plan (USACE, 2009), the Final Units 1-5 SSWP (Shaw, 2008), and the Final Non-Burn SSWP (Shaw, 2010), the following field activities were conducted to implement the MEC remedial action within the project area:

- Vegetation clearance within the units,
- Grid and border survey,
- Technology-aided surface MEC removal,
- DGM survey with Real-Time Kinematic (RTK) navigation,
- Subsurface MEC removal in selected areas,
- MEC detonation, and
- MD disposal.

Table 1 provides a summary of major events associated with the remedial action within the project area.

3.2.2 Variations from the Site-Specific Work Plan

Four variances (Appendix A) to the planned methods and areas described in the Final RD/RA Work Plan (USACE, 2009), the Final Units 1-5 SSWP (Shaw, 2008), and the Final Non-Burn SSWP (Shaw, 2010) occurred in response to unanticipated conditions or to improve the efficiency of MEC remedial activities.

3.2.3 Summary of Remedial Action Methods

Vegetation clearance within the Range 26 footprint (Phase I on Figure 2) was started and completed in March 2010. Vegetation clearance in the eastern portions of Units 1, 2, and 3 (Phase II on Figure 2) began in June 2012 to provide containment lines for Units 7 and 10 prescribed burns, and was completed in 2013. After a determination was made that vegetation clearance in the remainder of Units 1, 2, and 3 would be performed mechanically instead of by prescribed burn as initially outlined in the Final Units 1-5 SSWP (Shaw, 2008), vegetation clearance in the remainder of Units 1, 2, and 3 (Phase III on Figure 2) was initiated in June 2014 and was completed in October 2014.

Technology-aided surface MEC removal within Range 26 was started and completed in April 2010. Technology-aided surface MEC removal within Units 1, 2, and 3 began in July 2012 within the containment boundaries for Units 7 and 10 prescribed burns, and the acreage outside of the containment boundaries was ultimately completed in March 2015. Figure 2 shows the extent of surface removal performed within the project area during the three phases of work.

DGM survey within the Range 26 footprint began in April 2010 and was completed in August 2010. DGM survey in the remainder of Units 1, 2 and 3 was completed with vehicle-towed EM61-MK2A arrays from January 2013 until March 2015. The DGM survey, outside of that performed for Range 26 remediation (Phase I), was completed in two separate phases: 1) containment boundaries for Units 7 and 10 prescribed burns (Phase II); and, 2) remainder of Units 1, 2, and 3 not included as part of the Units 7 and 10 prescribed burns containment boundaries (Phase III). Figure 3 shows the extent of DGM survey performed within the project area.

Figure 7 documents areas where subsurface MEC removal was performed as part of the Track 3 remedy. Additionally, Figure 4 shows roads where subsurface MEC removal was performed prior to the completion and signature of the Track 3 ROD (Army, 2008), and areas within Units 1, 2, and 3 that had separate soil remedial actions conducted at Ranges 23, 26 and 27. This work is further documented in the *Final (revised) Remedial Action Completion Report, Site 39 Inland Ranges Habitat Reserve, Former Fort Ord, CA* (Gilbane, 2014).

Subsurface MEC removal was completed in administrative areas at the request of BLM following an Army-BLM Joint Inspection Summary of Units 1, 2, and 3 (Figure 7). The Units 1, 2, and 3 TM (KEMRON, 2016), included in Appendix F, contains details regarding the Joint

Inspection Summary. Figure 7 also shows 24 grids in Unit 2 where range structures including target boxes and military targets were removed and target boxes were backfilled to allow completion of surface MEC removal.

Figure 8 shows the area of interest (AOI) in Unit 3 where a limited subsurface removal was performed to reduce the probability that an unknown filler item would be encountered in the future. Prescribed burns are required in Units 1, 2, and 3 as a mitigation for impacts to the habitat resulting from mastication, and the potential existed for Stokes mortar projectiles and Livens Projectors to remain in the shallow subsurface in Unit 3. Any additional such items were deemed likely to contain screening smoke fill. USACE, Sacramento District, identified as a concern that the potential presence of these unknown filler items in the shallow subsurface could result in an item functioning during a prescribed burn. Although the possibility of an item functioning was deemed as unlikely, an AOI with regard to the potential presence of shallow subsurface unknown filler items was delineated. USACE recommended removal of subsurface anomalies that could represent these unknown filler items to a depth of 12 inches. Based on the expected millivolt (mV) response of a 4.2 inch mortar projectile (a close proxy item for a 4 inch Stokes mortar projectile) at a maximum depth of 12 inches (250 mV), a total of 126 subsurface anomalies were investigated and removed in the AOI. Three MEC items were determined to be 4-inch Stokes mortar and were non-intrusively assessed to confirm they contained screening smoke filler. Details of this assessment are included in Appendix I.

4.0 Site Preparation

4.1 Vegetation Clearance

Vegetation clearance within the Range 26 footprint was started and completed in March 2010. Vegetation clearance in Units 1, 2, and 3 began in June 2012 to provide containment lines for Units 7 and 10 prescribed burns, which were completed in 2013. After a determination was made that vegetation clearance in the remainder of Units 1, 2, and 3 would be performed mechanically instead of by prescribed burn as initially outlined in the Final Units 1-5 SSWP (Shaw, 2008), vegetation clearance in the remainder of Units 1, 2, and 3 was initiated in June 2014 and was completed in October 2014. Vegetation clearance teams, with escort support from UXO-qualified personnel, removed vegetation from the units to a height of six inches or less.

Mechanical equipment was used to cut the vegetation. In areas with dense vegetation that obscured visual inspection of the ground surface, a first cut was made to a height between 18 and 24 inches above the ground. After visual inspection for MEC by UXO-qualified personnel, a second cut was made to a height of six inches or less above ground. In areas with medium-to-light vegetation where the ground surface could be observed before cutting, the vegetation was cut in one stage to a height of no more than six inches above ground. Manual tools (e.g., chain saws and trimmers) were used in areas where the mechanical cutter could not gain access and to trim tree branches. Representative photographs of mechanical vegetation clearance are included as Photographs 1 and 2.

Manually cut vegetation was either removed and chipped or masticated on site. Mechanically cut vegetation was left on site but was reduced to the maximum extent possible to minimize visual impairment of the surface of the site.

UXO-qualified personnel provided UXO escort support during vegetation clearance, conducting a visual survey of the ground surface with the aid of Schonstedt magnetometers. When MD or suspected MEC was encountered, vegetation clearance personnel would stop operations until UXO-qualified personnel could determine if any hazard was associated with the item and remove the item if necessary.

4.2 Debris and Target Removal

During and after vegetation clearance activities, targets and other range-related debris (RRD) were removed from the project area. Quantity of recovered RRD was recorded on a per grid basis. Metal debris was recycled at a local recycler, and other debris was disposed of at a local municipal landfill.

4.3 Grid and Border Survey

UXO personnel, performing anomaly avoidance, established a 100-foot by 100-foot grid system across the project area. The grid system was tied into the Fort Ord Master Grid System. The grid nodes were marked with wooden stakes, each labeled with a unique identification marked on the southwestern corner stake.

5.0 Analog MEC Removal

Analog methods were used for surface MEC removal within the project area. Table 4 and 6 list the MEC items recovered during analog MEC surface removal. These tables also include items removed during analog and DGM-based subsurface MEC removal.

5.1 Technology-Aided Surface MEC Removal

Technology-aided surface MEC removal within Range 26 was started and completed in April 2010. Technology-aided surface MEC removal within Units 1, 2, and 3 began in July 2012 within the containment boundaries for Units 7 and 10 prescribed burns, and the acreage outside of the containment boundaries was ultimately completed in March 2015 (Figure 2). The objective of the surface MEC removal was twofold: 1) to remove surface MEC to meet the selected remedial alternative of the Track 3 ROD (Army, 2008), and 2) to remove metallic debris including MEC, MD, and other debris which could impact the DGM survey results. Representative photographs of surface MEC removal are included as Photographs 3 and 4.

During technology-aided surface MEC removal, UXO teams utilized Schonstedt magnetometers in addition to visual survey for MEC. UXO personnel walked in 5-foot wide parallel lanes across the removal grid to achieve complete Schonstedt and visual coverage. In general, metallic debris greater than 2 inches in any dimension identified on the ground surface was removed from the project area. Material Potentially Presenting an Explosive Hazard (MPPEH) and MEC were treated in accordance with standard operating procedures. The easting and northing location of MPPEH was recorded from the southwest grid corner of the grid to acquire the geo-referenced location at which it was found. MD was tracked by weight on a grid-by-grid basis. Surface MEC removal in the 24 grids in Unit 2 shown in Figure 7 was not completed until target boxes, soil backstops, and military targets were removed and target boxes were backfilled.

A total of 137 MEC items were found during surface MEC removal. All 137 MEC items were classified as UXO. MEC items removed as part of this operation are summarized in Tables 4 and 6.

5.2 Subsurface MEC Removal

Subsurface MEC removal conducted within Units 1, 2, and 3 is shown on Figure 4. Areas shown on Figure 4 include administrative areas where subsurface MEC removal was performed after

the development and signature of the Track 3 ROD (Army, 2008), roads where subsurface MEC removal was performed prior to the development and signature of the Track 3 ROD (Army, 2008), and ranges where soil remediation work was conducted. A limited DGM-based subsurface MEC removal was conducted in Unit 3 to address the potential for items with unknown fillers to remain in the shallow subsurface. This area of interest is shown on Figure 8. A total of 25 MEC items were removed during all phases of subsurface MEC removal. MEC items removed as part of this phase of work are summarized in Tables 4 and 6. Three MEC items removed during 100-foot buffer operations are included in Tables 4 and 6 as well. Subsurface MEC removal within the 100-foot buffer in Units 1, 2, and 3 is detailed further in the 100-foot Buffer TIP (Gilbane, 2015).

6.0 Digital Geophysical Mapping

DGM survey operations were conducted across the entirety of accessible areas within Units 1, 2, and 3. The DGM surveys were conducted with a vehicle-towed array consisting of three EM61-MK2A sensors, supported by single hand-pulled EM61-MK2A units. The towed array was used to obtain data over all accessible areas within the project area while the single units were utilized primarily for fill in. Figure 3 shows the results of DGM towed array mapping, including that performed at Range 26 prior to soil remediation activities. Measurement quality objectives were met and QC/QA processes were implemented in accordance with the Final Units 1-5 SSWP (Shaw, 2008), Final Non-Burn SSWP (Shaw, 2010) and FWV 03-018. Data gaps visible on Figure 3 are the result of obstacles preventing access to DGM surveys such as gullies, berms, and individual trees or stands of oak trees. Data gaps include the footprints of target boxes addressed in FWV-03-019, which were backfilled following completion of DGM survey. Representative photographs of DGM survey are included as Photographs 5 and 6.

A DGM survey in portions of Units 1 and 2 was performed under the Final Non-Burn SSWP (Shaw, 2010) for Range 26 and is documented in the *Range 26 Munitions and Explosives of Concern, Remedial Action, Technical Memorandum, Former Fort Ord, California* (Shaw, 2011).

Subsurface MEC removal utilizing DGM data within the 100-foot buffer was completed within the western boundaries of Units 1, 2, and 3 under the Final Non-Burn SSWP (Shaw, 2010) and is documented in the 100-foot Buffer TIP (Gilbane, 2015). DGM survey operations are discussed further in the following sections.

6.1 DGM Surveys

DGM surveys were used as the primary method to record the presence of subsurface anomalies. A DGM survey of a portion of 16 grids, or 1.8 acres, within Unit 1 to address an area in the vicinity of Range 26 where digital data was determined to be missing was completed in October 2017.

6.1.1 Instrumentation

As described in previous sections, EM61-MK2A sensors (towed array and single units) were utilized to obtain DGM data at the project area. A Leica RTK global positioning system (GPS) was used in conjunction with the EM61-MK2A sensors for navigation data.

6.1.1.1 EM61-MK2A

The EM61-MK2A is a four-channel, high-sensitivity time delay electro-magnetic sensor designed to detect shallow ferrous and nonferrous metallic objects with good spatial resolution and minimal interference from adjacent metallic features. The EM61-MK2A consists of two 1- by 0.5-meter rectangular coils stacked 40 centimeters (cm) apart with the source/receiver coil located below a second receiver coil. A square wave electro-magnetic pulse is generated with "time on" (positive and negative) and "time off" cycles. This induces subsurface eddy currents with an associated secondary magnetic field. The decay of the secondary magnetic fields is measured during "time off" cycles and stored as a millivolt response. By measuring the decay at "late times," the system can distinguish between natural earth materials and buried metal (ferrous and nonferrous) as the secondary field in metallic objects decays at a much slower rate than earth materials. Although the EM61-MK2A is capable of measuring a differential, calculated as the voltage difference between the top and bottom coils, for this project, data were recorded at four time gates from the bottom coil. The responses at these four specified time gates are recorded and displayed by an integrated system data logger.

6.1.1.2 Leica GPS

RTK GPS uses a base station that is set up based on a known position. Once the base station is established, it determines its location using satellites and then applies a correction based on the offset from the known coordinates at the location. This correction is then used by a rover that is in direct communication with the base station through a radio link. RTK GPS is capable of taking survey-grade measurements in real time and providing immediate accuracy to within 1 to 4 cm.

A permanent base station located within Ranges 43-48 and maintained by the USACE was used for the project area operations.

6.1.2 Data Collection Procedures

EM61-MK2A surveys utilized the four time gate readings from the bottom coil. Readings were sampled at a minimum rate of 10 readings per second. GPS readings were logged at a rate of 1 reading per second. All data collection activities were recorded in field logs and personal digital assistants and later synchronized into the project database. The field notes were monitored by data processors and the QC Geophysicist and are included in the data delivery forms. As discussed above, a combination of two different data collection modes were employed at the project area using the EM61-MK2A. These include the towed array and single unit manual systems.

6.1.2.1 Towed Array

The towed array system consisted of three EM61-MK2A coils mounted on a wheeled platform. The three units were mounted in parallel, wide end forward, such that the center-to-center coil spacing was 2.0 feet, and the bottoms of the coils were set at the standard Geonics height of 42 cm above the ground. The wheeled platform was pulled with a bulldozer. Survey lanes were marked using a biodegradable foam-marking system mounted to the bulldozer. The EM61-MK2A and GPS data were streamed together and recorded using Geometrics MagLogNT software. Data collection on the towed array was controlled remotely by a wireless transmitter from a remote computer. This allowed the tractor or bulldozer driver to concentrate on coverage. The remote computer was operated by a field geophysicist. The remote computer controlled the functions of the field computer mounted to the towed array system. The remote computer operator monitored the data collection.

6.1.2.2 Single Unit/Manual

A single unit, consisting of one EM61-MK2A mounted on wheels and manually pulled, was primarily used for filling in data gaps caused by surface obstructions (tree stumps, logs, etc.) and gaps caused by inconsistent towed array survey paths. Data were recorded using a standard field data logger controlled by the operator and RTK GPS was used for navigation. These data were then appended to the appropriate dataset to fulfill the measurement quality objective (MQO) requirements.

6.1.2.3 Daily Functional QC Checks

Instrument tests were performed on a daily basis to ensure the instruments met the project QC requirements. As described in project quality control documents, the following instrument tests were performed:

- Static Background Test
- Static Spike Test
- Personnel Test
- Cable Shake Test
- Repeat Data/Lag Line
- Static GPS Location Test
- Dynamic GPS Location Test (added)

These tests were performed at the beginning and end of each day the instruments were in use. If one of the instruments was not working properly, then the field crew would resolve the issue before beginning the survey. If it was determined that an instrument was not working properly at the end of the day, then the field teams notified the QC Geophysicist, and proper steps were taken to verify that the survey data met project QC standards.

In addition to the first six standard tests, two dynamic GPS location tests were conducted. One test consisted of placing a hitch-ball in the field area that was to be surveyed. The location of the hitch-ball was measured with GPS prior to obtaining data. The hitch-ball was run over by the EM61-MK2A system several times in one day. After the data were processed, the location was checked to verify that the location was within specification (2 feet).

6.1.3 Data Processing

Geophysical data were processed using Geosoft's Oasis Montaj and vendor-supplied software. Oasis Montaj processing included several steps:

1. Transforming raw data to American Standard Code for Information Interchange (ASCII) xyz files: Using vendor-supplied software, data were converted from the native file format to ASCII data files suitable for import into Oasis Montaj.

2. Initial data review: Once raw xyz files were imported into Oasis Montaj, the coordinates were converted to the project coordinate system. Data coverage and quality were assessed by

3. the data processors. If it was determined that data quality and coverage were acceptable, then the data proceeded to the next step. If coverage and/or data quality objectives were not met, then field teams were sent to either fill in data gaps or re-collect data where necessary.

4. Correcting for instrument latency: Using the results of the daily repeat data test, geophysical data were shifted to account for the time lag inherent in the data logging system.

5. Leveling data: Data were then leveled to the same background values removing the effects of instrument drift. The leveled data were added together to create the 4 channel sum.

Data processing procedures remained consistent for the project area. Data processing activities were logged in data processing forms. A detailed description of the processing steps was outlined in the project quality control documents.

6.1.4 Data Delivery

Survey data were broken down into separate grids and/or grid blocks prior to delivery. The delivery schedule was consistently met throughout the project. Exceptions were noted on the processing forms, and the QA Geophysicist was informed. Raw and processed data were submitted as one package within five days of data collection. Raw data deliveries included the raw data in binary format, raw data in ASCII xyz format, and the field notes saved in portable document format form. Processed data included the processed data in ASCII xyz format, the final targets lists, and the appropriate data processing forms. Examples of the data forms included in the data delivery are contained in Appendix C.

6.2 Measurement Quality Objectives

The DGM surveys for the project area were conducted with Category A and B MQOs based on the post-DGM activities planned for the site.

As part of the MQOs specified in the Final Units 1-5 SSWP (Shaw, 2008) and the Final Non-Burn SSWP (Shaw, 2010), the following items were monitored throughout the project:

- Background noise
- Mean speed
- Along track spacing
- Across track spacing

- Instrument latency corrections
- Data leveling
- Systematic noise
- Anomaly selection
- Positioning errors
- Known location QC items
- Blind seed/QC items
- Reacquisition

The geophysical QC plan required the QC Geophysicist to monitor all of the MQOs. The QC Geophysicist reviewed every grid; and if there were any aberrations to the MQOs, then actions were taken to assure that the specific metric was corrected before passing the grid. These actions were documented in weekly QC reports to the USACE QA Geophysicist. During the project area surveys, the USACE QA Geophysicist reviewed grids after they passed geophysical QC. Any comments or questions were addressed for specific grids, and the issues were resolved between the Project Geophysicist and USACE QA Geophysicist. The *Units 1, 2, and 3 Final Quality Assurance Report, Digital Geophysical Operations*, is included as an appendix to the Units 1, 2, and 3 TM (KEMRON, 2016). The TM is provided in Appendix F

6.3 Subsurface MEC Removal

DGM-based and analog subsurface MEC removal was conducted within Units 1, 2, and 3. Subsurface MEC removal was conducted in the following areas:

- Roads within Units 1, 2 and 3 where subsurface MEC removal was performed prior to the development and signature of the Track 3 ROD (Army, 2008) (Figure 4),

- Subsurface MEC removal in administrative areas where reuse is planned by BLM (Figures 4 and 7), and

- A limited subsurface MEC removal in Unit 3 to address the potential for unknown filler items to remain in the shallow subsurface was performed (Figure 8). 126 anomalies at 250mv were selected for intrusive investigation. Intrusive investigation and removal of these anomalies to a depth of one foot was conducted in January and February 2017 per procedures described in FWV-005. Three items from the investigation were determined

- to be 4-inch Stokes mortars and were non-intrusively assessed to confirm they contained screening smoke filler. The remainder of items investigated and removed included MD and Other Debris (OD) that met the 250mV threshold. Further detail regarding the procedures for this investigation is included in Appendix A.

DGM data was reviewed to ensure the data met Category A standards in areas where DGM-based subsurface MEC removal was performed. The performance objective for Category A DGM surveys is to locate all MEC and MEC-like targets to the depths demonstrated during the *Ordnance Detection and Discrimination Study* (ODDS) (Parsons, 2002) plot surveys. The measurement quality objective for the Category A surveys are described in project quality documents. Twenty-two MEC items were encountered and removed during subsurface MEC removal activities performed in administrative areas, preparation for soil remediation and during the limited subsurface MEC removal performed to remove items that had the potential to be unknown filler items. These items are included in Tables 4 and 6.

Three MEC items were encountered and removed during subsurface MEC removal activities conducted in the 100-foot buffer within Units 1, 2, and 3. Subsurface MEC removal within the 100-foot buffer in Units 1, 2, and 3 is detailed further in the 100-foot Buffer TIP (Gilbane, 2015).

7.0 Quality Control/Quality Assurance (QC/QA)

This section discusses the QC and QA procedures that were used at the project area.

7.1 QC

QC is conducted by the Contractor. All QC measures were conducted by the UXOQCS and by the QC Geophysicist. A discussion of the pertinent QC measures and procedures is included in the following sections.

7.1.1 Analog QC

7.1.1.1 Field Activities

During surface removal operations in Units 1, 2 and 3, the UXOQCS was responsible for visually observing teams and conducting periodic spot checks to ensure grids were receiving complete coverage during the surface removal phase. The UXOQCS performed analog QC

survey of at least 10% of completed surface MEC removal grids. All grids passed 10% analog QC surveys performed by the UXOQCS.

Additionally, surface blind seeds were emplaced by the UXOQCS before and during technology-aided surface removal field operations. All surface blind seeds were located in the field by the UXO teams.

7.1.1.2 Database Activities

The UXOQCS reviewed every entry received from personnel in the field during each phase of work prior to entry in the database. Each entry was reviewed for completion of field QC, MEC and MD nomenclature, completion of a given grid, and ultimate disposition of MEC items.

7.1.2 DGM QC

The DGM QC standards and procedures were outlined in the Final Units 1-5 SSWP (Shaw, 2008), Final Non-Burn SSWP (Shaw, 2010), FWV 03-018, and subsequent project quality documents. For the limited subsurface MEC removal in Unit 3 to address the potential for unknown filler items to remain in the shallow subsurface, a modified DGM QC process was implemented. This modified process is discussed further in Appendix J.

The QC Geophysicist was responsible for planning and executing QC oversight of geophysical activities and ensuring compliance with geophysical QC requirements. Specifically, the QC Geophysicist was responsible for the following:

- Reviewing and approving the qualifications of geophysical staff,
- Planning and ensuring the acceptable performance and completion of all geophysical QC activities,
- Reviewing the geophysical QC and DGM data, target lists, and dig results as specified in the Final Units 1-5 SSWP (Shaw, 2008), Final Non-Burn SSWP (Shaw, 2010), and subsequent updates,
- Establishing the known and blind seed item and location control program,
- Identifying quality problems and verifying that appropriate corrective actions were implemented for geophysical activities, and

- Ensuring that the requisite geophysical QC records, including submittals, were generated and retained as prescribed.

In order to keep track of weekly events and statistics, a weekly QC report was delivered to the Project Geophysicist and the QA Geophysicist. This included all pertinent information for the week as well as cumulative information about the project including, but not limited to, information such as grids surveyed, personnel, average acreage per day, and QC blind seeds located.

The QC Geophysicist had daily access to all geophysical QC and DGM data and was on site intermittently as needed after the completion of the initial inspections for geophysical activities. He was also on site as needed for meetings and seeding. The QC Geophysicist reported to the CQCSM and supported the UXOQCS.

7.2 Quality Assurance

QA is conducted by the USACE Ordnance and Explosives (OE) Safety Specialist and the USACE QA Geophysicist.

7.2.1 Analog Quality Assurance

USACE Surface Removal Quality Assurance Documentation is provided in Appendix D.

7.2.2 DGM Quality Assurance

The TM for Units 1, 2 and 3 is provided in Appendix F. The *Units 1, 2, and 3 Final Quality Assurance Report, Digital Geophysical Operations*, is included as an appendix to the TM for Unit 1, 2, and 3. The TIP for the Impact Area MRA 100-foot Buffer is provided in Appendix G. Two addendums to the *Units 1, 2, and 3 DQM Quality Assurance (QA) Report* (USACE, 2017) are included in Appendix J. All DGM data for Units 1, 2 and 3 has been reviewed and approved by the USACE QA Geophysicist.

7.2.3 Corrective Action Requests

During the course of the project area field operations, the USACE issued no Corrective Action Requests (CARs).

8.0 MEC and MD Removal

This section provides summaries of the MEC and MD removed from the project area. Table 3 provides data for the MEC item recovered within the project area during previous investigations.

8.1 Remedial Action

Statistical information for the Units 1, 2 and 3 MEC remedial action was recorded, tracked, and reported by removal grid, individual item, and date.

The cumulative results for the remedial action are provided in Tables 5 and 7.

8.1.1 MEC Removal

MEC was recovered and subjected to detonation during the course of the project RA. As shown in Table 4, a total of 137 MEC items were found and removed during surface MEC removal operations for the project area. MEC removal within the Impact Area MRA 100-foot buffer resulted in the location and removal of three MEC items. Twenty two MEC items were removed as part of subsurface removal operations other than those performed within the Impact Area MRA 100-foot buffer.

A summary of the type and quantity of MEC recovered during the RA is provided in Table 6.

8.1.2 MD Removal

Recovered MD was characterized by weight on a grid-by-grid basis. Figure 6 summarizes the estimated weight of MD removed from each removal grid. A total estimated quantity of MD removed during the RA is provided in Table 5.

MD and RRD were initially classified as MPPEH. Following initial classification, the MPPEH was certified by the SUXOS, UXOQCS, and USACE OE Safety Specialist as either material documented as safe (MDAS) or material documented as an explosive hazard (MDEH). All MDEH was detonated as described further in Section 8.1.3. All MDAS was certified free from explosive material, and stored in lockable roll-off containers. All MDAS was demilitarized as appropriate. MDAS was inspected, certified and transported to a recycling facility. DD Form 1348-1A documentation accompanied the MDAS. A DD Form 1348-1A for this project is provided in Appendix B. Additional MDAS from other Fort Ord MEC sites is included in the total amount of MD documented in Appendix B.

8.1.3 Detonation of Munitions and Explosives of Concern

During the course of the Units 1, 2 and 3 remedial action, 159 MEC items were destroyed by detonation. Three MEC items from the 100-foot buffer work were also destroyed by detonation during the period that work was performed. Explosives Accountability forms with dates of demolition operations are included in Appendix E. All procedures for demolition operations included in the Final Units 1-5 SSWP (Shaw, 2008), Final Non-Burn SSWP (Shaw, 2010) and in periodic updates were followed. All items were destroyed by detonation, and details, such as the date and result of this operation, have been reported in the Fort Ord Military Munitions Response Program (MMRP) database.

8.1.4 Disposition of Munitions Debris

The MDAS was transported to FACT International and Demil Metals for smelting and eventual recycling. DD Form 1348-1A documentation accompanied the MDAS. A DD Form 1348-1A for this project is provided in Appendix B.

8.2 Conceptual Site Model

The distribution of all MEC items found and removed as part of this remedial action within Units 1, 2, and 3, as well as the items recovered prior to the RA, is shown on Figure 5. The observed distribution of surface and subsurface MEC throughout Units 1, 2, and 3 is consistent with the expected distribution within these units based on historical information. Unit 1 includes a portion of Range 27. Units 1 and 2 include portions of the range fan of Range 26. Unit 2 also includes portions of range fans of Ranges 24 and 25. Unit 3 includes portions of the range fan of Range 23. Although these ranges were primarily used for small arms training just prior to the closure of Fort Ord, there are indications that these ranges were probably used for mixed use training earlier. The MEC items found and removed from Units 1, 2, and 3 included projectiles ranging in size from 37mm to 75mm, a Livens Projector, practice, smoke and fragmentation hand grenades, 2.36” high explosive anti-tank rockets, a 4.5” high explosive barrage rocket, and illumination signals.

Surface MEC removal and DGM data were evaluated in the Units 1, 2, and 3 TM (KEMRON, 2016) (Appendix F). Additional subsurface MEC removal was performed following completion of the TM (Appendix F) based upon recommendations in that document. This subsurface MEC removal included work performed in administrative areas, as well as a limited subsurface MEC removal in Unit 3 (a total of 126 subsurface anomalies in the AOI shown on Figure 8). Both a

Livens Projector and Stokes mortars were located during surface MEC removal in a portion of Unit 3. All were determined to be smoke filled. Subsurface anomalies to a depth of twelve inches within the AOI shown on Figure 8 which were potentially Livens Projectors or Stokes mortars were removed.

Munitions with sensitive fuzes-were not expected in Units 1, 2 and 3. Units 1 and 2 include portions of the range fan of Range 26. Unit 2 also includes portions of range fans of Ranges 24 and 25. Unit 3 includes portions of the range fan of Range 23. The completion of a technology-aided surface removal of MEC in Units 1, 2, and 3 did not result in the removal of any MEC items considered to have sensitive fuzes. During the munitions response described in this TM, no evidence was reported, including types of munitions debris (MD), that indicates the presence of munitions associated with sensitive fuzes in the units.

Subsurface MEC removal was previously performed in the 100-foot buffer in Units 1, 2, and 3. The TIP addressing this work is included in Appendix G. Work performed at Range 26 was evaluated in the *Range 26 MEC Remedial Action Technical Memorandum, Former Fort Ord, California* (Shaw, 2011). The TM addressing this work is included in Appendix H. There are no further recommendations other than those included in the Final 100-Foot Buffer and the Units 1, 2, and 3 TMs.

9.0 Munitions Constituents (MC) Characterization

9.1 Previous Site Characterization

Explosive ordnance target areas located within the Impact Area MRA were sampled as part of the Site 39 RI. Results are presented in the *Final, Basewide Remedial Investigation/Feasibility Study, Fort Ord, California* (HLA, 1995). Based on the available information at that time, a biased sampling program was developed to focus on the target areas, which were the areas most likely to contain detectable amounts of ordnance-related chemical residues and metals. Areas noted as likely to contain detectable amounts of ordnance-related chemical residues and metals within Units 1, 2 and 3 were Historical Areas (HAs) 23, 26 and 27. Soil remediation in specific areas identified in the Site 39 ROD Amendment including HAs 23, 26, and 27, occurred with appropriate UXO support as described in the *Final Remedial Action Completion Report, Site 39 Inland Ranges Habitat Reserve, former Fort Ord, California* (Gilbane, 2014).

9.2 Reconnaissance

Reconnaissance for Units 1, 2, and 3 (except for HAs where soil remediation had been completed) was conducted in August through October 2015. Features mapped and recorded with a GPS as a general field practice across all site reconnaissance areas include targets, berms, craters or mounds, MD, trash pits, debris, and RRD. The data collected were evaluated to determine location of soil samples required to further characterize an area with possible soil contamination. Further detail regarding reconnaissance as part of Basewide Range Assessment (BRA) within Units 1, 2, and 3 is included in the *Draft Sampling Results Technical Memorandum Basewide Range Assessment Investigation Site 39 Units 1, 2, 3, 7, 10, 33, and Watkins Gate Burn Area North and South Former Fort Ord, CA* (KEMRON, 2017).

9.3 Site Characterization

Prior to the initiation of field operations, UXO field personnel were trained to recognize and report evidence of potential soil contamination. Any such evidence was noted within the project area and was incorporated into the BRA evaluation of the units. Areas characterized for soil remediation include berms, craters, and areas with little or no vegetation.

9.4 Observations of Evidence of Potential Soil Contamination

Basewide Range Assessment soil sampling was performed in portions of Units 1, 2 and 3 in February and March of 2016. No explosives were detected in any samples. Lead was present but all detected lead was less than the 225 mg/kg remediation threshold. Results are included in *Draft Sampling Results Technical Memorandum Basewide Range Assessment Investigation Site 39 Units 1, 2, 3, 7, 10, 33, and Watkins Gate Burn Area North and South Former Fort Ord, CA* (KEMRON, 2017). The recommendation included in this document was for No Further Action in Units 1, 2 and 3.

10.0 Environmental Protection

10.1 Description of Impacts and Mitigation Measures

The project area is within the Natural Resource Management Area which is designated for transfer to BLM as undeveloped habitat reserve as described in the HMP (USACE, 1997). The HMP describes special land restrictions and habitat management requirements within habitat

reserve areas. Habitat reserve areas support plant and animal species protected under the Endangered Species Act; implementation of mitigation measures identified in the HMP are required to minimize potential adverse impacts to listed species. Vegetation in the project area consists primarily of CMC and contains numerous species listed as protected in the HMP. Please refer to Section 2.3.1 for a description of the vegetation and HMP species present within these units.

Mitigation measures to reduce impacts to protected species during MEC remedial actions are described in the HMP (USACE, 1997), the BOs (USFWS, 1997, 1999, 2002, 2005, 2007 [amendment], 2011, and 2014), and the Programmatic BO (USFWS, 2015). Mitigation and other environmental protection measures that were implemented during this project are summarized below:

Minimize Disturbance Associated with MEC Removal: Disturbances were limited to those required for the above-mentioned activities. As required by the HMP, existing roads were used with the exception of where it was necessary to traverse the site using tracked vehicles in order to remove piles of debris, remove vegetation, and conduct the DGM portion of the field work. Additionally, access roads, staging areas, and other appurtenant facilities were sited to avoid impacts to HMP plant and wildlife species.

Avoid Disturbance of HMP Annual Plant Populations: Populations of sand gilia, Monterey spineflower, Seaside bird's-beak, and Yadon's piperia were identified within openings in the CMC in Units 1, 2, and 3 (Burleson Consulting, 2016) (See Section 10.2 Biological Monitoring). While MEC removal and DGM activities were necessary within the HMP annuals plant population areas, no equipment or personnel were permitted within these areas from approximately March (approximate time of germination) through June (approximate time of seed-set) for Monterey spineflower and sand gilia, and through approximately September for Seaside bird's-beak and Yadon's piperia.

Conduct Employee Education Program: Training for all supervisors and field personnel was conducted by the Project Biologist. Any new personnel also received biological training prior to working on the site. Training included information on rare, threatened, and endangered species on the site, including a description of the species, their protected status, a list of measures to be implemented to avoid and reduce impacts to these species and their habitat, and contact information to report unforeseen impacts to HMP species. Additionally, a Habitat Checklist was

prepared by the Project Biologist prior to each activity that outlined specific avoidance and minimization measures, which were communicated to the project supervisors prior to work initiation.

Minimize Impacts to Black Legless Lizard: Supervisors and field personnel were trained during the Employee Education Program to identify black legless lizard, and were informed of the potential for this species to occur within the project site and the established protocol if any individuals were encountered. However, no black legless lizards were observed during the course of this work.

Minimize and Compensate for Impacts to California Linderiella, California Tiger Salamander, and California Red-legged frog: Supervisors and field personnel were trained during the Employee Education Program to identify California Tiger Salamander and California Red-legged frog, and were informed of the potential for these species to occur within the project site and the established protocol if any individuals were encountered. However, no California Tiger Salamanders or California Red-legged frogs were observed during the course of this work.

Invasive Weed Control: In order to reduce the spread of invasive weeds, existing roads were used to the greatest extent feasible. Equipment, vehicles, and gear were required to be cleaned daily or before moving out of the area within areas identified to be highly invaded with pampas grass (*Jubata cortideria*).

Erosion Control: To reduce erosion concerns normal vehicle access was restricted to existing roads and established access routes. Tracked vehicles were used to conduct vegetation removal and DGM surveys over the site. KEMRON monitored the work site for potential erosion problems and a final inspection was conducted by the Project Biologist.

10.2 Biological Monitoring

Prior to the initiation of work, baseline studies were conducted within the project area to document the location and abundance of HMP shrub and annual plant species and habitats; the results of these surveys are presented in the *1997 Annual Habitat Monitoring Report, Former Fort Ord, Monterey, California* (HLA, 1997) and the *2012 Biological Monitoring Report for Units 2, 3, 6, 10; Units 11, 12, 4, and 23; and Units 14 and 19, Former Fort Ord* (Tetra Tech, Inc., 2013) . Follow-up monitoring was conducted by Burleson Consulting in 2015; results of these surveys are presented in the *2015 Biological Monitoring Report BLM Area B, Subareas A,*

B, B-3 East, B-3 West, and C, and Units 05, 13, and 20; Units 01 West, 02 West, and 03 West; Units 02 East and 03 East; Units 15, 21, 32, and 34; and 2015 Annual Wetland Vegetation and Wildlife Monitoring Report, Former Fort Ord (Burleson Consulting, 2016). Monitoring within these units will continue according to the *2017 Programmatic BO* (USFWS, 2017), which supersedes all other BOs, including the 2015 Programmatic BO, to document the recovery of HMP species and habitat.

11.0 Protectiveness Assessment

The protectiveness of the remedial action was evaluated against the requirements of the Track 3 ROD (Army, 2008). The remedial action performed in Units 1, 2, and 3 was consistent with the Final Units 1-5 SSWP (Shaw, 2008), the Final Non-Burn SSWP (Shaw, 2010), and Track 3 RD/RA Work Plan (USACE, 2009), and no conditions contrary to these documents were encountered at the site.

The TM included in Appendix F applies to the project area of Units 1, 2, and 3. A separate TM for Range 26 is included in Appendix H. Regulatory agencies have reviewed the TMs and approved the recommendations included. Additional activities recommended in the TMs have been completed. The TIP included in Appendix G documents the subsurface MEC removal work performed in the Impact Area MRA 100-foot Buffer portion of Units 1, 2, and 3.

the DGM survey identified anomalies within the project area (Figure 3) which were not subject to reacquisition and subsurface removal, suggesting the possible presence of subsurface MEC. Subsurface anomalies were removed in the subsurface MEC removal areas identified in the Units 1, 2, and 3 TM (KEMRON, 2016),

The MEC remedial action for the project area is complete. All surface and subsurface MEC remediation areas passed QC/QA. Based on the Track 3 ROD (Army, 2008) and the Track 3 RD/RA Work Plan (USACE, 2009), the following actions will occur until all remedial actions within the Track 3 Impact Area MRA are complete:

- Annual inspection of surface removal areas until the site is stabilized,
- Site security of the Impact Area MRA will be maintained,
- Unauthorized public access to or within the Impact Area MRA will continue to be prohibited,

- MEC recognition and safety training as needed prior to property transfer and during the implementation of the remedial action,
- Provision of UXO-qualified personnel support for intrusive work, and
- Follow-up habitat monitoring.

At the completion of the remedial action within the Impact Area MRA, the Army will evaluate the work completed against planned reuse activities and the suitability of the LUCs that were selected as part of the remedy. The results of this evaluation will be included in a Remedial Action Completion Report. A detailed LUC implementation plan will also be developed prior to property transfer, in coordination with the future landowner and the regulatory agencies.

12.0 References

Burleson Consulting, 2016. *2015 Biological Monitoring Report BLM Area B, Subareas A, B, B-3 East, B-3 West, and C, and Units 05, 13, and 20; Units 01 West, 02 West, and 03 West; Units 02 East and 03 East; Units 15, 21, 32, and 34; and 2015 Annual Wetland Vegetation and Wildlife Monitoring Report, Former Fort Ord*. January. (AR# BW-2795)

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Shaw, 2010. *Final Site-Specific Work Plan, Munitions and Explosives of Concern Remedial Action, Non-Burn Areas, Former Fort Ord, California.* February. (AR# OE-0685D)

Shaw, 2011. *Range 26 Munitions and Explosives of Concern, Remedial Action, Technical Memorandum, Former Fort Ord, California.* March. (AR# OE-0738)

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USACE, 2009. *Final Work Plan, Remedial Design/Remedial Action, Track 3.* August. (AR# OE-0660K)

USACE, 2017. *Former Fort Ord, California Units 1, 2, and 3 Addendum to Quality Assurance Report: Digital Geophysical Operations.*

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USFWS, 2017. *Programmatic Biological Opinion.* June. (AR# BW-2747A)

Tables

Table 1
Major Event Milestones, Units 1, 2, and 3 Remedial Action

Major Event	Date Started	Date Completed
Signature of Track 3 Record of Decision		May 2008
Final Site Specific Work Plan for Units 1-5		June 2008
Final RD/RA Work Plan		August 2009
Remedial work in support of soil remediation at Range 26	March 2010	August 2010
Vegetation Mastication in Units 1,2, and 3	June 2012	October 2014
Surface removal in Units 1,2, and 3	July 2012	March 2015
DGM Survey in Units 1,2, and 3	January 2013	March 2015
MEC detonation	September 2012	February 2017
Technical Memorandum Units 1, 2, and 3		August 2015
Impact Area MRA 100-foot Buffer Technical Information Paper		September 2015
Subsurface Removal in Adiministrative Areas and Fuel Breaks	January 2017	July 2017
Limited Subsurface MEC Removal in Unit 3 Area of Interest	January 2017	February 2017

DGM = Digital Geophysical Mapping
MEC = Munitions and Explosives of Concern
MRA = Munitions Response Area
RD/RA = Remedial Design/Remedial Action

Table 2
Ranges Associated with Units 1, 2, and 3

Range/Site Number	Range/Site Name(s)	Description
23	Squad Attack Range, Rifle Squad Tactical Range, Train fire II Range Complex	Area of Range 23 appears to have been used for training since at least 1945 and as a range from at least the mid-1950s. Use of the range appears to have changed some over time, starting as a Train Fire Range Complex, becoming a Rifle Squad Tactical Range in 1965. Because the range was used as a squad attack range, no fixed firing points are present. Movement downrange was limited to 700 meters due to Range 19 and 25 safety fans.
23M	Dragon Tracking Range (Nonfiring range)	Area identified in Site 39 Data Summary Report as a nonfiring range. Area was used for training area for laser-aimed Dragon anti-armor weapons. Although identified as non-firing, some Dragon rounds and 4.2-inch mortar fragments have been found on the range.
24	Sniper Range, Table VII Range, Table VIII Range	Information from Range Control files indicates that Range 24 was constructed in 1966 and was modified in 1975 and 1991. Prior to 1966 a Range is present in about the same location as the present Range 24. The range was labeled as Range 21 on the 1965 photo mosaic, and as AR Table VII and AR Table VIII in 1950s maps. The area further inland from the current range fan appears to have been used as squad problems ranges in the 1940s based on the 1945 training map and 1940s aerial photographs.
25	Offensive Overhead Firing Course, Table VII Range, Table VIII Range, Range 41	Ranges within the area of Range 25 are shown on maps dating back to 1956. Review of Range control files indicates the range converted from an inactive pistol range to an overhead offensive firing course in 1975. The range was deactivated in 1976 upon close of Basic Combat Training. The range was re-activated in 1981 and used through 1989. Review of aerial photographs from 1966 and 1969 indicates that the berm may have been added to the range between 1966 and 1969. Review of maps indicated that when the Table Ranges were active in the 1950s and 1960s fire was more toward the west.

Table 2
Ranges Associated with Units 1, 2, and 3

Range/Site Number	Range/Site Name(s)	Description
26	Machine Gun Transition, Machine Goo Field Fire, Machine gun, Table II, Austin Antitank Range	This range is present as a range since at least 1945. The range appears to have been used primarily for machine gun fire since the mid-1950s. Information from the range control files indicates that the range was wired for M-30 Target Devices in 1966 and that in November 1973 the range was modified from a Machine Gun Range to a Dry Fire and Movement Course used in conjunction with Range 27. In February 1975, it was reactivated as a Machine Goo Range. In 1991 the range was modified for SAW firing.
27	Fire Movement Course, SAW Table I-N, Close Combat Course	This range was constructed in 1967. It was placed on inactive status in 1975, reopened in 1984, operated until 1989, and was converted to SAW in 1990. In April 1973, the range operated as a Close Combat Course with targets about 50 to 250m. In 1992 targets were located at I00, 200, and 300m. A night firing course may have operated in this area in the 1950s. This area was labeled as such in the 1956 training map.
27A	10m Machine Gun/25m Rifle Range	This range was used from at least 1973 through 1991 as a 10m Machine Gun, 25m Zero range. Up to 70 firing points were used at this range. The range use appears to have been consistent over time.
64	Rifle Night Firing	Range is shown on the 1956 training map, bot is not shown on the 1958 and 1961 training maps, and is not evident on the 1965 air photo mosaic.

Table 3
MEC Items Recovered Within Units 1, 2, and 3 during Previous Investigations

Date Found	Grid	Unique ID	Quantity	Depth	Item Type	Description
1/14/1993	LB1-MB09-SG04	574	1	0	ISD	Grenade, hand, smoke, M18 series
5/19/1994	LB1-MB10-SH02	753	1	0	ISD	Fuze, projectile, PD, MKIII
4/10/1997	LA2-MH02-SC07	77876	1	0	UXO	Rocket, 4.5inch, MK I, Mod 0 (Model Unknown)
4/10/1997	LA2-MH02-SC08	77877	1	0	UXO	Rocket, 2.36inch, high explosive antitank, M6
4/16/1997	LA2-MH02-SF04	77878	1	0	UXO	Rocket, 2.36inch, high explosive antitank, M6
4/17/1997	LA2-MH02-SE07	77857	2	0	UXO	Rocket, 2.36inch, high explosive antitank, M6
4/17/1997	LA2-MH02-SE07	77847	1	0	UXO	Projectile, 75mm, high explosive, MK I
8/14/1997	MRS-15 RNG 23_RD 67-69	77809	1	6	UXO	Projectile, 3inch, stokes mortar, prac, MK I
12/22/2009	B1C9A7	812473	1	0	DMM	Grenade, hand, smoke, M18 series
2/17/2010	B1C9A7	812474	1	12	DMM	Cartridge, 40mm, practice, M781

Table 4
MEC Items Recovered During All Remedial Actions

Date Found	Item Type	Quantity	Depth	Unique ID	Description	Operation	Unit
5/24/2010	UXO	1	15	813407	Projectile, 37mm, high explosive, M63	Subsurface Removal	Unit 1
5/25/2010	UXO	1	0	813418	Rocket, 2.36inch, high explosive antitank, M6	Subsurface Removal	Unit 1
6/22/2010	UXO	1	9	808167	Rocket, 2.36inch, high explosive antitank, M6	Subsurface Removal	Unit 1
6/25/2010	UXO	1	4	808350	Projectile, 37mm, high explosive, M63	Subsurface Removal	Unit 1
7/7/2010	UXO	1	12	813424	Projectile, 37mm, target practice, M63 MOD1	Subsurface Removal	Unit 1
7/7/2010	UXO	1	24	810546	Rocket, 4.5inch, barrage, high explosive, MK III	Subsurface Removal	Unit 1
7/9/2010	UXO	1	2	810525	Projectile, 37mm, low explosive, MK I	Subsurface Removal	Unit 1
7/9/2010	UXO	1	12	813427	Projectile, 37mm, target practice, M63 MOD1	Subsurface Removal	Unit 1
7/14/2010	UXO	1	6	810197	Projectile, 37mm, low explosive, MK I	Subsurface Removal	Unit 1
7/14/2010	UXO	1	12	809717	Projectile, 37mm, low explosive, MK II	Subsurface Removal	Unit 1
7/14/2010	UXO	1	14	810195	Rocket, 4.5inch, barrage, high explosive, MK III	Subsurface Removal	Unit 1
7/21/2010	UXO	1	8	813403	Projectile, 37mm, low explosive, MK II	Subsurface Removal	Unit 1
7/30/2012	UXO	1	0	814768	Grenade, hand, smoke, HC, AN-M8	Surface Removal	Unit 3
7/30/2012	UXO	1	0	814553	Signal, illumination, ground, M125 series	Surface Removal	Unit 3
7/31/2012	UXO	1	0	814643	Projectile, 75mm, Shrapnel, MK I	Surface Removal	Unit 3
8/1/2012	UXO	1	0	814734	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 3
8/2/2012	UXO	1	0	814718	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 3
8/8/2012	UXO	1	0	814682	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 3
8/8/2012	UXO	1	0	814684	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 3
8/13/2012	UXO	1	0	814652	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 3
7/25/2013	UXO	1	0	814271	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 1
7/29/2013	UXO	1	0	814266	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 1
7/29/2013	UXO	1	0	814291	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 1
7/30/2013	UXO	1	0	814261	Projectile, 37mm, high explosive, M54	Surface Removal	Unit 1
7/30/2013	UXO	1	0	814254	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 1
7/30/2013	UXO	1	0	814255	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 1
7/30/2013	UXO	1	0	814256	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 1
7/31/2013	UXO	2	0	814188	Grenade, hand, fragmentation, MK II	Surface Removal	Unit 1
7/31/2013	UXO	2	0	814190	Grenade, hand, practice, MK II	Surface Removal	Unit 1
7/31/2013	UXO	1	0	814234	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 1
7/31/2013	UXO	1	0	814302	Signal, illumination, ground, M127A1 series	Surface Removal	Unit 2
8/1/2013	UXO	1	0	814181	Grenade, hand, practice, M69	Surface Removal	Unit 1
8/5/2013	UXO	1	0	814164	Grenade, hand, practice, M69	Surface Removal	Unit 1
8/6/2013	UXO	1	0	814169	Grenade, hand, practice, M69	Surface Removal	Unit 1
8/6/2013	UXO	1	0	814307	Projectile, 37mm, high explosive, M63	Surface Removal	Unit 2
8/7/2013	UXO	1	0	814157	Grenade, hand, practice, M30	Surface Removal	Unit 1
8/7/2013	UXO	1	0	814155	Grenade, hand, practice, MK II	Surface Removal	Unit 1
8/12/2013	UXO	1	0	814139	Grenade, hand, practice, M69	Surface Removal	Unit 1
8/12/2013	UXO	1	0	814140	Grenade, hand, practice, MK II	Surface Removal	Unit 1
8/14/2013	UXO	1	0	814519	Grenade, hand, practice, M69	Surface Removal	Unit 3
8/14/2013	UXO	1	0	814218	Projectile, 75mm, high explosive, MK I	Surface Removal	Unit 1
8/19/2013	UXO	1	0	814275	Grenade, hand, practice, M30	Surface Removal	Unit 1
9/12/2013	UXO	1	2	825928	Grenade, rifle, antitank, M9 series	Subsurface Removal	Unit 1
9/12/2013	UXO	1	4	825924	Projectile, 81mm, mortar, Flare Shell, T-23	Subsurface Removal	Unit 1
10/3/2013	UXO	1	4	811844	Cartridge, 40mm, practice, M781	Subsurface Removal	Unit 3
6/24/2014	UXO	1	0	831822	Grenade, hand, practice, M30	Surface Removal	Unit 1
6/24/2014	UXO	1	0	831821	Grenade, hand, practice, M69	Surface Removal	Unit 1
6/24/2014	UXO	1	0	831820	Grenade, hand, practice, MK II	Surface Removal	Unit 1
6/26/2014	UXO	1	0	831633	Grenade, hand, practice, M69	Surface Removal	Unit 1
6/26/2014	UXO	1	0	831634	Grenade, hand, practice, M69	Surface Removal	Unit 1
6/26/2014	UXO	1	0	831832	Grenade, hand, practice, M69	Surface Removal	Unit 1
6/30/2014	UXO	1	0	831842	Grenade, hand, practice, M69	Surface Removal	Unit 1
6/30/2014	UXO	1	0	831844	Grenade, hand, practice, M69	Surface Removal	Unit 1
7/1/2014	UXO	1	0	831620	Grenade, hand, practice, M69	Surface Removal	Unit 1
7/1/2014	UXO	1	0	831724	Grenade, hand, practice, M69	Surface Removal	Unit 1
7/8/2014	UXO	1	0	831602	Fuze, grenade, hand, practice, M228	Surface Removal	Unit 1
7/9/2014	UXO	1	0	831611	Fuze, grenade, hand, practice, M205 series	Surface Removal	Unit 1
7/9/2014	UXO	1	0	831614	Fuze, grenade, hand, practice, M205 series	Surface Removal	Unit 1
7/9/2014	UXO	1	0	831612	Fuze, grenade, hand, practice, M228	Surface Removal	Unit 1
7/9/2014	UXO	1	0	831809	Rocket, 4.5inch, barrage, high explosive, MK III	Surface Removal	Unit 1
7/10/2014	UXO	1	0	831607	Fuze, grenade, hand, practice, M205 series	Surface Removal	Unit 1
7/10/2014	UXO	1	0	831790	Projectile, 37mm, high explosive, M63	Surface Removal	Unit 1
7/14/2014	UXO	1	0	831713	Fuze, grenade, hand, practice, M228	Surface Removal	Unit 1
7/14/2014	UXO	1	0	832081	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1
7/14/2014	UXO	1	0	832092	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1
7/14/2014	UXO	1	0	832033	Rocket, 2.36inch, high explosive antitank, M6	Surface Removal	Unit 1
7/14/2014	UXO	1	0	832034	Rocket, 2.36inch, high explosive antitank, M6	Surface Removal	Unit 1
7/14/2014	UXO	1	0	832036	Rocket, 2.36inch, high explosive antitank, M6	Surface Removal	Unit 1
7/14/2014	UXO	1	0	832037	Rocket, 2.36inch, high explosive antitank, M6	Surface Removal	Unit 1
7/14/2014	UXO	1	0	832039	Rocket, 2.36inch, high explosive antitank, M6	Surface Removal	Unit 1
7/14/2014	UXO	1	0	832040	Rocket, 2.36inch, high explosive antitank, M6	Surface Removal	Unit 1
7/15/2014	UXO	1	0	832027	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 1
7/15/2014	UXO	1	0	832076	Projectile, 75mm, Shrapnel, MK I	Surface Removal	Unit 1
7/15/2014	UXO	1	0	832023	Rocket, 2.36inch, high explosive antitank, M6	Surface Removal	Unit 1
7/15/2014	UXO	1	0	832024	Rocket, 2.36inch, high explosive antitank, M6	Surface Removal	Unit 1
7/15/2014	UXO	1	0	832025	Rocket, 2.36inch, high explosive antitank, M6	Surface Removal	Unit 1
7/15/2014	UXO	1	0	832028	Rocket, 2.36inch, high explosive antitank, M6	Surface Removal	Unit 1
7/16/2014	UXO	1	0	832002	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 1
7/16/2014	UXO	1	0	831816	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1

7/16/2014	UXO	1	0	832073	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1
7/16/2014	UXO	1	0	832014	Rocket, 2.36inch, high explosive antitank, M6	Surface Removal	Unit 1
7/16/2014	UXO	1	0	832016	Rocket, 2.36inch, high explosive antitank, M6	Surface Removal	Unit 1
7/17/2014	UXO	1	0	831715	Grenade, hand, practice, M69	Surface Removal	Unit 1
7/17/2014	UXO	1	0	832011	Projectile, 37mm, high explosive, MK II	Surface Removal	Unit 1
7/17/2014	UXO	1	0	832068	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1
7/21/2014	UXO	1	0	831999	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 1
7/21/2014	UXO	1	0	831988	Projectile, 75mm, high explosive, MK I	Surface Removal	Unit 1
7/21/2014	UXO	1	0	831997	Rocket, 2.36inch, high explosive antitank, M6	Surface Removal	Unit 1
7/22/2014	UXO	1	0	831774	Grenade, hand, practice, M69	Surface Removal	Unit 1
7/22/2014	UXO	1	0	831797	Projectile, 37mm, high explosive, M63	Surface Removal	Unit 1
7/22/2014	UXO	1	0	831819	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1
7/23/2014	UXO	1	0	831976	Grenade, hand, fragmentation, M26-M26A1	Surface Removal	Unit 1
7/23/2014	UXO	1	0	831742	Grenade, hand, practice, M69	Surface Removal	Unit 1
7/23/2014	UXO	1	0	831753	Grenade, hand, practice, M69	Surface Removal	Unit 1
7/23/2014	UXO	1	0	831978	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 1
7/23/2014	UXO	1	0	831975	Projectile, 75mm, Shrapnel, MK I	Surface Removal	Unit 1
7/23/2014	UXO	1	0	832054	Projectile, 75mm, Shrapnel, MK I	Surface Removal	Unit 1
7/24/2014	UXO	1	0	831731	Grenade, hand, practice, M69	Surface Removal	Unit 1
7/28/2014	UXO	1	0	831985	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 1
7/29/2014	UXO	1	0	831905	Rocket, 2.36inch, high explosive antitank, M6	Surface Removal	Unit 1
7/29/2014	UXO	1	0	831906	Rocket, 2.36inch, high explosive antitank, M6	Surface Removal	Unit 1
7/29/2014	UXO	1	0	831907	Rocket, 2.36inch, high explosive antitank, M6	Surface Removal	Unit 1
7/29/2014	UXO	1	0	831911	Rocket, 2.36inch, high explosive antitank, M6	Surface Removal	Unit 1
7/29/2014	UXO	1	0	831912	Rocket, 2.36inch, high explosive antitank, M6	Surface Removal	Unit 1
7/29/2014	UXO	1	0	831913	Rocket, 2.36inch, high explosive antitank, M6	Surface Removal	Unit 1
7/29/2014	UXO	1	0	831914	Rocket, 2.36inch, high explosive antitank, M6	Surface Removal	Unit 1
7/29/2014	UXO	1	0	831915	Rocket, 2.36inch, high explosive antitank, M6	Surface Removal	Unit 1
7/30/2014	UXO	1	0	831720	Grenade, hand, practice, M69	Surface Removal	Unit 1
7/30/2014	UXO	1	0	831733	Grenade, hand, practice, M69	Surface Removal	Unit 1
7/30/2014	UXO	1	0	831869	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1
7/31/2014	UXO	1	0	832100	Projectile, 37mm, high explosive, M63	Surface Removal	Unit 1
7/31/2014	UXO	1	0	831948	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1
7/31/2014	UXO	1	0	831949	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1
7/31/2014	UXO	1	0	831951	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1
7/31/2014	UXO	1	0	831953	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1
7/31/2014	UXO	1	0	831963	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1
7/31/2014	UXO	1	0	831965	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1
7/31/2014	UXO	1	0	831890	Rocket, 2.36inch, high explosive antitank, M6	Surface Removal	Unit 1
7/31/2014	UXO	1	0	831892	Rocket, 2.36inch, high explosive antitank, M6	Surface Removal	Unit 1
8/4/2014	UXO	1	0	831959	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1
8/4/2014	UXO	1	0	831882	Rocket, 2.36inch, high explosive antitank, M6	Surface Removal	Unit 1
8/6/2014	UXO	1	0	831939	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1
8/7/2014	UXO	1	0	832558	Projectile, 75mm, Shrapnel, MK I	Surface Removal	Unit 2
8/11/2014	UXO	1	0	832466	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 2
8/13/2014	UXO	1	0	832340	Projectile, 75mm, Shrapnel, MK I	Surface Removal	Unit 2
9/2/2014	UXO	1	0	832206	Projectile, 75mm, Shrapnel, MK I	Surface Removal	Unit 2
9/18/2014	UXO	1	0	832582	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 2
9/22/2014	UXO	1	0	832272	Rocket, 35mm, subcaliber, practice, M73	Surface Removal	Unit 2
9/22/2014	UXO	1	0	832281	Rocket, 35mm, subcaliber, practice, M73	Surface Removal	Unit 2
9/22/2014	UXO	1	0	832573	Rocket, 35mm, subcaliber, practice, M73	Surface Removal	Unit 2
9/23/2014	UXO	1	0	832265	Rocket, 35mm, subcaliber, practice, M73	Surface Removal	Unit 2
9/23/2014	UXO	1	0	832266	Rocket, 35mm, subcaliber, practice, M73	Surface Removal	Unit 2
9/23/2014	UXO	1	0	832273	Rocket, 35mm, subcaliber, practice, M73	Surface Removal	Unit 2
9/24/2014	UXO	1	0	832275	Projectile, 75mm, Shrapnel, MK I	Surface Removal	Unit 2
10/1/2014	UXO	1	0	832937	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 3
10/1/2014	UXO	1	0	832939	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 3
10/6/2014	UXO	1	0	832914	Cartridge, 40mm, practice, M781	Surface Removal	Unit 3
10/15/2014	UXO	1	0	832966	Rocket, 35mm, subcaliber, practice, M73	Surface Removal	Unit 3
10/17/2014	UXO	1	0	832615	projectile, 4inch, stokes mortar, screening smoke, FM	Surface Removal	Unit 3
10/20/2014	UXO	1	0	832983	Projectile, 75mm, Shrapnel, MK I	Surface Removal	Unit 3
10/28/2014	UXO	1	0	833008	projectile, 4inch, stokes mortar, smoke, HC	Surface Removal	Unit 3
11/3/2014	UXO	1	0	832944	projectile, 4inch, stokes mortar, smoke, HC	Surface Removal	Unit 3
11/4/2014	UXO	1	0	832875	projectile, 4inch, stokes mortar, screening smoke, FM	Surface Removal	Unit 3
11/13/2014	UXO	1	0	832894	projectile, 4inch, stokes mortar, smoke, HC	Surface Removal	Unit 3
1/6/2015	UXO	1	0	832881	projectile, 4inch, stokes mortar, screening smoke, FM	Surface Removal	Unit 3
1/6/2015	UXO	1	0	832719	Projector, Livens, screening smoke, FM	Surface Removal	Unit 3
2/3/2015	UXO	1	0	832843	projectile, 4inch, stokes mortar, screening smoke, FM	Surface Removal	Unit 3
2/3/2015	UXO	1	0	832844	projectile, 4inch, stokes mortar, screening smoke, FM	Surface Removal	Unit 3
2/12/2015	UXO	1	0	832776	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 3
2/12/2015	UXO	1	0	832785	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 3
1/30/2017	UXO	1	12	1804375	projectile, 4inch, stokes mortar, screening smoke, FM	Limited Subsurface Removal	Unit 3
2/1/2017	UXO	1	4	1804157	projectile, 4inch, stokes mortar, smoke, WP, MK I	Limited Subsurface Removal	Unit 3
2/1/2017	UXO	1	5	1804652	projectile, 4inch, stokes mortar, smoke, WP, MK I	Limited Subsurface Removal	Unit 3
2/7/2017	UXO	1	9	1804195	Projectile, 37mm, low explosive, MK I	Subsurface Removal	Unit 3
2/9/2017	UXO	1	10	1804998	Rocket, 2.36inch, high explosive antitank, M6	Subsurface Removal	Unit 1
2/15/2017	UXO	1	4	1804776	Rocket, 2.36inch, high explosive antitank, M6	Subsurface Removal	Unit 1
2/15/2017	UXO	1	4	1805422	Rocket, 2.36inch, high explosive antitank, M6	Subsurface Removal	Unit 1
5/16/2017	UXO	1	8	1807814	Rocket, 2.36inch, high explosive antitank, M6	Subsurface Removal	Unit 1
5/18/2017	UXO	1	10	1807907	Rocket, 2.36inch, high explosive antitank, M6	Subsurface Removal	Unit 1
6/1/2017	UXO	1	9	1807899	Rocket, 2.36inch, high explosive antitank, M6	Subsurface Removal	Unit 1

Table 5
Cumulative Results

Parameter	Unit 1	Unit 2	Unit 3	Total
Surface removal acreage	125	166	142	433
Analog subsurface removal acreage	0	0	0	0
Digital subsurface removal acreage	7.2	1.1	5.0	13.3
DGM survey acreage	125	160	142	428
MEC items	118	14	30	162
Total estimated MD weight (lbs)	4384	6859	6467	17710
Total estimated RRD and CD weight (lbs)	52637	41139	8236	102012

Table 6
MEC Recovered During Remedial Action

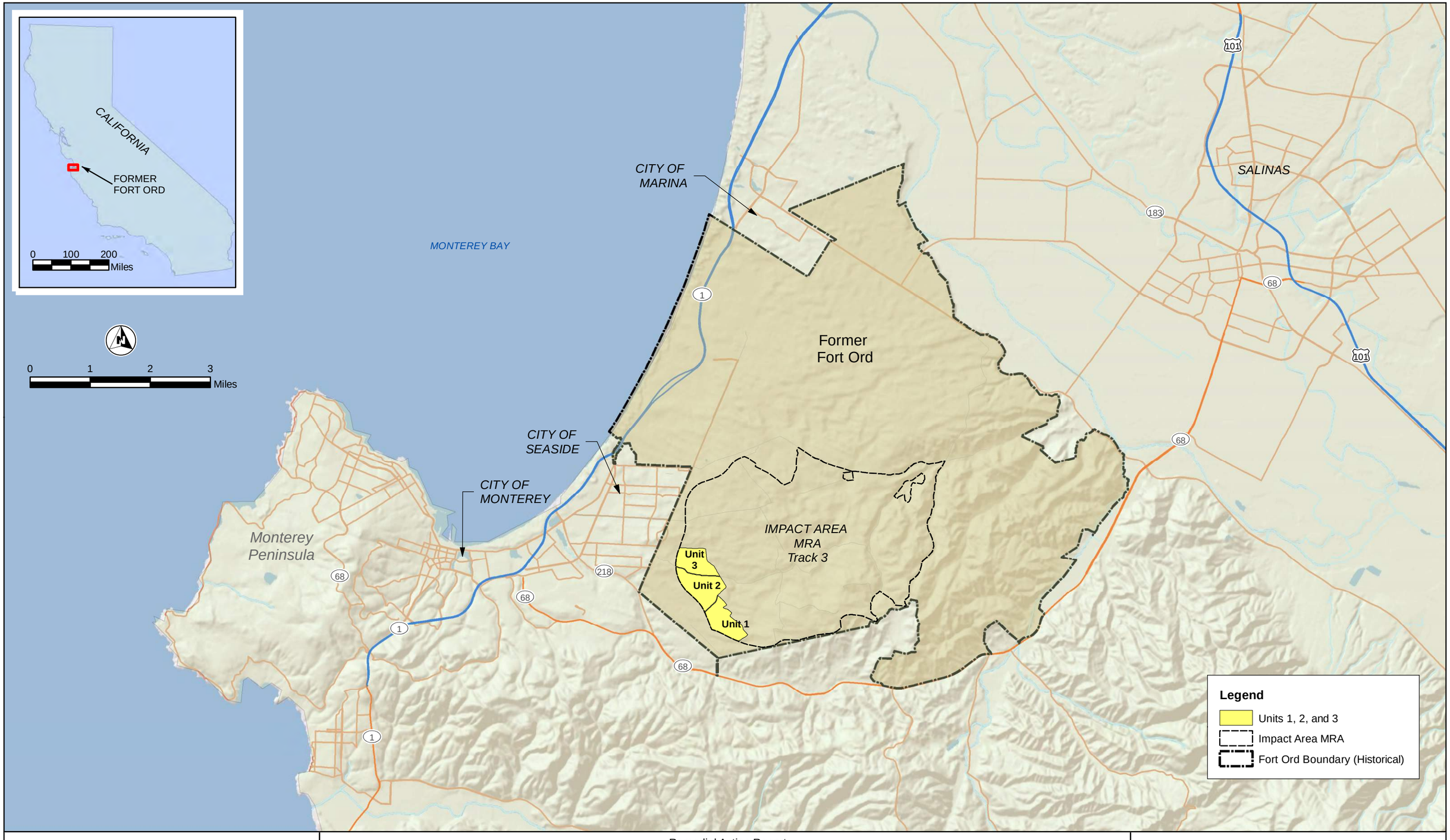
Description	Item Type	Quantity	Unit
Cartridge, 40mm, practice, M781	UXO	2	Unit 3
Fuze, grenade, hand, practice, M205 series	UXO	3	Unit 1
Fuze, grenade, hand, practice, M228	UXO	3	Unit 1
Grenade, hand, fragmentation, M26-M26A1	UXO	1	Unit 1
Grenade, hand, fragmentation, MK II	UXO	2	Unit 1
Grenade, hand, practice, M30	UXO	3	Unit 1
Grenade, hand, practice, M69	UXO	19	Unit 1
Grenade, hand, practice, M69	UXO	1	Unit 3
Grenade, hand, practice, MK II	UXO	5	Unit 1
Grenade, hand, smoke, HC, AN-M8	UXO	1	Unit 3
Grenade, rifle, antitank, M9 series	UXO	1	Unit 1
Projectile, 4inch, stokes mortar, smoke, WP, MK I	UXO	2	Unit 3
Projectile, 4inch, stokes mortar, screening smoke, FM	UXO	6	Unit 3
Projectile, 4inch, stokes mortar, smoke, HC	UXO	3	Unit 3
Projectile, 37mm, high explosive, M54	UXO	1	Unit 1
Projectile, 37mm, high explosive, M63	UXO	5	Unit 1
Projectile, 37mm, high explosive, M63	UXO	1	Unit 2
Projectile, 37mm, high explosive, MK II	UXO	1	Unit 1
Projectile, 37mm, low explosive, MK I	UXO	14	Unit 1
Projectile, 37mm, low explosive, MK I	UXO	10	Unit 3
Projectile, 37mm, low explosive, MK II	UXO	17	Unit 1
Projectile, 37mm, low explosive, MK II	UXO	2	Unit 2
Projectile, 37mm, target practice, M63 MOD1	UXO	2	Unit 1
Projectile, 75mm, high explosive, MK I	UXO	2	Unit 1
Projectile, 75mm, Shrapnel, MK I	UXO	3	Unit 1
Projectile, 75mm, Shrapnel, MK I	UXO	4	Unit 2
Projectile, 75mm, Shrapnel, MK I	UXO	2	Unit 3
Projectile, 81mm, mortar, Flare Shell, T-23	UXO	1	Unit 1
Projector, Livens, screening smoke, FM	UXO	1	Unit 3
Rocket, 2.36inch, high explosive antitank, M6	UXO	32	Unit 1
Rocket, 35mm, subcaliber, practice, M73	UXO	6	Unit 2
Rocket, 35mm, subcaliber, practice, M73	UXO	1	Unit 3
Rocket, 4.5inch, barrage, high explosive, MK III	UXO	3	Unit 1
Signal, illumination, ground, M125 series	UXO	1	Unit 3
Signal, illumination, ground, M127A1 series	UXO	1	Unit 2

Table 7

Summary of Survey and Removal Methods by Grids

Activity	Unit 1 Grids	Unit 2 Grids	Unit 3 Grids	Total Grids
Surface removal	617	816	686	2119
Analog subsurface removal		0	0	0
Digital subsurface removal	73	46	45	164
DGM survey	613	776	686	2075

Figures



Remedial Action Report
Units 1, 2, and 3
Munitions and Explosives of Concern (MEC) Removal
ImpactArea MRA
Former Fort Ord, California

Figure 1

Track 3 Impact Area MRA
Regional Location Map

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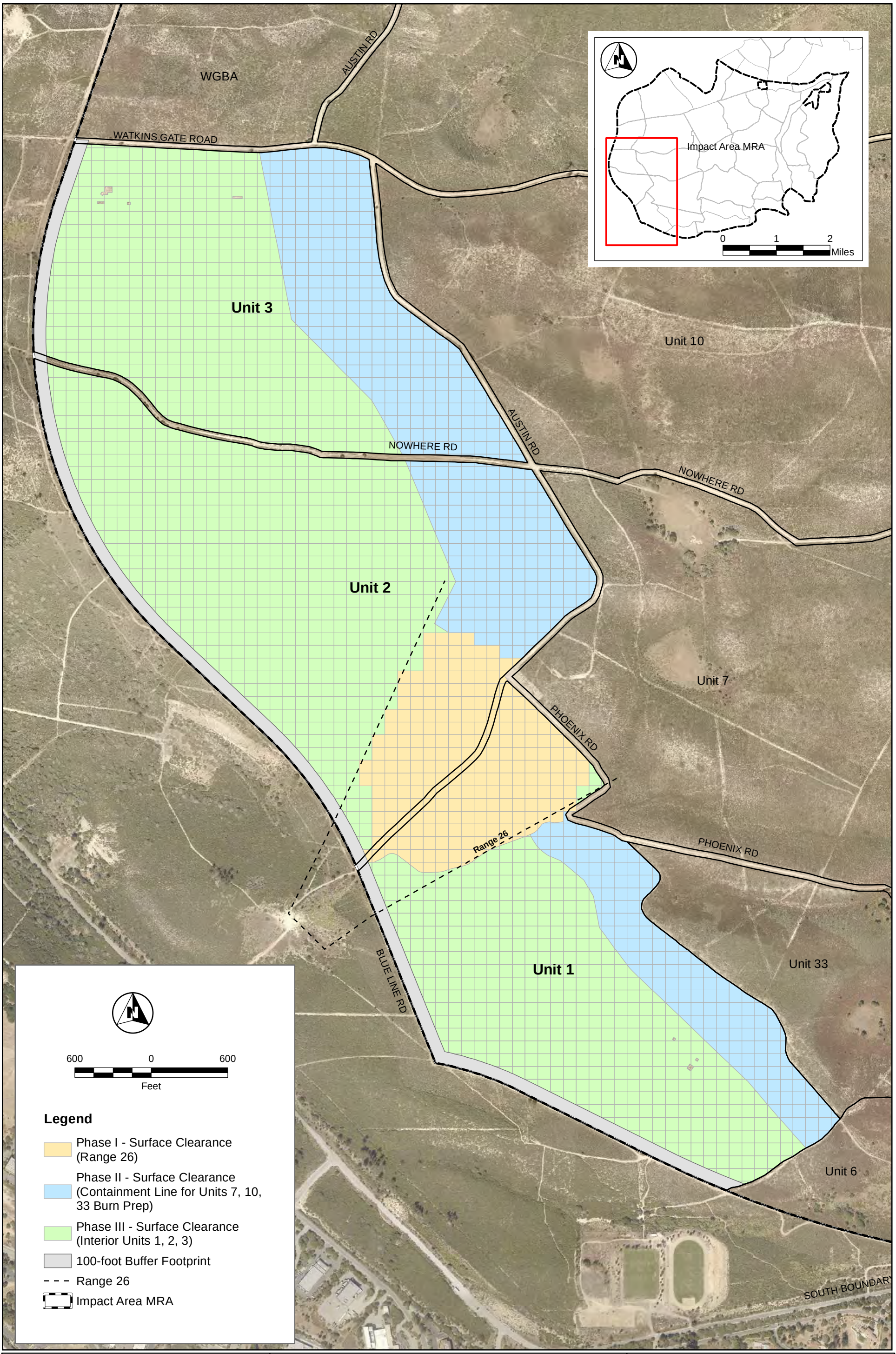

Remedial Action Report
Units 1, 2, and 3
Munitions and Explosives of Concern (MEC) Removal
Impact Area MRA
Former Fort Ord, California

Figure 2

Surface Removal Operations

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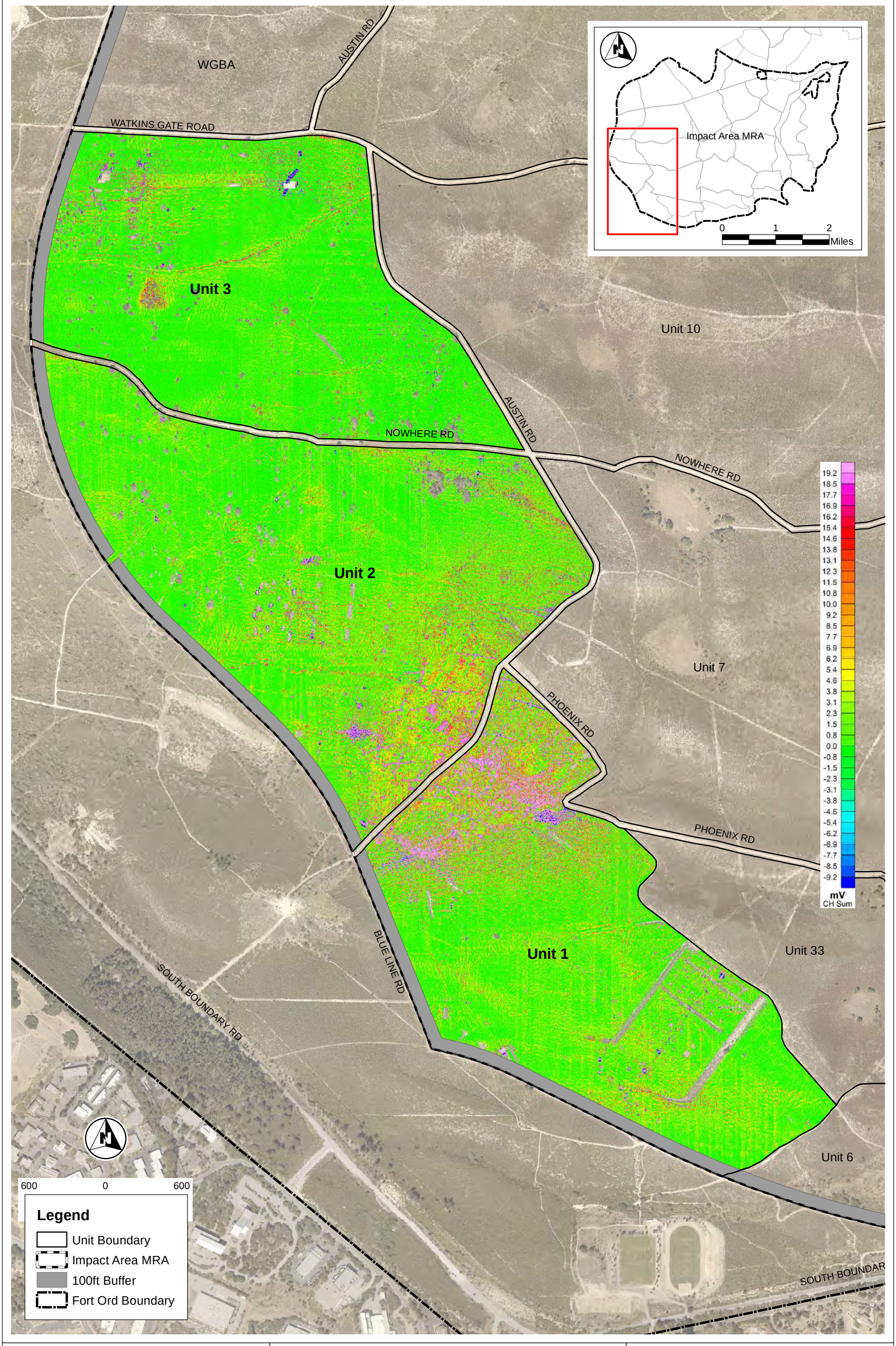

KEMRON ENVIRONMENTAL SERVICES Gilbane	Remedial Action Report Units 1, 2, and 3 Explosives of Concern (MEC) Removal Impact Area MRA Former Fort Ord, California	**Figure 3** Geophysical Data Map

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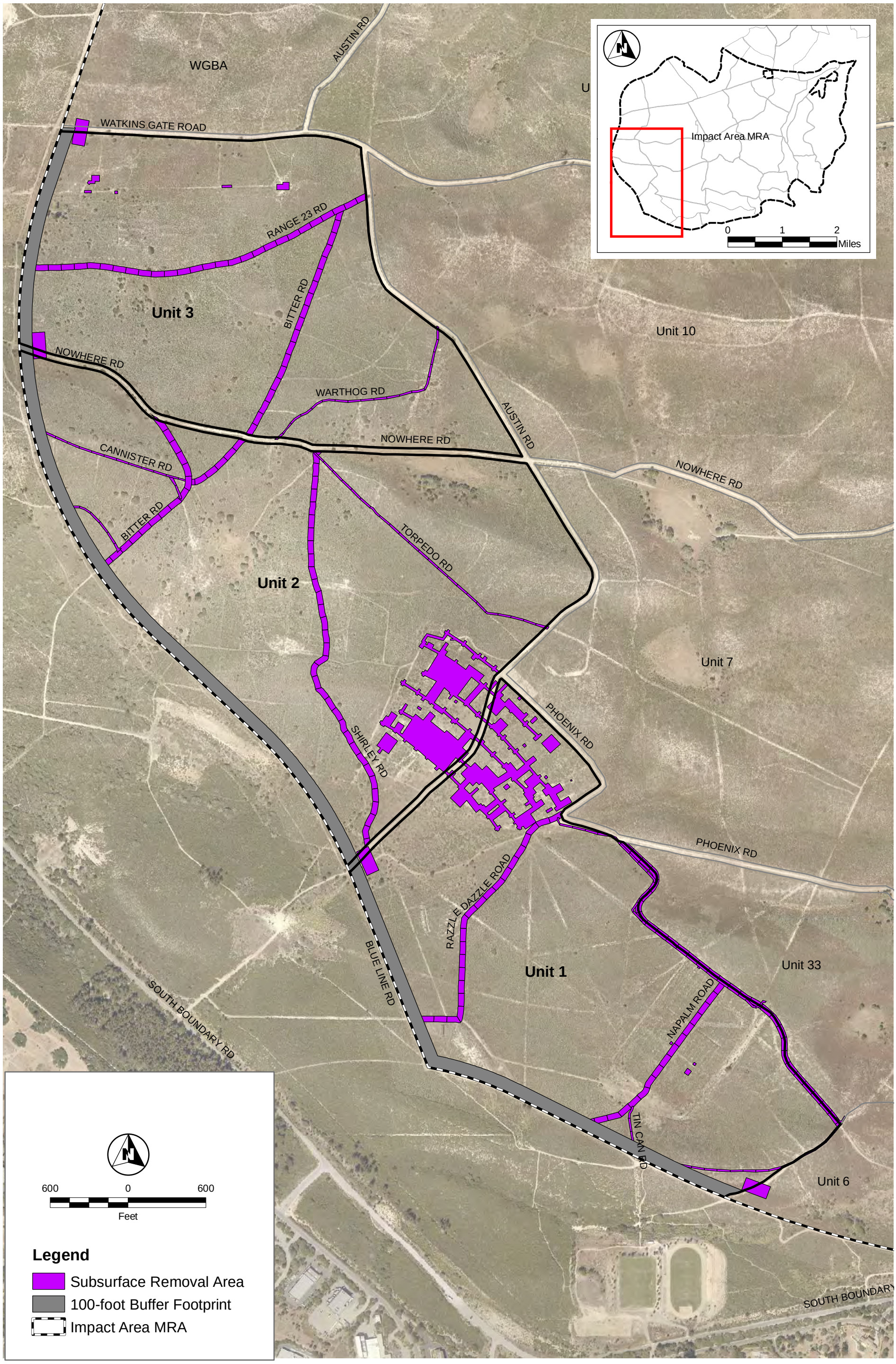

Remedial Action Report
Units 1, 2, and 3
Explosives of Concern (MEC) Removal
Impact Area MRA
Former Fort Ord, California

Figure 4

Subsurface Removal Operations

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WGBA

WATKINS GATE ROAD

WGBA

Impact Area MRA

0 1 2 Miles

Unit 3

Unit 10

AUSTIN RD

NOWHERE RD

NOWHERE RD

Unit 2

Unit 7

BLUE LINE RD

PHOENIX RD

PHOENIX RD

Unit 33

Unit 1

Unit 6

SOUTH BOUND

700 0 700 Feet

Legend

MEC Removed

- Cartridge, 40mm, practice, M781 (3)
- Fuze, grenade, hand, practice, M205 series (3)
- Fuze, grenade, hand, practice, M228 (3)
- Fuze, projectile, PD, MKIII (1)
- Grenade, hand, fragmentation, M26-M26A1 (1)
- Grenade, hand, fragmentation, MK II (1)
- Grenade, hand, practice, M30 (3)
- Grenade, hand, practice, M69 (20)
- Grenade, hand, practice, MK II (4)
- Grenade, hand, smoke, HC, AN-M8 (1)
- Grenade, hand, smoke, M18 series (2)
- Grenade, rifle, antitank, M9 series (1)
- Projectile, 37mm, high explosive, M54 (1)
- Projectile, 37mm, high explosive, M63 (6)
- Projectile, 37mm, high explosive, MK II (1)
- Projectile, 37mm, low explosive, MK I (24)
- Projectile, 37mm, low explosive, MK II (19)
- Projectile, 37mm, target practice, M63 MOD1 (2)
- Projectile, 75mm, Shrapnel, MK I (9)
- Projectile, 75mm, high explosive, MK I (3)
- Projectile, 81mm, mortar, Flare Shell, T-23 (1)
- Projector, Livens, screening smoke, FM (1)
- Rocket 4.5 inch, MK I, Mod 0 (Model Unknown)* (1)
- Rocket, 2.36inch, high explosive antitank, M6 (35)
- Rocket, 35mm, subcaliber, practice, M73 (7)
- Rocket, 4.5inch, barrage, high explosive, MK III (3)
- Signal, illumination, ground, M125 series (1)
- Signal, illumination, ground, M127A1 series (1)
- Projectile, 3inch, stokes mortar, prac, MK I (1)
- Projectile, 4inch, stokes mortar, smoke, WP, MK I (2)
- Projectile, 4inch, stokes mortar, screening smoke, FM (6)
- Projectile, 4inch, stokes mortar, smoke, HC (3)
- 100-ft Buffer (1)
- Fort Ord Boundary (1)

- Impact Area MRA
- 100-ft Buffer
- Unit Boundary
- Fort Ord Boundary

Remedial Action Report
Units 1, 2, and 3
Explosives of Concern (MEC) Removal
Impact Area MRA
Former Fort Ord, California

Figure 5

MEC Removed

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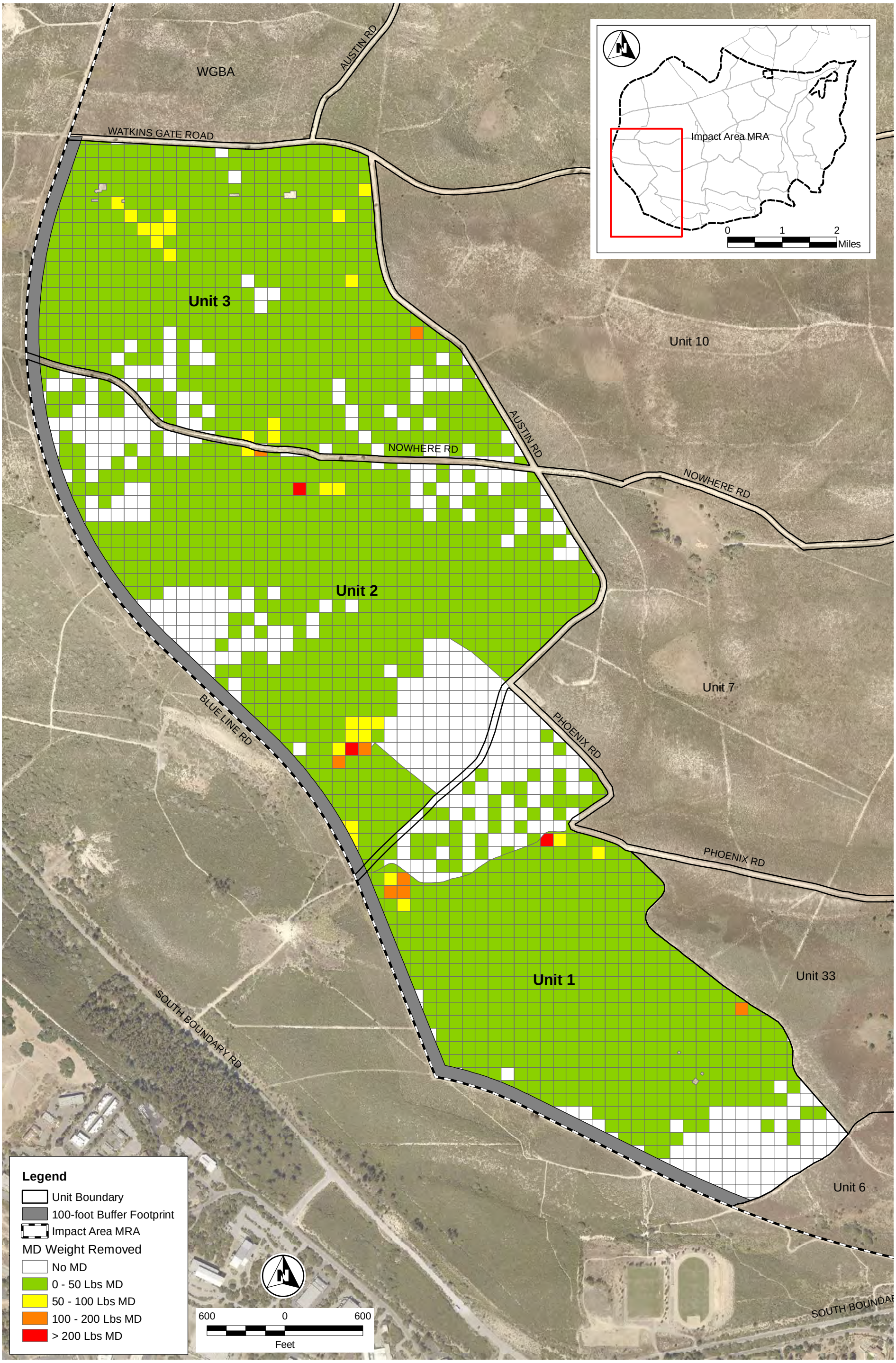

Remedial Action Report
Units 1, 2, and 3
Explosives of Concern (MEC) Removal
Impact Area MRA
Former Fort Ord, California

Figure 6

Munitions Debris Removed

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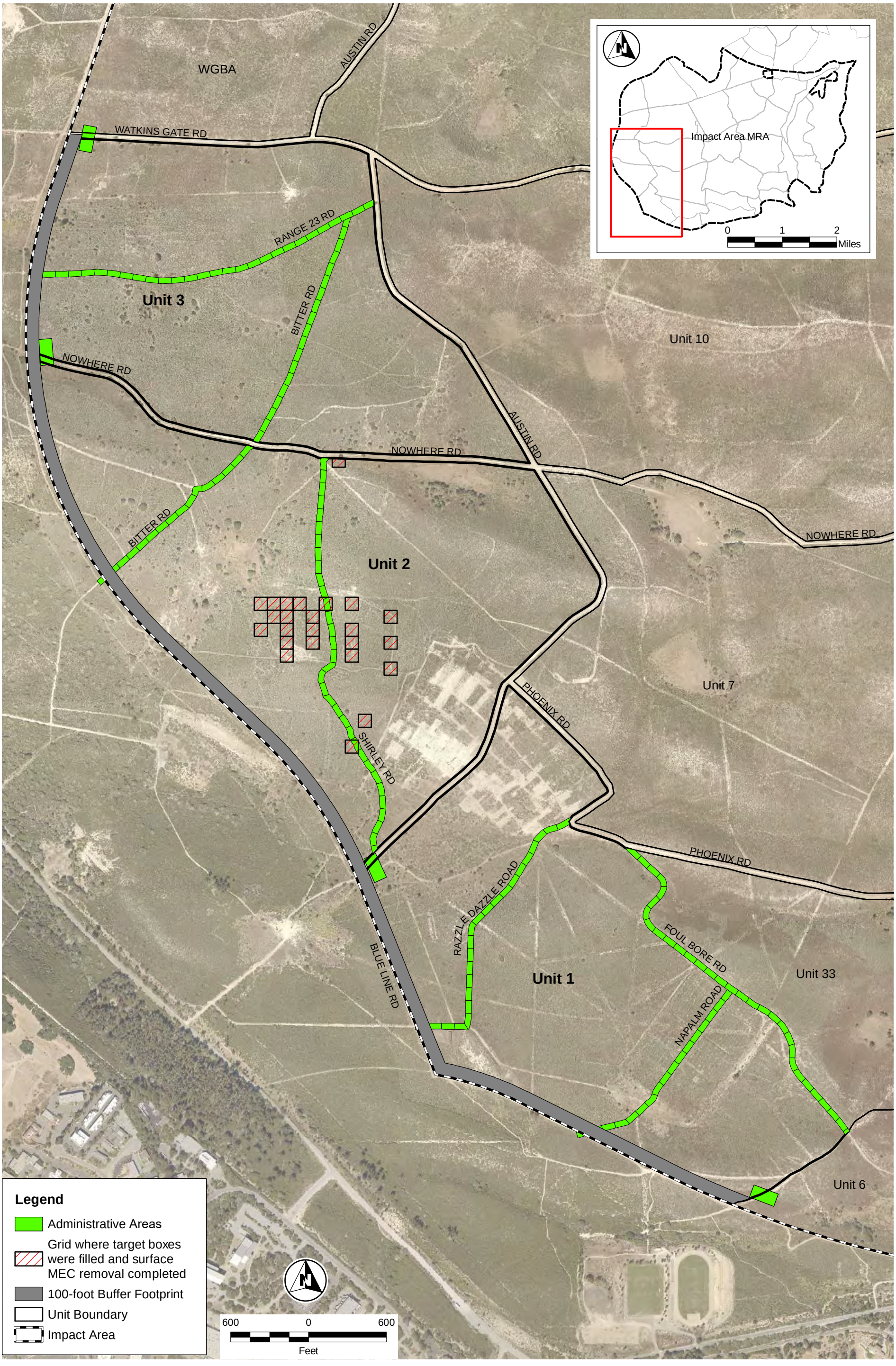
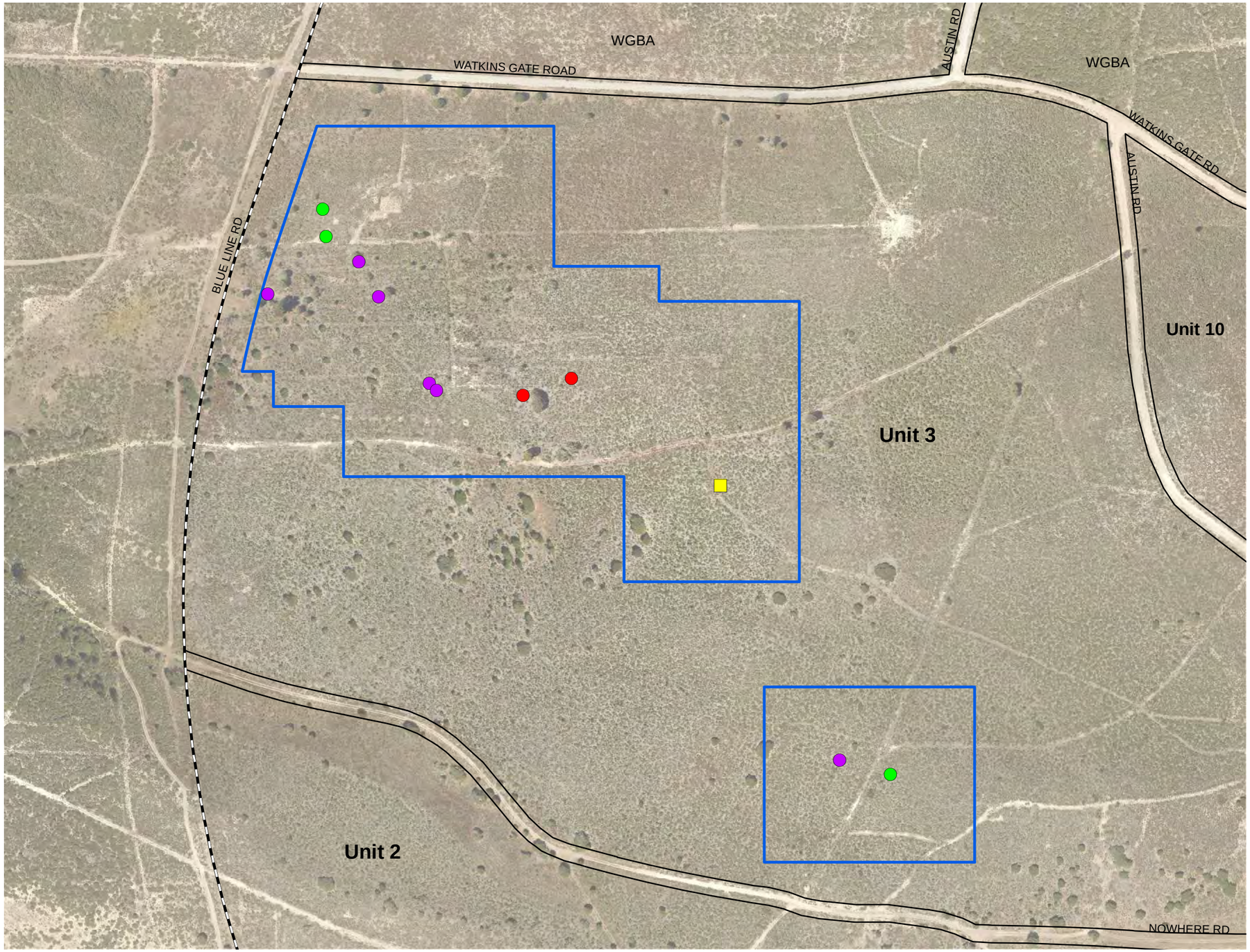
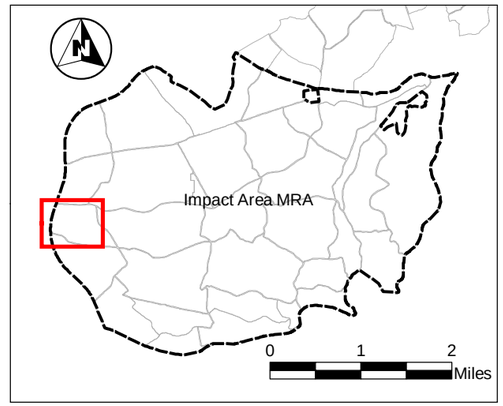
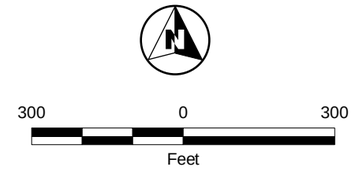


Remedial Action Report
Units 1, 2, and 3
Explosives of Concern (MEC) Removal
Impact Area MRA
Former Fort Ord, California

Figure 7
Additional Work Areas
Identified in the Tech Memo







Legend

- Area of Interest (AOI) 36.4 acres

Stokes/Livens Recovered/Encountered

- Projector, Livens, screening smoke, FM
- Projectile, 4inch, Stokes mortar, smoke, WP, MK I
- Projectile, 4inch, Stokes mortar, screening smoke, FM
- Projectile, 4inch, Stokes mortar, smoke, HC
- Unit Boundary
- Impact Area MRA

KEMRON ENVIRONMENTAL SERVICES

Gilbane

Remedial Action Report
Units 1, 2, and 3
Explosives of Concern (MEC) Removal
Impact Area MRA
Former Fort Ord, California

Figure 8

Stokes Mortar/Livens Projector Area of Concern

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Photographs

Photograph 1 – Vegetation Mastication – 1

Photograph 2 – Vegetation Mastication – 2

Photograph 3 – Surface Removal Operations - 1

Photograph 4 – Surface Removal Operations – 2

Photograph 5 - DGM Survey Operations – 1

Photograph 6 - DGM Survey Operations – 2

Photograph 7 - Target Box in Unit 2

Photograph 8 - Fighting Trench in Unit 2

Appendices

Appendix A
Field Work Variances

Distribution List:

Field Work Variance No. 03-018, to the *Final Work Plan, MRS-BLM Burn Units 01-05, Munitions and Explosives of Concern, Remedial Action, Former Fort Ord, California*

Email	Paper	Name	Organization	Address	City, State	Zip
1		Mr. John Jackson	Department of the Army USACE	1325 "J" Street	Sacramento, CA	95814
1		Mr. Therman Franks	Department of the Army USACE	1325 "J" Street	Sacramento, CA	95814
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1		Mr. David Eisen	Department of the Army, USACE, C/O Fort Ord BRAC	4463 Gigling Road	Seaside, CA	93955
1		Mr. Lyle Shurtleff	Department of the Army, Fort Ord BRAC	4463 Gigling Road	Seaside, CA	93955
1		Mr. Terry Gleason	Department of the Army USACE	1325 "J" Street	Sacramento, CA	95814
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1		Ms. Chieko Nozaki	Department of the Army, Fort Ord BRAC	4463 Gigling Road	Seaside, CA	93955
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1		Mr. Roman Racca	California Department of Toxic Substance Control	8800 California Center Drive	Sacramento, CA	95826
1		Mr. Lewis Mitani	U.S. Environmental Protection Agency, Region IX	75 Hawthorne Street, Mail SFD-8-3	San Francisco, CA	94105
1		Mr. Ed Walker	California Department of Toxic Substance Control	8800 California Center Drive	Sacramento, CA	95826
1		Mr. Tom Hall	Techlaw, Inc.	7 Shore Point	North Little Rock, AR	72116
1		Mr. Terry Zdon	Tech Law, Inc.	90 New Montgomery Street Suite 710	San Francisco, CA	94105
1		Mr. Eric Morgan	Bureau of Land Management, c/o Fort Ord BRAC Office	4463 Gigling Road	Seaside, CA	93955
	1+CD	Mr. Dan Amadeo	Marina In Motion	P.O. Box 1641	Marina, CA	93933
	1	Ms. LeVonne Stone	Fort Ord Environmental Justice Network	P.O. Box 361	Marina, CA	93933
	1	Mr. Mike Weaver	Fort Ord Community Advisory Group	52 Corral De Tierra Road	Salinas, CA	93908
1		Mr. Steve Crane	ITSI Gilbane	2934 Gold Pan Court, Suite 12	Rancho Cordova, CA	95670

Distribution List: Field Work Variance No. 03-018, to the *Final Work Plan, MRS-BLM Burn Units 01-05, Munitions and Explosives of Concern, Remedial Action, Former Fort Ord, California*

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1	1	Ms. Audrey Johnson	ITSI Gilbane	PO Box 1860	Marina, CA	93933
1		Mr. Tom Ghigliotto	PAM Environmental, Inc.	PO Box 1860	Marina, CA	93933
1		Mr. Charles Nycum	Shaw Environmental, Inc. a CB&I Federal Services Company	PO Box 1698	Marina, CA	93933

Approval:

Shawn Meek
USACE OESS

ITSI Gilbane

CBI

Field Work Variance No. 03-018

FIELD WORK VARIANCE

Project Name/Number	Fort Ord / 07202.2001	**WAD**	WAD 03
Applicable Document	*Final Work Plan, MRS-BLM Burn Units 01-05, Munitions and Explosives of Concern, Remedial Action, Former Fort Ord, California, Revision 0*	**Date**	August 8, 2014

Problem Description:

1) The *Final Work Plan, MRS-BLM Burn Units 01-05, Munitions and Explosives on Concern Removal, Former Fort Ord, California, Revision 0 (Shaw, 2008) (Units 1-5 WP)* documents the procedures for technology-assisted surface Munitions and Explosives of Concern (MEC) remediation within Units 1-5. Changes in procedures from previous work plans require the UXO Teams to search through vegetative duff layer at the site and removal of all items greater than 2" in any dimension, including Material Potentially Presenting and Explosive Hazard (MPPEH) and Munitions Debris (MD). Quality control (QC) standards outlined in the Units 1-5 WP result in a grid failure if one item greater than 2" in any dimension is encountered. A revised QC criteria was instituted during the work in Units 11 and 12 where vegetation was masticated (FWV 03-003) to achieve technology-aided surface MEC removal within acceptable production efficiency and quality, without compromising public safety. This QC criteria is appropriate to be used since vegetation in Units 1-3 was masticated, not burned as envisioned in the original work plan, leaving chipped vegetation materials on the ground surface.

2) Current QC seeding rate as outlined in the Units 1-5 WP for surface MEC removal is a minimum of **one** seed per four acres. A new QC seeding rate was instituted when work in Units 7, 10 and 33 began designed for each UXO team to encounter one QC seed per day (also described in attached FWV 03-016).

3) Additional key sections of the Units 1-5 WP require updating as outlined below.

Recommended solution:

1) Revise Technical Management and QC sections of the Units 1-5 WP which address this QC standard as described above in accordance with current field procedures. The following text will be updated and/or added to the Units 1-5 WP to address this issue:

Section 2.4.3.5 Technology-Aided Surface Removal: Following vegetation removal and completion of the grid and border survey, a technology-aided surface MEC removal will be conducted. The intent of the surface MEC removal is twofold: 1) to remove surface MEC/MPPEH, and 2) to remove metallic debris including MEC/MPPEH, MD, range-related debris (RRD), and other debris that could impact the DGM survey results.

Any MEC, suspected MEC, and MEC-like items (items that could be mistaken for MEC) will be removed from the ground surface. Single expended small arms shell casings (small arms) will not be required to be picked up, since they do not pose an explosive hazard and will not interfere with DGM. Any casing 20 mm or above will be removed. Piles of expended shell casings will be removed. With the exception of shell casings described above, metallic objects greater than 2 inches in any dimension will be picked up and removed from the site to the extent practicable. The soil surface will be considered the extent of surface removal. There will be no scuffing of soil to find metallic items detected with magnetometers. If an item is partially visible on the surface, it will be removed as part of surface removal. QC inspection of the technology-aided surface MEC removal will be conducted prior to the DGM as well as quality assurance (QA).

During surface MEC removal, UXO teams will use magnetometers to support visual identification of MEC/MPPEH/MD. UXO-qualified personnel and UXO sweep personnel will walk in parallel lines across each removal grid to provide complete visual coverage. Visual inspection will be conducted in 5-foot search lanes assisted by use of hand held magnetometers in all areas. The UXO Team will investigate all magnetometer ring-offs on the soil surface. If the soil surface is covered by vegetation, the UXO Technician will remove the overburden at the magnetometer ring-off to expose the soil surface.

Metallic debris identified on the ground surface will be removed from Units 1-5. MEC/MPPEH will be treated in accordance with the MPS (ITSI, 2011). The easting and northing location of MEC/MPPEH will be recorded with a GPS to acquire the exact geo-referenced location at which it was found. MEC/MPPEH found within areas where RTK GPS does not function properly will be referenced to the nearest known grid stake location. MD will be tracked by general item type and estimated weight on a grid-by-grid basis. The quantity of MEC/MPPEH/MD/RRD per grid will be recorded. Recovered MD will be stored in lockable containers at a designated staging area for future disposal. Details on procedures for implementation of the surface MEC removal are provided in Section 2.4.3, Surface Munitions and Explosives of Concern Removal Procedures, of the MPS (ITSI, 2011).

Surface removal personnel will be trained to recognize and document evidence of potential soil contamination. Any indication of potential soil contamination will be reported in the Technical Memorandum.

Section 10.1.1 (To Be Added) Detection Performance Goals: A QC survey will be performed by the UXOQCS following completion of surface removal grids. Location of any MEC or MEC-like items (items that could be mistaken for MEC) would constitute a grid failure. Location of any casing 20mm or above will constitute a grid failure. Location of single expended small arms shell casings on the surface will not constitute a QC failure. With the exception of MEC and MEC-like items *and metallic items deemed (on a case-by-case basis) to adversely impact DGM quality*, metallic objects greater than 2 inches will not constitute a grid failure.

Following DGM in surface areas only, certain detected anomalies will be checked in the field to ensure the items displayed as DGM anomalies are not actually surface items. This work will be conducted by both ITSI Gilbane Company and USACE and the results presented to the BCT.

A corrective action report (CAR) will be promptly developed to investigate the grid failure root cause. Corrective action will include a grid re-inspection process. Preventive actions will be based on the root cause, but may include additional procedure controls, more rigorous UXOQCS field surveillance, and additional training. Corrective measures processes are provided in Section 6.11, Corrective Measures, of the MPS (ITSI, 2011). Items greater than 2" in any dimension will continue to be removed by UXO teams to the extent possible.

2) Modify QC seeding rate in accordance with FWV 03-016 and the *Final EM 200-1-15 Performance Table 11-6* (both attached). QC seeds will be placed across Units 1-5 at a rate of one QC seed to potentially be encountered per surface MEC removal team per day.

3) Update/add to key sections of the Units 1-5 WP as outlined below in the recommended solution section of this FWV.

Section 1.1 Preface: Prescribed burns were not conducted as originally detailed in the Units 1-5 SSWP due to concerns regarding the height and density of brush and close proximity of Monterey Airport and residential areas to these units. Vegetation will be mechanically masticated and a prescribed burn will be conducted at a later date.

Section 1.2 Purpose: An Explosives Safety Submission (ESS) has been submitted and approved by the Department of Defense Explosives Safety Board (DDESB).

Section 1.9.2 Summary of MEC-Related Activities and Data Collected to Date: MEC remedial action activities in the eastern portions of Units 1, 2, and 3 have been completed as part of preparatory activities for prescribed burns within Units 7 and 10. Additionally, remedial action activities along a 100-ft buffer along the western edge of these units has been completed as part of establishment of the Impact Area MRA 100-ft buffer.

Section 2.2.2 Chemical Warfare Materiel: Further details regarding procedures to be followed in the event of the discovery of a suspect CWM item can be found in *Recovered Chemical Warfare Material Response Process*, Engineering Pamphlet (EP) 75-1-3 (USACE, 2004). In the unlikely event of encountering Chemical Agent

Identification Set kits, they will be handled in accordance with the procedures included in *Policy Guidance – Chemical Agent Identification Sets Containing Dilute Agent (Except Dilute Nerve) and Industrial Chemicals* (Army, 2008b).

Section 2.2.3 Procedures When MEC Cannot Be Disposed or MEC are Unidentified: In the event that MEC or material potentially presenting an explosive hazard (MPPEH) is encountered that cannot be disposed or readily identified, the USACE Ordnance and Explosives (OE) Safety Specialist will be notified. If the USACE OE Safety Specialist is unable to identify the MEC/MPPEH item, Vandenberg Air Force Base (AFB) Explosive Ordnance Disposal (EOD) personnel will be notified. Phone contact information for the Vandenberg AFB EOD is 805-606-9961. Further information on procedures for when MEC/MPPEH cannot be disposed of on site is provided in Section 2.4.4.5, Munitions and Explosives of Concern Identification, of the MPS (ITSI, 2011).

Section 2.3 Project Personnel, Organization, Communication and Reporting: Personnel qualifications will be documented in accordance with USACE Data Item Description (DID) WERS-012.01 and all UXO personnel will meet the qualification requirements of DDESB Technical Paper 18 (DDESB, 2004). The project team will include the following managerial and technical positions:

- PM: Stephen Crane
- Deputy PM: Erin Caruso
- Contractor QC Manager: Tom Ghigliotto
- Task Manager: Kevin Siemann
- Site Safety and Health Officer: Val Valdez
- Senior UXO Supervisor (SUXOS): Brad Olson
- UXO QC Specialist (UXOQCS): Bruce McClain
- UXO Safety Officer (UXOSO): Val Valdez
- Project Biologist: Jami Davis
- QC Geophysicist: Jeremy Flemmer
- Project Geophysicist: Andy Gauscho
- Site Geophysicist: Chuck Nycum
- UXO Technicians
- Geophysical Technicians
- Geographic Information System (GIS) Database Manager: Chris Russo
- GIS Site Support: Eric Schmidt.

Section 2.4.6.4 MEC Discovery, Notification and Reporting: MEC-related activities will be performed in accordance with the MPS (ITSI, 2011) and this SSWP. Recovered MEC will be treated by detonation. Detonation procedures are provided in Section 2.4.4.7, Detonation Operations, of the MPS (ITSI, 2011). All MEC will be blown-in-place unless prior authorization is received from the USACE OE Safety Specialist. As necessary, UXO teams will use engineering controls to reduce the fragmentation distance during intentional detonations. The maximum fragment range–horizontal will be used for all unmitigated intentional detonations.

Procedures for the disposition of MPPEH are provided in Section; 2.4.5, Disposition of Material Potentially Presenting an Explosive Hazard (MPPEH), of the MPS (ITSI, 2011). Guidance detailed in DoD 6055.09-M (DoD, 2010) will also be applied for handling MPPEH. Operational data (including recovery information, such as date excavated, grid location, item type/classification, observed depth, estimated weight, and detailed description) will be recorded for each excavated MEC item. Requirements for MD and scrap management are provided in Section 2.4.5.5, Certification/ Verification/Disposition of Munitions Debris, of the MPS (ITSI, 2011).

Section 5.0 (to be added) Geophysical System Verification: ITSI Gilbane Company uses the Geophysical System Verification (GSV) process to ensure the integrity of the geophysical mapping equipment. The collected

data also helps to quantify site-specific geophysical characteristics that determine the detectability of items of interest. A detailed description of the GSV approach is given the ESTCP report "Geophysical System Verification (GSV): A Physics-Based Alternative to Geophysical Prove-Outs for Munitions Response" published in July, 2009.

MEC detection instrumentation, including both analog and digital equipment, will be tested prior to field use and throughout the project duration. The equipment will be operated over a test strip (the IVS – Instrument Verification Strip) seeded with Industry Standard Objects (ISOs, see Table 5-1). IVS's are currently established. The IVS's, also include two inert items of the types that are expected to be found in the work area, buried at depths that are dependent upon the items selected. The ISOs are schedule 40 pipe nipples, threaded on both ends, made from black welded steel. Table 5-1 summarizes the items and their positioning.

Table 5-1
Positioning of IVS Seeds

Item	Type	Orientation	Depth (inches)
1	Small ISO	Vertical	9
2	Small ISO	Horizontal	4
3	40mm	Vertical	11
4	40mm	Horizontal	5

The responses measured over the ISOs will be compared to the known responses of these items, as provided by the Naval Research Laboratory (NRL). Similar results are indicative that the EM61–MK2A and the positioning instrumentation are working properly. Inert munitions items in the IVS, with an SNR of 10x or greater, will return a Channel 2 response that is greater than (or equal to) 75% of the average Channel 2 response, based on the first week of tests. The response from each item will be compared to both historical readings from previous EM61 surveys at Fort Ord and physics-based models. Measurements of dynamic noise will not exceed +/- 2.5mv for all EM61 data channels (standard deviation). The final metric for this parameter will be defined during the initial IVS testing.

The MEC Procedures Supplement (MPS) (ITSI, 2011) will be implemented for this work. The 2011 Final MEC Procedures Supplement (MPS) was developed to facilitate and streamline Munitions Response (MR) activities at the former Fort Ord. This MPS provides standard procedures, protocols, and methodologies that are to be followed during execution of field work at all former Ford Ord Munitions Response Sites (MRS). The MPS is generic in nature and designed to streamline SSWP development, review, and approval. It is to be used in conjunction with each SSWP to support MR activities and objectives. The 2011 MPS has been amended by the following FWVs:

- FWV 03-004 (OE-0737B.2): The field geophysicist will capture field note data digitally during DGM operations and remove the required preparation of paper forms.
- FWV 03-005 (OE-0737B.3): Removed the incidental data gap fill the requirement for Category B areas.
- FWV 03-006 (OE-0737B.4): The contractor is required to deliver the raw and processed files in one delivery, within 5 days of data collection. This delivered product will merge all data from the raw and processed xyz files into one file.
- FWV 03-007 (OE-0737B.5): The contractor will complement the Final Data Delivery Report with an Excel spreadsheet that documents QC test results (through time).
- FWV 01-001 (OE-0737B.6): Replaced original forms with revised forms, assigned a technical GIS analyst, and revised QC geophysicist responsibilities.

The following references have been updated since the submittal of the Units 1-5 SSWP:
HNC-ED-CS-S-96-8 Revision 1, 1997, USACE, Huntsville, *Guide for Selection and Siting of Barricades for Selected UXO*, September.
HNC-ED-CS-S-98-7 Amendment 1, 2011, USACE, Huntsville, *Use of Sandbags for Mitigation of Fragmentation and Blast Due to Intentional Detonation of Munitions*, February.
HNC-ED-CS-S-98-8 Revision 1, 2010, USACE, Huntsville, *MOFB*, March.
U.S. Army Corps of Engineers (USACE), 2006, ER 1110-1-12, *Engineering and Design - Quality Management, Washington, DC.*
USACE, 2012, *ER 415-1-10: Contractor Submittal Procedures.*
USACE, 2000, *EP 1110-1-18, OE Response.*
USACE, 2004, *EP 385-1-95, Basic Safety Concepts and Considerations for (MEC) Response Actions.* August.

Impact on present and completed work:

Allows for timely completion of the surface MEC remediation in Units 1-5 in order to reduce the potential explosive hazard within the units.

Recommended solution/disposition:

Incorporate this FWV as an appendix to the existing Final Work Plan.

Clarification ☒ Minor Change ☐ Major Change ☒

Affects Budget Yes ☒ No ☐
Affects Schedule Yes ☒ No ☐

Signature _____ Date 7/28/14
Task Manager

ITSI Gilbane

CB&I

Field Work Variance No. 03-018

Signature	Bradley Ob	Date 7/28/14	Signature	Erin Caruso	Date
	SUXOS			Project Manager	
Signature	Tom	Date 7/28/14	Signature	Erin Caruso	Date
	CQCSM			Deputy Project Manager	
Signature	Bruce M C	Date 7/28/14			
	UXOQCS				

USACE Approval: If Major Change:

Signature		Date 7/28/14	Signature	EISEN.DAVID.E.1231985146	Date
	OE Safety Specialist			USACE COR or TM	
Signature	JACKSON.JOHN.MICHAEL.1396427903	Date			
	USACE Project Geophysicist				

Attachments

Gilbane

TRANSMITTAL MEMORANDUM

To: Distribution

Date: January 16, 2014

Subject: Field Work Variance No. 03-016, to the *Final, Site Specific Work Plan, Munitions and Explosives of Concern, Remedial Action, MRS-BLM Units 6, 7, and 10, Former Fort Ord, California*

DCN: 07202.2001.181

Attached please find Field Work Variance No. 03-016 which amends the *Final, Site Specific Work Plan, Munitions and Explosives of Concern, Remedial Action, MRS-BLM Units 6, 7, and 10, Former Fort Ord, California*

Should you have any questions, please contact the U.S. Army, Fort Ord BRAC Community Relations Office, at (831) 393-1284 or by e-mail at melissa.m.broadston.ctr@mail.mil.

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FWV 03-016 to the Final, Site Specific Work Plan, Munitions and Explosives of Concern, Remediation Action, MRS-BLM Units 6, 7, and 10, Former Fort Ord, California

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1		Mr. David Eisen	Department of the Army, USACE	4463 Gigling Road	Seaside, CA	93955
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1		Mr. Lyle Shurtleff	Department of the Army, Fort Ord BRAC	4463 Gigling Road	Seaside, CA	93955
1		Ms. Chieko Nozaki	Chenega Corporation	4463 Gigling Road	Seaside, CA	93955
1		Mr. Eric Morgan	Bureau of Land Management, c/o Fort Ord BRAC Office	4463 Gigling Road	Seaside, CA	93955
1		Mr. Lewis Mitani	U.S. Environmental Protection Agency, Region IX	75 Hawthorne Street, Mail SFD-8-3	San Francisco, CA	94105
1		Mr. Tom Hall	Tech Law, Inc.	7 Shore Point	North Little Rock, AR	72116
1		Mr. Roman Racca	California Department of Toxic Substances Control	8800 California Center Drive	Sacramento, CA	95826
1		Mr. Ed Walker	California Department of Toxic Substances Control	8800 California Center Drive	Sacramento, CA	95826
1		Mr. Mike Weaver	Fort Ord Community Advisory Group (FOCAG)	52 Corral De Tierra Road	Salinas, CA	93908
1		Mr. Dan Amadeo	Marina In Motion	P.O. Box 1641	Marina, CA	93933
1		Ms. LeVonne Stone	Fort Ord Environmental Justice Network (FOEJN)	P.O. Box 361	Marina, CA	93933
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Distribution List:

FWV 03-016 to the Final, Site Specific Work Plan, Munitions and Explosives of Concern, Remediation Action, MRS-BLM Units 6, 7, and 10, Former Fort Ord, California

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1		Mr. Kevin Siemann	ITSI Gilbane Company	4522 Joe Lloyd Way	Monterey, CA	93944
1	1	Ms. Audrey Johnson	ITSI Gilbane Company	4522 Joe Lloyd Way	Monterey, CA	93944
1		Mr. Tom Ghigliotto	PAM Environmental Services	4522 Joe Lloyd Way	Monterey, CA	93944

Approval: EISEN.DAVID.E.123198 5146 Digitally signed by EISEN.DAVID.E.1231985146 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=EISEN.DAVID.E.1231985146 Date: 2014.01.15 14:51:50 -08'00'

David Eisen
USACE Project Manager

FIELD WORK VARIANCE

Project Name/Number	Fort Ord / 07202.2001	**WAD**	WAD 03
Applicable Document	Final, Site Specific Work Plan, Munitions and Explosives of Concern Remedial Action, MRS-BLM Units 6, 7, and 10, Fort Ord, California (Final SSWP), July, 2012, ITSI Gilbane	**Date**	December 16, 2013

Problem Description:

1) During the prescribed burn of Unit 7 conducted on October 15, 2013, a portion of Unit 33 (approximately 94 acres) burned as a result of unintended spot fires. The burn removed vegetation and exposed the ground surface in the majority of Unit 33. As a result of this burn occurring, the entire unit (approximately 124 acres) will undergo MEC remediation. Unit 33 was not included in the SSWP which addressed the other units (Units 7 and 10) scheduled for prescribed burning in 2013.

2) Current QC Seeding rate as outlined in Final SSWP for surface MEC removal is a **minimum** of one QC seed per 4 acres. Modify QC seeding rate in accordance with *Final EM 200-1-15 Performance Table 11-6* (attached).

Recommended solution:

Add Unit 33 to the Final SSWP. Remedial action procedures addressed in the Final SSWP for Units 6, 7, and 10 shall be followed for Unit 33. Figure 1-1 (attached) shows the Unit 33 location and Figure 1-2 (attached) shows the historical ranges associated with, previous MEC finds within 100 feet of, and remedial actions planned for the unit. Below is additional text specific to Unit 33 and corresponding to original sections in the Final SSWP:

1.2 Site Location – Unit 33 is located in the central southern section of the Impact Area MRA and falls within the MRS-BLM. Unit 33 is bounded to the west, north, south, and east, respectively, by Foul Bore and Phoenix Roads, Sidewinder Road, and Evolution Road.

1.2.1 Military History – Ranges at least partially contained within Unit 33 not discussed in the Final SSWP include the following:

Table 1-1
Ranges Associated with Unit 33 not discussed in Final SSWP

Range	Military History and Training Activities	Unit
Range 64 - Rifle Night Firing	Range is shown on the 1956 training map, but is not shown on the 1958 and 1961 training maps, and is not evident on the 1965 air photo mosaic.	33
Range 65 – Carbine X	Range is shown on the 1956 range construction priority map, but is not shown on the 1958 and 1961 training maps, and is not evident on the 1965 air photo mosaic. It is not known if this range was ever constructed.	33
Range 66 – Carbine XI	Range is shown on the 1956 range construction priority map, but is not shown on the 1958 and 1961 training maps, and is not evident on the 1965 air photo mosaic. It is not known if this range was ever constructed.	33

1.3 Previous Investigations – Previous MEC finds within 100 feet of Unit 33 are shown on Figure 1-2 (attached).

2.5.4 Vegetation Clearance – During the Unit 7 prescribed burn, approximately 94 acres of Unit 33 were

burned. This acreage, in addition to the approximate 30 acres of Unit 33 that did not burn, vegetation will be cut using primarily mechanical means in accordance with procedures established in the Final SSWP and MEC Procedures Supplement.

2.6 Munitions with Greatest Fragmentation Distance - For Quantity-Distance (Q-D) purposes, a Munition with Greatest Fragmentation Distance (MGFD) was established for Unit 33 based on the historical range and sampling data. The MGFD selected for Unit 33 is the projectile, 75mm, HE, MK 1.

2.7 Project Personnel, Organization, Communication, and Reporting – Project Geophysicist: Chuck Nycum (acting).

6.1.3 Site Conditions – Site conditions associated with Units 6, 7, and 10 and detailed in the Final SSWP are essentially identical to the site conditions associated with Unit 33.

10.1.5 QC Seeding Program – QC items will be seeded across the Units 7, 10 and 33 project areas. The current QC Seeding rate as outlined in Final SSWP for surface MEC removal is a **minimum** of one QC seed per 4 acres. QC seeding rate will be modified in accordance with *Final EM 200-1-15* performance requirements identified in *Table 11-6*(attached). QC seeds will be placed at Units 7, 10, and 33 at a rate of one QC seed to be potentially encountered per surface MEC removal team per day. Anticipated team field production rates will be used to establish seeding frequency at the start of the project in order to allow achievement of target rate. Actual team field production rates will be used to establish seeding frequency after the initial stages of the project (2-3 field days) in order to allow achievement of target rate.

Impact on present and completed work:

The additional work extends the schedule of remediation.

Recommended solution/disposition:

Attach this FWV to the Final SSWP and implement as recommended.

Clarification ☐ Minor Change ☐ Major Change ☒

Affects Budget Yes ☒ No ☐
Affects Schedule Yes ☒ No ☐

Signature Kevin Siemann Date 19 Dec 13
Task Manager

Signature Bruce McClain Date 19 Dec 13
SUXOS

Signature Tom Ghigliotto Date 19 Dec 13
CQCSM

Signature Bruce McClain Date 19 Dec 13
UXOQCS

Signature Steve Crane Date 20 Dec 13
Project Manager

Signature Erin Caruso Date 20 Dec 13
Deputy Project Manager

USACE Approval: If Major Change:

Signature MEEK.SHAWN.MICHAEL.1155551739 Date _____

OE Safety Specialist

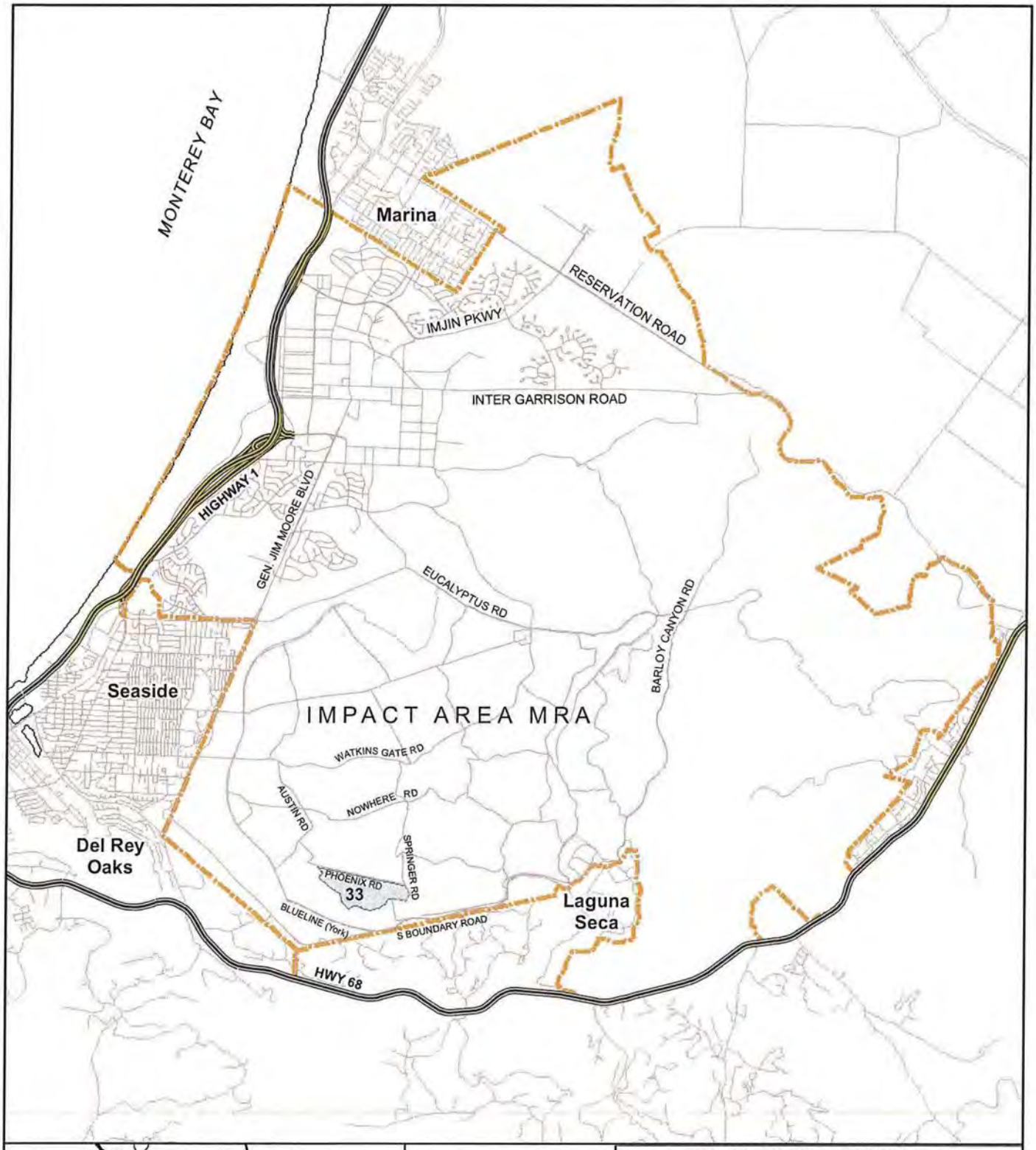
Signature EISEN.DAVID.E.1231985146 Date _____

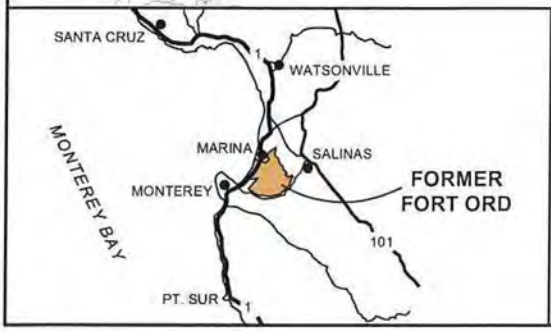
USACE COR or TM

Signature _____ Date

USACE Project Geophysicist

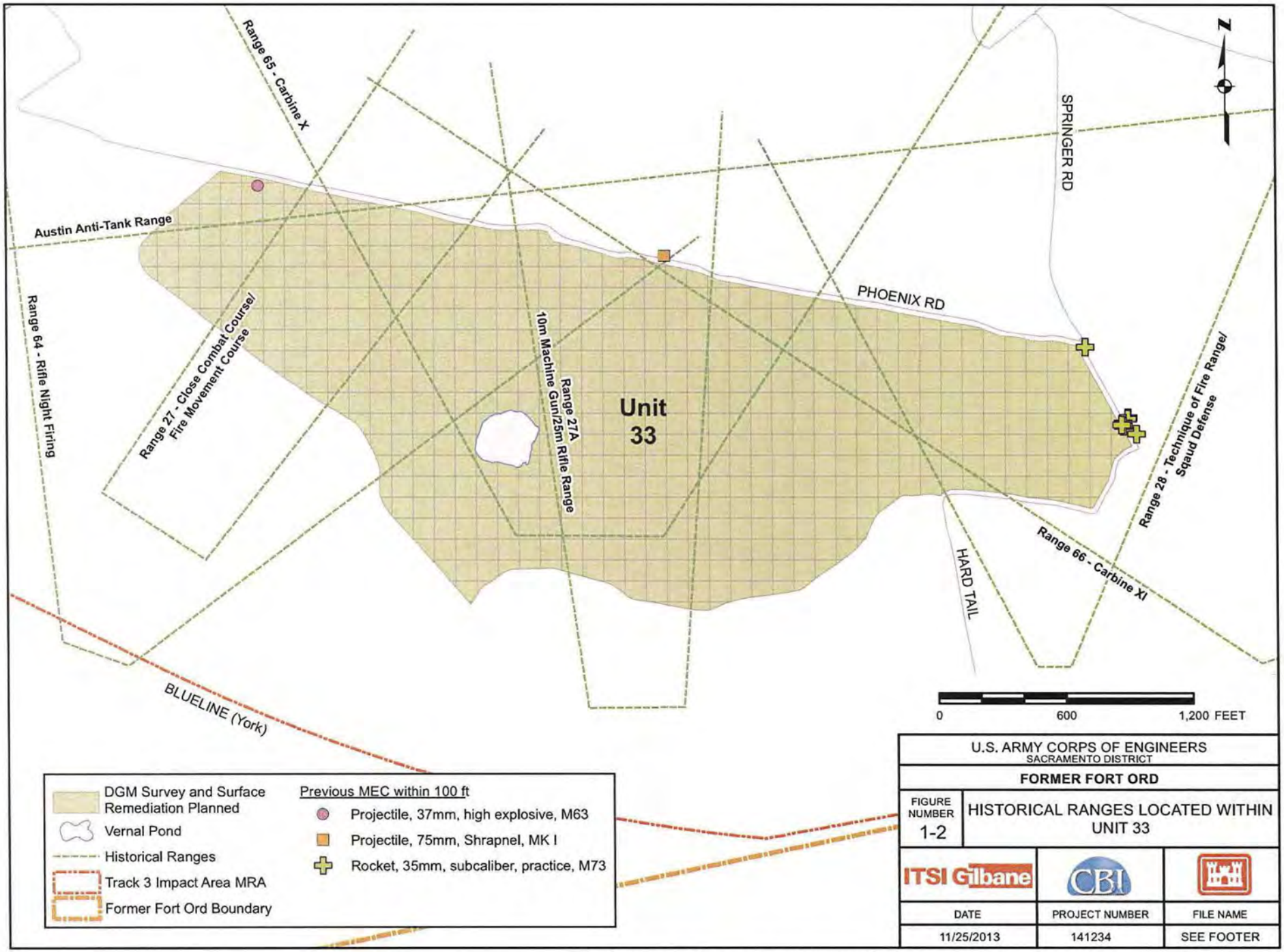
FIGURES





U.S. ARMY CORPS OF ENGINEERS SACRAMENTO DISTRICT		
FORMER FORT ORD		
FIGURE NUMBER 1-1	UNIT 33 LOCATION MAP	
ITSI Gilbane	CBI	
DATE	PROJECT NUMBER	FILE NAME
11/25/2013	141234	SEE FOOTER

File Path:C:\GIS\Fort_Ord_GIS\BurnUnit6_33\GIS_Documents\Burn33_loc.mxd



File Path:C:\GIS\Fort_Ord_GIS\BurnUnit6_33\GIS_Documents\Burn33_ranges.mxd

ATTACHMENT
Final EM 200-1-15 Performance Table 11-6

Table 11-6: Performance Requirements for RA Using Analog Methods[a]

Requirement	Limited Applicability (Specific to Collection Method/Use)	Performance Standard	Frequency	Consequence of Failure[b]
Repeatability (instrument functionality)	All	All items in test strip detected (trains ear daily to items of interest)[c]	Min 1 daily[d]	Remedial training and additional remedial measures as described in the approved UFP-QAPP if due to operator error, or replacement of faulty equipment.[e]
Coverage, detection and recovery *	All	All blind coverage seeds and blind detection seeds recovered[f]	Per operator per lot[g]: variable 1-2 large/deep and 1-3 small/shallow[h]	Redo lot.
Anomaly resolution *[i]	Verification checking of excavated locations (analog or digital instrument)[j]	2nd party checks open holes to determine: 90% confidence < 1%[k] unresolved anomalies.[l] Accept on zero.	Rate varies depending on lot size[g]. See Table 6-6: Acceptance Sampling Table for Anomaly Resolution.[m]	Redo lot.
	Verification checking by DGM remapping[n]	90% confidence < 1%[k] unresolved anomalies.[l] Accept on zero.	Rate varies depending on lot size[g]. See Table 6-6: Acceptance Sampling Table for Anomaly Resolution[m].	Redo lot.
Geodetic equipment functionality *	All	Position offset of known/temporary control point within expected range as described in the approved UFP-QAPP.[o]	Daily	Redo affected work.

Requirement	Limited Applicability (Specific to Collection Method/Use)	Performance Standard	Frequency	Consequence of Failure[h]
Geodetic accuracy	Points used for RTK or RTS base stations	Project network must be tied to HARN, CORS, OPUS or other recognized network[p]. Project control points that are used more than once must be repeatable to within 5 cm	For points used more than once, repeat occupation[q] of each point used, either monthly (for frequently used points) or before re-use (if used infrequently[r]).	Reset points not located at original locations or resurvey point following approved UFP-QAPP.

Note: Performance metrics marked with an * are default values that may be changed by the PDT to suit project needs, potentially as a result of TPP decisions.

[a] These are the critical requirements for RA analog methods. Contractors shall use additional methods/frequencies that they deem beneficial and as required in their SOPs.

[h] All failures also require a root-cause analysis.

[c] The requirement is that each operator demonstrates positive detection on a daily basis of the smallest and largest expected MEC of interest when it is placed at both its best and worst orientations and buried between 95% and 100% of their respective maximum consistent detection depth. Maximum consistent detection depth is defined as producing any above background response on a minimum of the first three time gates of the EM61-MK2 optimized for site conditions and having a 0.9 m2 size or more as calculated using the Geosoft Oasis Montaj UCEAnalyseTarget.gx or equivalent routine.

[d] Random blind reconfiguration of test strip is also required (i.e., moving/adding items) at a frequency determined by the contractor and approved in the UFP-QAPP, to address the potential for simply memorizing seed locations.

[e] Some examples of additional remedial measures are removal of operator from mapping for one day, retesting on new blind strip meeting the same requirements for seed items (could move location of items in same area), and 100% QC reinspection of initial lanes by that operator.

[f] Coverage seeds are small pieces of metal that will produce relatively large amplitude anomalies over small areas, such as small nails or ball bearings. Known location accuracy of placement is not critical. See endnote #g for description of blind detection seeds.

[g] Contractor shall propose the lot size and criteria for designation (i.e., woods vs. open).

[h] Detection and recovery must be demonstrated consistently for the hard to detect items; therefore, seed items (e.g., ISOs) that are representative of the largest expected MEC and the smallest expected MEC shall be placed between 95% and 100% of their respective maximum consistent detection depth.

[i] Resolved is defined as 1) there is no geophysical signal remaining at the flagged/selected location, or 2) a signal remains but it is too low or too small to be associated with TOI, or 3) a signal remains but is associated with surface material which when moved results in low, or no signal at the interpreted location, or 4) a signal remains and a complete rationale for its presence exists.

[j] This requires leaving flags at excavated locations until QC is complete. If UXO technicians need to return to a flag during QC, then the failure has already occurred—it is not important that something large or small comes out of the hole. Assumption here is mapping coverage is addressed through other means. It is up to the contractor to indicate which holes knowingly have metal left in them where the PDT has agreed such is acceptable. It is the contractor's responsibility to not put hot material back in the hole before QC is complete.

[k] This is a statistical test number. These values have been used successfully on previous projects. The PDT may choose to modify the statistical confidence level or the number of unresolved anomalies that are allowable on a site-specific basis. The statistical test number does not imply there are 1% bad units. It tests there are fewer than 1% bad units, including zero bad units. Values for confidence levels will be determined by the PDT and are dependent on the information needed. Stopping rules will take precedence over this standard (i.e., for high MEC density, decision could be made to stop because the team has enough data for characterization).

[l] Unresolved anomaly means a significant signal remains without a complete rationale for its presence.

[m] For example, if lot size is 500, to achieve a 90% confidence that there are less than 5% unresolved anomalies, 43 anomalies must be rechecked. If any one of the 43 is unresolved, then the confidence level has not been met, the lot submittal fails, and all anomalies in that lot must be rechecked (i.e., accept on zero). The contractor shall propose the lot size for government concurrence (i.e., The contractor determines the amount of risk they are willing to take. The larger the lot, the less sampling needs to be done, but the larger the risk of increased costs/rework if failure occurs.). For anomaly resolution, in order to use statistics/confidence levels, it is based on number of anomalies not grids.

[n] Mapping shall cover the required number of anomaly locations. This is used in lieu of checking individual anomalies for those instances where it is quicker to remap sections of land rather than return to individual anomalies. Only the data at the anomaly locations are reviewed for resolution.

[o] Most high-accuracy systems should demonstrate repeatability between 5 cm and 10 cm. Typical accuracies achievable for some high-accuracy systems are 2 cm to sub-centimeter for RTK DGPS and RTS units depending on manufacturer and site conditions. Less accurate systems should demonstrate repeatability within manufacturer published ranges. Typical accuracies for less accurate systems are 5 m to submeter for WAAS or satellite correction service DGPS units depending on manufacturer, correction service and site conditions, and 30 m to 1 m for U.S. Coast Guard beacon corrected units depending on manufacturer.

[p] The plan for tying the project network to a common reference network must be described in the approved UFP-QAPP. If monumentation is part of the plan, specific monumentation procedures and DQOs also need to be specified and installation of monumentation or network control points shall follow all guidance and accuracies specified in EC 1110-1-73 "Standards and Specifications for Surveys, Maps, Engineering Drawings, and Related Spatial Data Products."

[q] Repeat occupation means demonstrate the control points being used can be recovered and reoccupied and that they have not moved more than the requirement specification. This can be accomplished using the same methodology used to initially tie the local network to a HARN, CORS, OPUS, or other recognized network, or it can be accomplished by other means that achieve this requirement.

[r] An example of frequently used control points would be points used as RTK DGPS base stations. Infrequently used points could be those used during RTS operations where the control point was used during mapping and then again at some later time for reacquisition and QC statistical sampling. Infrequently used points could also include grid corners they are used for line and fiducial positioning and then subsequently reused for reacquisition or QC statistical sampling.

Gilbane

TRANSMITTAL MEMORANDUM

To: Distribution Date: December 10, 2014

Subject: Field Work Variance No. 03-019, to the *Final Site Specific Work Plan, Munitions and Explosives of Concern, Remedial Action, MRS-BLM Units 1-5, Former Fort Ord, California*

DCN: 07202.2001.260

Attached please find Field Work Variance No. 03-019 which amends the *Final Site Specific Work Plan, Munitions and Explosives of Concern, Remedial Action, MRS-BLM Units 1-5, Former Fort Ord, California.*

Should you have any questions, please contact the U.S. Army, Fort Ord BRAC Community Relations Office, at (831) 393-1284 or by e-mail at melissa.m.broadston.ctr@mail.mil.

4522 Joe Lloyd Way, Monterey, CA 93944
PO Box 1860, Marina, CA 93933

(831) 212-4121
fax (831) 883-0152
www.itsi.com

Distribution List:

Field Work Variance No. 03-019, to the *Field Work Variance No. 03-019, to the Final Site Specific Work Plan, Munitions and Explosives of Concern, Remedial Action, MRS-BLM Units 1-5, Former Fort Ord, California*

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1		Mr. John Jackson	Department of the Army USACE	1325 "J" Street	Sacramento, CA	95814
1		Mr. Therman Franks	Department of the Army USACE	1325 "J" Street	Sacramento, CA	95814
1		Mr. James Specht	Department of the Army USACE	1325 "J" Street	Sacramento, CA	95814
1		Mr. Shawn Meek	Department of the Army, USACE, C/O Fort Ord BRAC	4463 Gigling Road	Seaside, CA	93955
1		Mr. David Eisen	Department of the Army, USACE, C/O Fort Ord BRAC	4463 Gigling Road	Seaside, CA	93955
1		Mr. Lyle Shurtleff	Department of the Army, Fort Ord BRAC	4463 Gigling Road	Seaside, CA	93955
1		Mr. Terry Gleason	Department of the Army USACE	1325 "J" Street	Sacramento, CA	95814
1		Mr. William Collins	Department of the Army, Fort Ord BRAC	4463 Gigling Road	Seaside, CA	93955
1		Ms. Chieko Nozaki	Chenega Corporation	4463 Gigling Road	Seaside, CA	93955
1	1+CD	Ms. Lindsay Alexander	Fort Ord Administrative Record, Fort Ord BRAC	4463 Gigling Road, Room 101	Seaside, CA	93955
1		Mr. Lewis Mitani	U.S. Environmental Protection Agency, Region IX	75 Hawthorne Street, Mail SFD-8-3	San Francisco, CA	94105
1		Mr. Ed Walker	California Department of Toxic Substance Control	8800 California Center Drive	Sacramento, CA	95826
1		Mr. Tom Hall	Techlaw, Inc.	7 Shore Point	North Little Rock, AR	72116
1		Mr. Terry Zdon	Tech Law, Inc.	90 New Montgomery Street Suite 710	San Francisco, CA	94105
1		Mr. Eric Morgan	Bureau of Land Management, c/o Fort Ord BRAC Office	4463 Gigling Road	Seaside, CA	93955
	1+CD	Mr. Dan Amadeo	Marina In Motion	P.O. Box 1641	Marina, CA	93933
	1	Ms. LeVonne Stone	Fort Ord Environmental Justice Network	P.O. Box 361	Marina, CA	93933
	1	Mr. Mike Weaver	Fort Ord Community Advisory Group	52 Corral De Tierra Road	Salinas, CA	93908
1		Mr. Steve Crane	Gilbane Company	2934 Gold Pan Court, Suite 12	Rancho Cordova, CA	95670
1		Mr. Brad Olson	Gilbane Company	PO Box 1860	Marina, CA	93933
1	1	Ms. Audrey Johnson	Gilbane Company	PO Box 1860	Marina, CA	93933

Distribution List:

Field Work Variance No. 03-019, to the *Field Work Variance No. 03-019, to the Final Site Specific Work Plan, Munitions and Explosives of Concern, Remedial Action, MRS-BLM Units 1-5, Former Fort Ord, California*

Email	Paper	Name	Organization	Address	City, State	Zip
1		Mr. Tom Ghigliotto	Chenega Corporation	PO Box 1860	Marina, CA	93933
1		Mr. Charles Nycum	Shaw Environmental, Inc. a CB&I Federal Services Company	PO Box 1698	Marina, CA	93933

Approval: EISEN.DAVID.E.1231985146 Digitally signed by EISEN.DAVID.E.1231985146 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=EISEN.DAVID.E.1231985146 Date: 2014.12.11 08:27:31 -08'00'

David Eisen
Project Manager

Field Work Variance No. 03-019

Page 1 of 3

FIELD WORK VARIANCE

Project Name/Number	Fort Ord / 07202.2001	**WAD**	WAD 03
Applicable Documents	Final, Site-Specific Work Plan, Munitions and Explosives of Concern Remedial Action, MRS-BLM Units 1-5, Former Fort Ord, California (Units 1-5 SSWP) AR# OE-0626L	**Date**	December 3, 2014

Problem Description:

Following the vegetation removal in Unit 2 a significant number of range structures were identified, which included target boxes, soil backstops, and/or former military targets that have affected 24 grids (see Attachment 1). Many of the target boxes consisted of large and up to 10 ft deep non–engineered excavations which limit the ability of UXO staff to conduct removals, due to safety issues. Soil backfill is not readily available and on site soils cannot be utilized until chemical testing is conducted and determined to be not contaminated.

Recommended solution:

Surface MEC removal and digital geophysical mapping (DGM) survey in all grids within MRS-BLM Unit 2 will be completed in accordance with the Units 1-5 SSWP, with the exception of the 24 grids shown on the attached Figure 1. Contractor will place snow fence around excavations to mark excavations. Complete surface MEC removal and DGM survey to the extent possible in these remaining 24 grids. After target boxes are filled in and targets are removed, complete remaining surface MEC removal in these areas.

Include this Field Work Variance as an attachment to the Final Units 1-5 SSWP

Impact on present and completed work:

Will allow for timely completion of Unit 2 field work and documentation and will have minimal effect on project schedule and budget.

Recommended solution/disposition:

Implement as recommended.

Clarification ☐ Minor Change ☒ Major Change ☐

Affects Budget Yes ☒ No ☐

Affects Schedule Yes ☒ No ☐

Signature _____ Date 12/3/14
Task Manager

Signature _____ Date 12/3/14
SUXOS

Signature _____ Date 12/5/14
CQCSM

Signature _____ Date 12/3/14
UXOQCS

Signature Steve Crane Date _____
Project Manager

Signature Erin Caruso Date _____
Deputy Project Manager

USACE Approval: If Major Change:

Signature _____ Date 12/4/14 Signature EISEN.DAVID.E.1231985146 Digitally signed by EISEN.DAVID.E.1231985146 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=EISEN.DAVID.E.1231985146 Date: 2014.12.10 [illegible] Date _____

OE Safety Specialist

USACE COR or TM

Signature JACKSON.JOHN.MICHAEL.1396427903 Digitally signed by JACKSON.JOHN.MICHAEL.1396427903 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=JACKSON.JOHN.MICHAEL.1396427903 Date: 2014.12.10 15:52:22 -08'00' Date _____

USACE Project Geophysicist

Data presented on map are current as of the date below. Data have not undergone a quality control review and therefore, are subject to change.

U.S. ARMY CORPS OF ENGINEERS
SACRAMENTO DISTRICT

FIGURE NUMBER	FORMER FORT ORD Unit 2 Surface Removal FWV
1	

DATE	PROJECT NUMBER	FILE NAME
10/16/2014	141234	See Footer

Path: C:\GIS\Fort_Ord_GIS\U2_3\Field_Documents\Projects\U02_surface_FWV.mxd

Distribution List:

FWV 003-020, Final, Site-Specific Work Plan, Munitions and Explosives of Concern, Remedial Action, MRS-BLM Units 1-5, Former Fort Ord, California

CD	Email	Name	Organization	Address	City, State	Zip
	1	Mr. James Specht	Department of the Army, USACE	1325 J Street	Sacramento, CA	95814
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	1	Mr. Therman Franks	Department of the Army, USACE	4101 Jefferson Plaza NE	Albuquerque, NM	87109
	1	Mr. David Eisen	Department of the Army, USACE	4463 Gigling Road	Seaside, CA	93955
	1	Mr. John Jackson	Department of the Army, USACE	1325 J Street	Sacramento, CA	95814
	1	Mr. Shawn Meek	Department of the Army, USACE	4463 Gigling Road	Seaside, CA	93955
	1	Mr. William Collins	Department of the Army, Fort Ord BRAC	4463 Gigling Road	Seaside, CA	93955
	1	Mr. Lyle Shurtleff	Department of the Army, Fort Ord BRAC	4463 Gigling Road	Seaside, CA	93955
	1	Ms. Chieko Nozaki	Chenega Corporation	4463 Gigling Road	Seaside, CA	93955
	1	Mr. Eric Morgan	Bureau of Land Management, c/o Fort Ord BRAC Office	4463 Gigling Road	Seaside, CA	93955
	1	Mr. Lewis Mitani	U.S. Environmental Protection Agency, Region IX	75 Hawthorne Street, Mail SFD-8-3	San Francisco, CA	94105
	1	Mr. Tom Hall	Tech Law, Inc.	7 Shore Point	North Little Rock, AR	72116
	1	Mr. Terry Zdon	Tech Law, Inc.	90 New Monterey Street, Suite 710	San Francisco, CA	94105
	1	Mr. Ed Walker	California Department of Toxic Substances Control	8800 California Center Drive	Sacramento, CA	95826
	1	Mr. Steve Crane	KEMRON Environmental Services, Inc.	2934 Gold Pan Court, Suite 12	Rancho Cordova, CA	95670
1	1	Ms. Sintia Solis	Gilbane Company	4522 Joe Lloyd Way	Monterey, CA	93944
	1	Mr. Mike Weaver	Fort Ord Community Advisory Group (FOCAG)	52 Corral De Tierra Road	Salinas, CA	93908
	1	Mr. Dan Amadeo	Marina In Motion	P.O. Box 1641	Marina, CA	93933
	1	Ms. LeVonne Stone	Fort Ord Environmental Justice Network (FOEJN)	P.O. Box 361	Marina, CA	93933
1	1	Admin Record	Fort Ord BRAC	4463 Gigling Road	Seaside, CA	93955

Approved: EISEN.DAVID.E.1231985146 Digitally signed by EISEN.DAVID.E.1231985146 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=EISEN.DAVID.E.1231985146 Date: 2015.02.11 09:58:21 -08'00'

David Eisen
USACE Project Manager

Gilbane

CBI

Field Work Variance No. 003-020

FIELD WORK VARIANCE

Project Name/Number	Fort Ord / 07202.2001	**WAD**	WAD 03
Applicable Documents	Final, Site-Specific Work Plan, Munitions and Explosives of Concern Remedial Action, MRS-BLM Units 1-5, Former Fort Ord, California (Units 1-5 SSWP) AR# OE-0626M	**Date**	February 9, 2015

Problem Description:

Current MEC field work protocols require stoppage of MEC removal activities when an item with an unknown filler is encountered by MEC removal teams. As of 2/9/15, surface MEC removal teams working in MRS-BLM Unit 3 have encountered eight 4-inch Stokes Mortars and one Livens Projector, all of which have resulted in stoppage of all field work in and around Unit 3. Following each encounter, a team was dispatched from Chemical, Biological, Radiological, Nuclear, Explosives (CBRNE) Command to make a determination as to the type of filler within the item. Delays resulting from CBRNE team mobilization times have had a significant cost and schedule impact on the project. All items to date were determined to contain screening smoke following further evaluation.

Recommended solution:

Modify current MEC field work protocols to allow MEC removal activities to continue if additional 4-inch Stokes Mortars or Livens Projectors are encountered in Unit 3. The former Fort Ord MEC project team has determined that continuing work following an encounter of an additional item poses negligent risk to field personnel. In the event additional items are discovered, the item will be marked using a GPS, covered with plastic, and surrounded with sandbags. Security for these items will be in place when MEC teams are not working within Unit 3. Plywood will be placed over the item. dc

Impact on present and completed work:

Modification of current MEC field work protocols to allow MEC removal activities to continue if additional 4-inch Stokes Mortars or Livens Projectors are encountered in Unit 3 will allow work to be completed in a timely manner without cost or schedule impacts.

Recommended solution/disposition:

Implement as recommended.

Clarification ☐ Minor Change ☐ Major Change ☒

Affects Budget Yes ☒ No ☐

Affects Schedule Yes ☒ No ☐

Signature _____ Date 2/10/15

Task Manager

Signature Bradley J. Ols Date 2/10/15

SUXOS

Signature Erin Caruso Date 2/10/15

Project Manager

Gilbane

CBI

Field Work Variance No. 003-020

Signature _____ Date 2/10/15
CQCSM

Signature _____ Date 2/10/15
UXOQCS

Signature Steve Crane Date 2/10/15
Deputy Project Manager

USACE Approval: If Major Change:

Signature _____ Date 2/10/15
OE Safety Specialist

Signature _____ Date 2/11/15
USACE COR or TM

FIELD WORK VARIANCE

Project Name/Number	Fort Ord	**WP**	17
Applicable Document	Final, Site-Specific Work Plan, MRS-BLM Units 1-5 Munitions and Explosives of Concern Remedial Action, Former Fort Ord, California (Shaw, 2008) (OE-0626L)	**Date**	May 31, 2016

Background and Problem Description:

Background: A munitions response was conducted at the former Fort Ord, CA in MRS-BLM Units 1, 2, and 3 from June, 2012 until March, 2015. During the munitions response in Unit 3, eight 4 inch Stokes mortar projectiles (4 screening smoke; 3 smoke, hexachloroethane; and 1 smoke, WP) and one Livens Projector (screening smoke) were encountered and removed from the ground surface. Although all nine items were subsequently confirmed to contain smoke fillers, these items also have the potential to be used for delivery of chemical gas. Since the filler of these items cannot be confirmed visually, they are generally classified as munitions with unknown fillers. Both Department of Defense and U.S. Army Corps of Engineers (USACE) guidance specify that only Explosive Ordnance Disposal (EOD) or Chemical, Biological, Radiological, Nuclear and Explosives (CBRNE) response personnel can determine the most likely filler of these munitions. In accordance with standard operating procedures, active duty EOD personnel were contacted to determine the filler of these items. The location of each of the items described above resulted in a stoppage of munitions response work until a response was completed by EOD and CBRNE personnel. These multiple work stoppages significantly extended the munitions response in Unit 3.

Following completion of surface MEC removal within Unit 3, digital geophysical mapping (DGM) was performed to document the presence of subsurface anomalies.

Stokes mortar projectiles and Livens Projectors were previously encountered and removed in an adjacent unit (Seaside 1). A subsurface MEC removal to the depth of instrument detection was performed on this adjacent unit. All these Stokes mortar projectiles were also determined to contain screening smoke.

Prescribed burns are eventually required in Units 1, 2, and 3 as a mitigation for impacts to the habitat from being cut, and the potential exists for Stokes mortar projectiles and Livens Projectors to remain in the shallow subsurface in Unit 3. Any additional such items are likely to contain screening smoke fill. USACE, Sacramento District, has identified as a concern that the potential presence of these unknown filler items in the shallow subsurface could result in an item functioning during a prescribed burn. Although the possibility of an item functioning is deemed as unlikely, an Area of Interest (AOI) with regard to the potential presence of shallow subsurface unknown filler items was delineated (Figure 1). USACE recommended removal of subsurface anomalies that could represent these unknown filler items to a depth of 12 inches.

Problem Description: An unknown filler item could be encountered in the future, necessitating time-consuming procedures that could impact the planned long-term reuse of the property by the Bureau of Land Management, the ultimate property recipient. Conduct of a limited subsurface removal will address the uncertainty that an unknown filler item could be encountered in the future. Based on the expected millivolt (mV) response of a 4.2 inch mortar projectile (a close proxy item for a 4 inch Stokes mortar projectile) at a maximum depth of 12 inches (250 mV), there are a total of 126 subsurface anomalies recommended for investigation and removal in the AOI shown on Figure 1.

Recommended solution:

In order to expedite field work within Unit 3, an alternate intrusive investigation procedure was developed in coordination with USACE. Select subsurface anomalies within a portion of Unit 3 delineated by the locations of these unknown filler items will be investigated and removed to a depth of one foot. The portion of Unit 3 where subsurface anomaly investigation will occur is shown on Figure 1. The AOI shown on is based on a footprint of where the majority of unknown filler items were encountered, coincident with a relatively higher level of

subsurface anomalies.

Field Procedures

DGM Anomaly Reacquisition: Target anomalies selected for subsurface removal will be reacquired prior to excavation. Each target anomaly, with its unique target ID, will be displayed on a grid map over the gridded DGM data to assist the reacquisition team. Target anomaly locations will be reacquired using RTK-GPS or RTS, as applicable. The location of each target anomaly will be verified and refined, if necessary, by using a single-coil person-portable EM61-MK2A to search a 3.5-foot diameter centered on the reported target location, using the target anomaly response value as a guide. A colored non-metallic pin flag marked with the unique target anomaly identification will be placed at the anomaly's peak response location. The offset from the original flag location and the peak Channel 2 EM61-MK2A response value will be digitally documented and recorded. If multiple peak responses are located within the reacquisition search radius, the peak with the highest response amplitude will be selected as the intrusive investigation location. If no unique peak response is identified, the original flag location will be selected as the intrusive investigation location. If no peak response greater than the target selection threshold is located within 3.5 feet of the original flag location, a white pin flag will be placed at the original flag location, and the Field Geophysicist will be consulted.

Notice to EOD Prior to Commencement of Intrusive Activities: Prior to the commencement of intrusive activities, Vandenberg (or other active duty) EOD unit will be notified by the USACE OESS.

Intrusive Investigation: All reacquired anomalies will be investigated to a depth of one foot. If a depth of one foot is reached and no item is encountered, excavation will be stopped and the excavation will be backfilled. If an intrusively investigated item is determined to be either a 4 inch stokes mortar projectile or Livens Projector, the location of the item will be recorded with an RTK-GPS or RTS. The item will be covered with plastic sheeting, plywood and sand bag(s), and the existing hole will be backfilled. All items determined to be either a 4 inch stokes mortar projectile or Livens Projector will be handled in this manner. Following completion of all anomaly excavations, active duty EOD personnel, if not already on site, will be contacted to determine the filler of these items during one site visit.

Other MPPEH items encountered during intrusive activities will be handled in accordance with standard procedures.

Impact on present and completed work:

No impact on current or completed work.

Recommended solution/disposition:

Incorporate this FWV as an appendix to the existing Final Work Plan.

Clarification ☐ Minor Change ☐ Major Change ☒

Affects Budget Yes ☒ No ☐
Affects Schedule Yes ☒ No ☐

Signature Kevin J. Siemann Digitally signed by Kevin J. Siemann DN: C=US, E=ksiemann@gilbaneco.com, O=Gilbane Company, OU=Gilbane Company, CN=Kevin J. Siemann Date: 2016.05.31 13:13:46-07'00' Date _____
Task Manager

Signature Bradley J. Olson Digitally signed by Bradley J. Olson DN: cn=Bradley J. Olson, o=KEMRON, ou, email=bolson@kemron.com, c=US Date: 2016.05.31 15:57:38 -07'00' Date _____
SUXOS

Signature Charles E. Clyde Digitally signed by cclyde@gilbaneco.com DN: cn=cclyde@gilbaneco.com Date: 2016.05.31 12:39 -07'00' Date _____
CQCSM

Signature Steve Crane Digitally signed by Steve Crane Date _____
Project Manager

Signature Erin Caruso Digitally signed by Erin Caruso Date _____
Deputy Project Manager

KEMRON

Field Work Variance No. 005

Gilbane

Signature Bruce McClain Digitally signed by Bruce McClain, o=KEMRON Environmental Services, ou=Former Ft. Ord, email=bmcclain@kemron.com, c=US Date: 2016.03.31 15:39:34 -07'00' Date _____

UXOQCS

USACE Approval: If Major Change:

Signature _____ Date 01 Jun 16 Signature _____ Date June 1, 2016

OE Safety Specialist

USACE COR or TM

Signature JACKSONJOHN.MICHAEL.1396427903 Digitally signed by JACKSONJOHN.MICHAEL.1396427903 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=JACKSONJOHN.MICHAEL.1396427903 Date: 2016.06.01 09:06:01 -07'00' Date _____

USACE Project Geophysicist

KEMRON ENVIRONMENTAL SERVICES

Gilbane

Figure 1

Unit 3 Area of Interest
Stokes Mortar and Livens Projector Anomalies (to 12 inches bgs)

G:\ArcGIS\USACE\Fort_Ord\PROJECTS\Unit_03\Map_Docs\Figure_7_Unit_03_AOI_20160121.mxd 2/3/2016 [10:47 AM] AGASCHO, Gilbane

Appendix B
DD Form 1348-1A
(MD and Metal Debris Documentation)
from KEMRON led field work

DD FORM 1348-1A, JUL 91 (EG) ISSUE RELEASE/RECEIPT DOCUMENT

1 2 3 4 5 6 7	23 24 25 26 27 28 29	45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80	1. TOTAL PRICE	2. SHIP FROM	3. SHIP TO
DOC IDENT	RI FROM M&S	UNIT ISS QUANTITY	SER SUPPLEMENTARY ADDRESS SIG FUND DISTRIBUTION PROJECT PRI REQD DEL DATE ADV RI O/P COND MGT	UNIT PRICE DOLLARS CTS / DOLLARS CTS	KEMRON; Fort Ord 4522 Joe Lloyd Way Monterey, CA 93944	Demil Metal, Inc. 601 N.Skokie Blvd #207; Northbrook, IL 60062
	EA00001				4. MARK FOR

5. DOC DATE	6. NMFC	7. FRT RATE	8. TYPE CARGO	9. PS

10. QTY. REC'D	11 UP	12. UNIT WEIGHT	13. UNIT CUBE	14. UFC	15. SL

16. FREIGHT CLASSIFICATION NOMENCLATURE

17. ITEM NOMENCLATURE
Munitions Debris Inert -Mixed Aluminum

18. TY CONT	19. NO CONT	20. TOTAL WEIGHT	21. TOTAL CUBE
		38,820 lbs MD	

22. RECEIVED BY [signature] 23. DATE RECEIVED 6/12/17

PREVIOUS EDITION MAY BE USED

24. DOCUMENT NUMBER & SUFFIX (30-44)

25. NATIONAL STOCK NO. & ADD (8-22)

26. RIC (4-6) UI (23-24) QTY (25-29) CON CODE (71) DIST (55-56) UP (74-80)

TRL Vin 1UYVS25364P179514, 53 Ft. Box Body Trailer ; 22 GAYLORD Boxes; USACE/Fort Ord, CA/KEMRON/00027
Seal # 162145

27. ADDITIONAL DATA

This certifies that the material listed has been 100 percent properly inspected and, to the best of our knowledge and belief, is free of explosive hazards, engine fluids, illuminating dials and other visible liquid hazardous, toxic, and radioactive waste materials."

Certified By: Brad Olson [signature]
Senior UXO Supervisor - KEMRON
MEC Removal and Soil Remediation Project
Fort Ord, CA Phone 831-905-9960

Verified By: James Britt [signature]
OESS
USACE - Sacramento
Fort Ord, CA Phone 831-824-2324

Adobe Designer 8.0

Appendix C
Examples of DGM Data Forms

Final Data Delivery Report

Grid Block:	A2F2C4	Filename:	A2F2C4_proc_and_raw_combined	Delivery Date:	10/2/2014

Field Survey Data Summary

Survey Date	Survey ID	Phase	File List
9/24/2014	2544	Initial	092414a_1, 092414b_1, 092414ivs_1, 092414z_1

Work Units Included

A2F2C4, A2F2D3, A2F2D4, A2F2D5, A2F2D6, A2F2D7, A2F2D8

PreProcessing

Date: 9/30/2014

PreProcessor: Sally Lamb

Lag/Latency: Array: -0.6s

Along Track Spacing OK: Yes

Across Track Spacing OK: Yes

Nav. Corrections

EM Array Offsets: EM center x = 0m, y = 0m; EM right x = .61m, y = -.61m; EM left x = -.59m, y = -.61m

Initial Coordinate System: Geographic WGS-84 - Lat/Lon

Conversions: MagMap/Dat61 conversion: WGS84 Geographic -> UTM Zone 10N (meters), Geosoft conversion: UTM Zone 10N -> NAD83 California State Plane Zone 4, US Survey Foot

Final Coordinate System: California State Plane Zone 4 - US Survey Foot

Conversion OK: Yes

QC Date: 9/30/2014

QC By: Jeremy Flemmer

PreProcessing QC OK: Yes

QC Notes: None.

Processing

Final Data Delivery Report

Grid Block: A2F2C4 | Filename: A2F2C4_proc_and_raw_combined | Delivery Date: 10/2/2014

Date: 9/30/2014 | Processor: Sally Lamb

Data Leveling / Diurnal Correction

Geosoft GX: uxdrift.gx.
Parameters:
UXDRIFT.LOW=0
UXDRIFT.HIGH=50
UXDRIFT.BLOCK=60.

The same drift correction was applied to all lines and all sensors.

Leveled with a larger raw dataset to avoid edge effects and drift correction errors.

Data Filtering:

None.

Data leveling OK? Yes

Processing Notes:

Field Area: Unit 1

Field Crew: Team 1.

QC Date: 9/30/2014 | QC By: Jeremy Flemmer | Processing QC OK: Yes

QC Notes: None.

Grid Block QC

Platform Velocity

Min	Max	Mean	Std Dev
0.0	3.1	1.6	0.3

Along Track Sampling

Min	Max	Mean	Std Dev
0.0	0.6	0.2	0.1

Across Track Sampling

3.0

Comments

Stats based on raw gridblock dataset. Spikes removed.

Background Statistics

Channel	Min	Max	Mean	Std Dev	# of Points
Ch1_lev	-1.0	3.0	0.5	0.6	152536
Ch2_lev	0.0	2.0	0.5	0.4	120968
Ch3_lev	-1.0	1.0	0.2	0.3	151316
Ch4_lev	-1.0	1.0	0.2	0.3	154197
Sum	-1.0	6.0	1.3	1.3	148002

Final Data Delivery Report

Grid Block:	A2F2C4	Filename:	A2F2C4_proc_and_raw_combined	Delivery Date:	10/2/2014

Field Survey Data Detail

Survey ID:	2544	Survey Date:	9/24/2014		
Type:	EM61	Phase:	Initial	Complete:	True

Notes:

Equipment

Equipment Type: Navigation

Equipment
Nav-Team2

Instrument Role	Serial Number
GPS Receiver	36804

Equipment Type: EM61 Towed Array

Equipment	Data Collection Rate	Line Spacing	Start Battery Voltage	End Battery Voltage
Ord Unit 11/12 Array 1	10 Hz	3 Ft	12.60	12.00

Instrument Role	Serial Number
Coil - Center	1013
Coil - Left	0906
Coil - Right	0929
Electronics - Center	082806
Electronics - Left	092913
Electronics - Right	082805

Weather

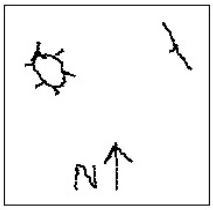
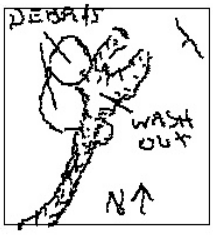
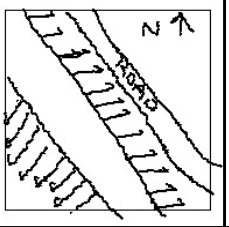
Time	Temp	Notes	Conditions
11:00 AM	70		
			Sky: Clear

Work Units

Survey ID	Work Unit	Estimated Acreage	Tree Height	Sketch	Ground Conditions and Notes
2544	A2F2C4	0.01000	0		added in shawgeo on 9/30 by sl. sketch is on last page of delivery report.

Final Data Delivery Report

Grid Block: A2F2C4 Filename: A2F2C4_proc_and_raw_combined Delivery Date: 10/2/2014

Survey ID	Work Unit	Estimated Acreage	Tree Height	Sketch	Ground Conditions and Notes
2544	A2F2D3	0.09000	0		Brush: Light Terrain: Moderate Slope,
2544	A2F2D4	0.23000	0		Brush: Light Terrain: Ruts Terrain: Moderate Slope,
2544	A2F2D5	0.23000	0		Brush: Light Terrain: Dangerous Terrain: Ruts Terrain: Trench, washout, Terrain: Moderate Slope Terrain: Rocky, debris piles (asphalt and lumber)
2544	A2F2D6	0.23000	0		Brush: Light Terrain: Rolling Terrain: Steep,
2544	A2F2D7	0.23000	0		Brush: Light Terrain: Steep Cultural: Road, dirt
2544	A2F2D8	0.23000	0		Brush: Light Terrain: Moderate Slope Cultural: Road, dirt

Final Data Delivery Report

Grid Block: A2F2C4 | Filename: A2F2C4_proc_and_raw_combined | Delivery Date: 10/2/2014

Sensor QC

Notes:

Sensor stats apply to unleveled data.

Survey Start and End Times: 07:30, 16:30.

Sensor Checks:
Equipment Warm-up - check, Sensor Position - check, Personnel Test - check.

Sensor Calibration Lines:
Static Background - Line 0; Static Spike - Line 1; Coil Test - Line 2; Cable Shake - Line 3; Repeatability Test - Line 4.

Static Background

PRE Survey

Coil # 1	CH1	CH2	CH3	CH4
Min	-33.8	-0.5	-0.9	-2.6
Max	-32.5	0.1	-0.4	-2.1
Mean	-33.2	-0.2	-0.7	-2.4
StdDev	0.2	0.1	0.1	0.1
Coil # 2	**CH1**	**CH2**	**CH3**	**CH4**
Min	-14.7	20.5	7.6	-1.0
Max	-13.6	21.4	8.4	-0.4
Mean	-14.2	20.9	8.0	-0.6
StdDev	0.2	0.1	0.1	0.1
Coil # 3	**CH1**	**CH2**	**CH3**	**CH4**
Min	-9.1	10.0	1.2	-3.7
Max	-8.3	10.9	1.7	-3.2
Mean	-8.7	10.4	1.4	-3.4
StdDev	0.1	0.1	0.1	0.1

Static Background

POST Survey

Coil # 1	CH1	CH2	CH3	CH4
Min	-23.0	-13.4	-2.9	-3.3
Max	-20.9	-11.3	-2.2	-2.9
Mean	-21.8	-12.5	-2.5	-3.1
StdDev	0.4	0.4	0.1	0.1
Coil # 2	**CH1**	**CH2**	**CH3**	**CH4**
Min	8.1	20.1	6.1	-2.1
Max	10.3	21.1	7.0	-1.8
Mean	9.3	20.6	6.6	-2.0
StdDev	0.4	0.1	0.1	0.1
Coil # 3	**CH1**	**CH2**	**CH3**	**CH4**
Min	-3.4	2.8	-1.1	-4.3
Max	-2.1	3.8	-0.5	-4.0
Mean	-2.7	3.3	-0.9	-4.1
StdDev	0.2	0.1	0.1	0.1

Static Spike

PRE Survey

Coil # 1	CH1	CH2	CH3	CH4
Min	59.3	56.8	27.4	6.9
Max	60.6	57.8	28.1	7.4
Mean	60.0	57.3	27.8	7.1
StdDev	0.2	0.2	0.1	0.1
Coil # 2	**CH1**	**CH2**	**CH3**	**CH4**
Min	90.6	86.9	41.6	11.2
Max	92.8	88.4	42.5	11.9
Mean	91.6	87.8	42.1	11.6
StdDev	0.3	0.2	0.1	0.1
Coil # 3	**CH1**	**CH2**	**CH3**	**CH4**
Min	83.2	66.6	28.3	4.9
Max	84.8	67.8	28.9	5.3
Mean	84.1	67.2	28.6	5.1
StdDev	0.2	0.2	0.1	0.1

Static Spike

POST Survey

Coil # 1	CH1	CH2	CH3	CH4
Min	66.6	43.4	24.5	5.6
Max	69.7	46.4	25.3	6.1
Mean	68.3	44.6	24.9	5.9
StdDev	0.6	0.6	0.1	0.1
Coil # 2	**CH1**	**CH2**	**CH3**	**CH4**
Min	107.0	83.5	38.2	9.5
Max	110.0	85.1	39.5	10.0
Mean	108.6	84.3	38.9	9.8
StdDev	0.6	0.2	0.2	0.1
Coil # 3	**CH1**	**CH2**	**CH3**	**CH4**
Min	85.1	57.9	25.0	3.8
Max	87.6	59.3	25.7	4.1
Mean	86.5	58.6	25.4	4.0
StdDev	0.4	0.2	0.1	0.1

Final Data Delivery Report

Grid Block: A2F2C4 | Filename: A2F2C4_proc_and_raw_combined | Delivery Date: 10/2/2014

Cable Shake

PRE Survey

Coil # 1	CH1	CH2	CH3	CH4
Min	-33.6	-0.6	-0.9	-2.5
Max	-32.6	0.0	-0.4	-2.2
Mean	-33.1	-0.3	-0.7	-2.4
StdDev	0.2	0.1	0.1	0.1
Coil # 2	**CH1**	**CH2**	**CH3**	**CH4**
Min	-13.7	20.4	7.7	-1.0
Max	-12.6	21.2	8.2	-0.6
Mean	-13.1	20.9	8.0	-0.8
StdDev	0.2	0.1	0.1	0.1
Coil # 3	**CH1**	**CH2**	**CH3**	**CH4**
Min	-9.2	9.6	1.0	-3.7
Max	-8.5	10.0	1.3	-3.3
Mean	-8.9	9.8	1.2	-3.5
StdDev	0.1	0.1	0.1	0.1

Cable Shake

POST Survey

Coil # 1	CH1	CH2	CH3	CH4
Min	-25.0	-10.7	-3.2	-3.2
Max	-22.7	-8.5	-2.7	-2.9
Mean	-23.6	-9.9	-2.9	-3.0
StdDev	0.6	0.6	0.1	0.1
Coil # 2	**CH1**	**CH2**	**CH3**	**CH4**
Min	6.6	20.8	5.4	-1.9
Max	8.7	21.5	6.3	-1.5
Mean	7.9	21.1	5.9	-1.7
StdDev	0.5	0.1	0.2	0.1
Coil # 3	**CH1**	**CH2**	**CH3**	**CH4**
Min	-4.2	3.8	-1.2	-4.3
Max	-2.7	4.5	-0.7	-3.9
Mean	-3.3	4.0	-1.0	-4.1
StdDev	0.3	0.2	0.1	0.1

Navigation QC

Notes: Repeat Test Anomaly Amplitude taken from CH3 values. Repeat line offset distances are peak to bar in the location after latency is applied in the forward direction. Repeat Original Northing and Easting are first-pass peak location after latency is applied. Lag bar not centered.

2-Line Repeat Data Test

PRE Survey

Coil # 1			
Amplitude	**Northing**	**Easting**	**Offset**
Original: 16.6 Repeat: 13.7	Original: 2111953.29 Repeat: 0.00	Original: 5736728.46 Repeat: 0.00	0.75
Coil # 2			
Amplitude	**Northing**	**Easting**	**Offset**
Original: 91.5 Repeat: 91.3	Original: 2111955.24 Repeat: 0.00	Original: 5736727.83 Repeat: 0.00	0.08
Coil # 3			
Amplitude	**Northing**	**Easting**	**Offset**
Original: 47.9 Repeat: 52.7	Original: 2111957.23 Repeat: 0.00	Original: 5736728.18 Repeat: 0.00	0.39

Final Data Delivery Report

Grid Block: A2F2C4 Filename: A2F2C4_proc_and_raw_combined Delivery Date: 10/2/2014

POST Survey

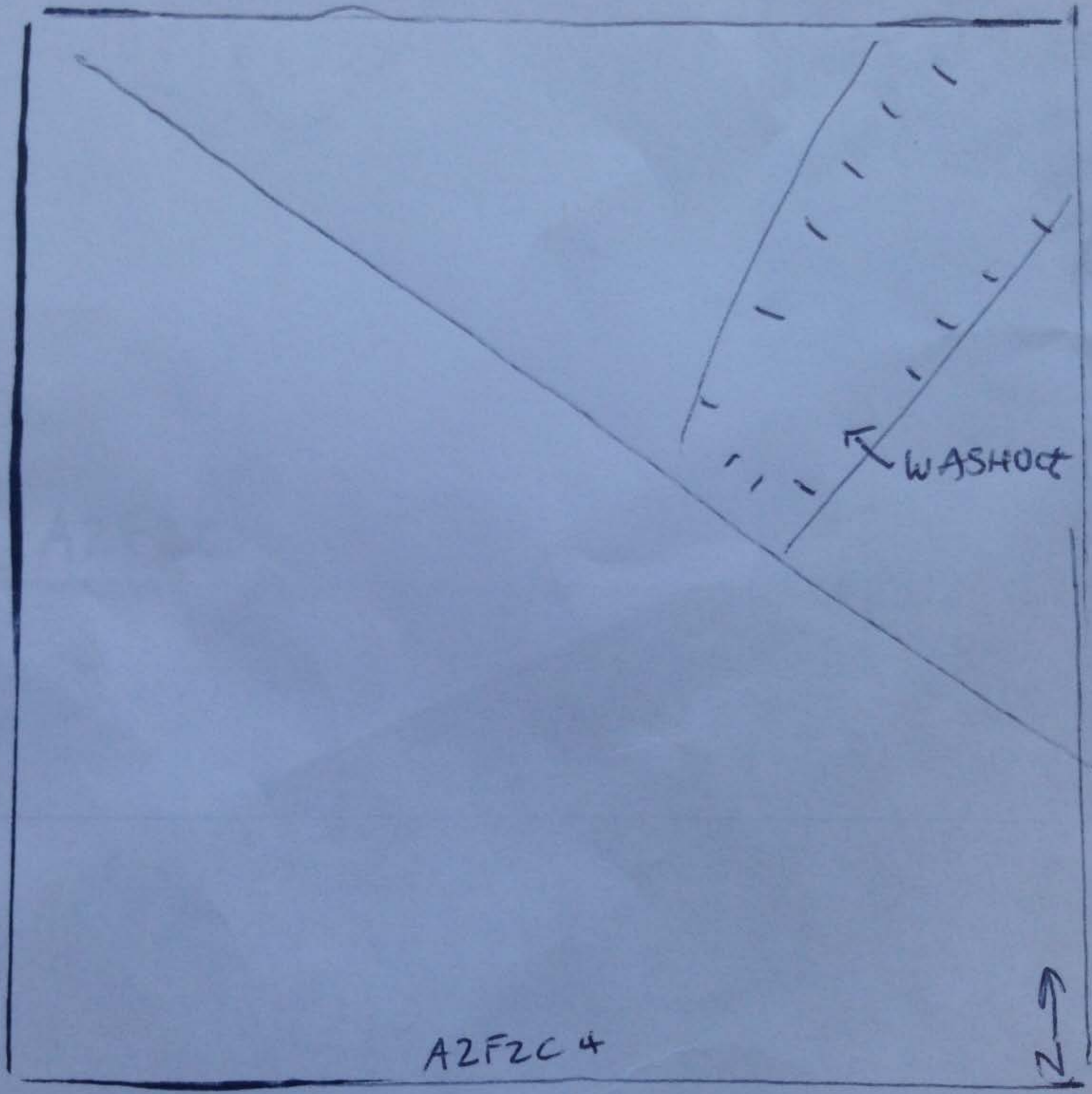
Coil # 2			
Amplitude	**Northing**	**Easting**	**Offset**
Original: 89.3 Repeat: 89.8	Original: 2111955.27 Repeat: 0.00	Original: 5736727.81 Repeat: 0.00	0.05
Coil # 1			
Amplitude	**Northing**	**Easting**	**Offset**
Original: 14.2 Repeat: 12.2	Original: 2111953.32 Repeat: 0.00	Original: 5736728.44 Repeat: 0.00	0.72
Coil # 3			
Amplitude	**Northing**	**Easting**	**Offset**
Original: 42.4 Repeat: 47.3	Original: 2111957.26 Repeat: 0.00	Original: 5736728.20 Repeat: 0.00	0.42

Dynamic Positioning QC Check

Location	Northing	Easting	Offset
A2F2E6	Known: 2107400.00 Recorded: 2107400.48	Known: 5737000.00 Recorded: 5736999.84	Distance: 0.50 Direction: NW

Static Positioning QC Check

Location	Date Time	Northing	Easting	Offset
b2a2a4	9/24/2014 7:30:00 AM	Known: 2112000.00 Recorded: 2111999.97	Known: 5736800.00 Recorded: 5736800.01	Distance: 0.03 Direction: SE


WASHOUT
A2F2C4

Appendix D
USACE Surface Removal Quality Assurance Documentation

Grid ID	Work Date	Operation Type	Contractor	Unit	Acres
A1H0I0	8/14/2014	USACE UXO QA	GILBANE	2	0.10
A1H0J0	8/14/2014	USACE UXO QA	GILBANE	2	0.23
A1H0J8	8/14/2014	USACE UXO QA	GILBANE	2	0.00
A1H0J9	8/14/2014	USACE UXO QA	GILBANE	2	0.11
A1I0A0	8/26/2014	USACE UXO QA	GILBANE	2	0.23
A1I0A7	8/28/2014	USACE UXO QA	GILBANE	2	0.00
A1I0A8	8/28/2014	USACE UXO QA	GILBANE	2	0.13
A1I0A9	8/26/2014	USACE UXO QA	GILBANE	2	0.23
A1I0B0	8/26/2014	USACE UXO QA	GILBANE	2	0.23
A1I0B6	8/28/2014	USACE UXO QA	GILBANE	2	0.00
A1I0B7	8/28/2014	USACE UXO QA	GILBANE	2	0.14
A1I0B8	8/28/2014	USACE UXO QA	GILBANE	2	0.23
A1I0B9	8/26/2014	USACE UXO QA	GILBANE	2	0.23
A1I0C0	8/26/2014	USACE UXO QA	GILBANE	2	0.23
A1I0C5	8/28/2014	USACE UXO QA	GILBANE	2	0.00
A1I0C6	8/28/2014	USACE UXO QA	GILBANE	2	0.15
A1I0C7	8/28/2014	USACE UXO QA	GILBANE	2	0.23
A1I0C8	8/28/2014	USACE UXO QA	GILBANE	2	0.23
A1I0C9	8/26/2014	USACE UXO QA	GILBANE	2	0.23
A1I0D0	8/26/2014	USACE UXO QA	GILBANE	2	0.23
A1I0D4	8/28/2014	USACE UXO QA	GILBANE	2	0.01
A1I0D5	8/28/2014	USACE UXO QA	GILBANE	2	0.16
A1I0D6	8/28/2014	USACE UXO QA	GILBANE	2	0.23
A1I0D7	8/28/2014	USACE UXO QA	GILBANE	2	0.23
A1I0D8	8/28/2014	USACE UXO QA	GILBANE	2	0.23
A1I0D9	8/26/2014	USACE UXO QA	GILBANE	2	0.23
A1I0E0	9/3/2014	USACE UXO QA	GILBANE	2	0.23
A1I0E3	8/28/2014	USACE UXO QA	GILBANE	2	0.01
A1I0E4	8/28/2014	USACE UXO QA	GILBANE	2	0.17
A1I0E5	8/28/2014	USACE UXO QA	GILBANE	2	0.23
A1I0E6	8/28/2014	USACE UXO QA	GILBANE	2	0.23
A1I0E7	8/28/2014	USACE UXO QA	GILBANE	2	0.23
A1I0E8	8/28/2014	USACE UXO QA	GILBANE	2	0.23
A1I0E9	9/3/2014	USACE UXO QA	GILBANE	2	0.23
A1I0F0	9/3/2014	USACE UXO QA	GILBANE	2	0.23
A1I0F2	8/28/2014	USACE UXO QA	GILBANE	2	0.02
A1I0F3	8/28/2014	USACE UXO QA	GILBANE	2	0.18
A1I0F4	8/28/2014	USACE UXO QA	GILBANE	2	0.23
A1I0F5	8/28/2014	USACE UXO QA	GILBANE	2	0.23
A1I0F6	8/28/2014	USACE UXO QA	GILBANE	2	0.23
A1I0F7	8/28/2014	USACE UXO QA	GILBANE	2	0.23
A1I0F8	8/28/2014	USACE UXO QA	GILBANE	2	0.23
A1I0F9	9/3/2014	USACE UXO QA	GILBANE	2	0.23
A1I0G0	9/4/2014	USACE UXO QA	GILBANE	2	0.23
A1I0G1	9/4/2014	USACE UXO QA	GILBANE	2	0.02
A1I0G2	9/4/2014	USACE UXO QA	GILBANE	2	0.19

A1I0G3	9/4/2014	USACE UXO QA	GILBANE	2	0.23
A1I0G4	9/4/2014	USACE UXO QA	GILBANE	2	0.23
A1I0G5	9/4/2014	USACE UXO QA	GILBANE	2	0.23
A1I0G6	9/4/2014	USACE UXO QA	GILBANE	2	0.23
A1I0G7	9/4/2014	USACE UXO QA	GILBANE	2	0.23
A1I0G8	9/4/2014	USACE UXO QA	GILBANE	2	0.23
A1I0G9	11/25/2014	USACE UXO QA	GILBANE	2	0.23
A1I0H0	11/25/2014	USACE UXO QA	GILBANE	2	0.23
A1I0H1	9/4/2014	USACE UXO QA	GILBANE	2	0.19
A1I0H2	9/4/2014	USACE UXO QA	GILBANE	2	0.23
A1I0H3	9/4/2014	USACE UXO QA	GILBANE	2	0.23
A1I0H4	9/4/2014	USACE UXO QA	GILBANE	2	0.23
A1I0H5	9/4/2014	USACE UXO QA	GILBANE	2	0.23
A1I0H6	9/4/2014	USACE UXO QA	GILBANE	2	0.23
A1I0H7	9/4/2014	USACE UXO QA	GILBANE	2	0.23
A1I0H8	9/4/2014	USACE UXO QA	GILBANE	2	0.23
A1I0H9	9/4/2014	USACE UXO QA	GILBANE	2	0.23
A1I0I0	11/25/2014	USACE UXO QA	GILBANE	2	0.23
A1I0I1	9/10/2014	USACE UXO QA	GILBANE	2	0.23
A1I0I2	9/10/2014	USACE UXO QA	GILBANE	2	0.23
A1I0I3	9/10/2014	USACE UXO QA	GILBANE	2	0.23
A1I0I4	9/10/2014	USACE UXO QA	GILBANE	2	0.23
A1I0I5	9/10/2014	USACE UXO QA	GILBANE	2	0.23
A1I0I6	9/10/2014	USACE UXO QA	GILBANE	2	0.23
A1I0I7	9/10/2014	USACE UXO QA	GILBANE	2	0.23
A1I0I8	9/10/2014	USACE UXO QA	GILBANE	2	0.23
A1I0I9	11/25/2014	USACE UXO QA	GILBANE	2	0.23
A1I0J0	9/9/2014	USACE UXO QA	GILBANE	2	0.23
A1I0J1	9/10/2014	USACE UXO QA	GILBANE	2	0.23
A1I0J2	9/10/2014	USACE UXO QA	GILBANE	2	0.23
A1I0J3	9/10/2014	USACE UXO QA	GILBANE	2	0.23
A1I0J4	9/10/2014	USACE UXO QA	GILBANE	2	0.23
A1I0J5	9/10/2014	USACE UXO QA	GILBANE	2	0.23
A1I0J6	9/10/2014	USACE UXO QA	GILBANE	2	0.23
A1I0J7	9/9/2014	USACE UXO QA	GILBANE	2	0.23
A1I0J8	9/9/2014	USACE UXO QA	GILBANE	2	0.23
A1I0J9	9/9/2014	USACE UXO QA	GILBANE	2	0.23
A1I9H0	9/10/2014	USACE UXO QA	GILBANE	2	0.02
A1I9I0	9/10/2014	USACE UXO QA	GILBANE	2	0.17
A1I9I9	9/10/2014	USACE UXO QA	GILBANE	2	0.01
A1I9J0	9/10/2014	USACE UXO QA	GILBANE	2	0.23
A1I9J9	9/10/2014	USACE UXO QA	GILBANE	2	0.14
A1J0A0	9/2/2014	USACE UXO QA	GILBANE	2	0.23
A1J0A1	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J0A2	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J0A3	9/22/2014	USACE UXO QA	GILBANE	2	0.23
A1J0A4	9/22/2014	USACE UXO QA	GILBANE	2	0.23

A1J0A5	9/22/2014	USACE UXO QA	GILBANE	2	0.23
A1J0A6	9/22/2014	USACE UXO QA	GILBANE	2	0.23
A1J0A7	9/9/2014	USACE UXO QA	GILBANE	2	0.23
A1J0A8	9/9/2014	USACE UXO QA	GILBANE	2	0.23
A1J0A9	9/2/2014	USACE UXO QA	GILBANE	2	0.23
A1J0B0	9/2/2014	USACE UXO QA	GILBANE	2	0.23
A1J0B1	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J0B2	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J0B3	9/22/2014	USACE UXO QA	GILBANE	2	0.23
A1J0B4	9/22/2014	USACE UXO QA	GILBANE	2	0.23
A1J0B5	9/22/2014	USACE UXO QA	GILBANE	2	0.23
A1J0B6	9/22/2014	USACE UXO QA	GILBANE	2	0.23
A1J0B7	9/9/2014	USACE UXO QA	GILBANE	2	0.23
A1J0B8	9/9/2014	USACE UXO QA	GILBANE	2	0.23
A1J0B9	9/2/2014	USACE UXO QA	GILBANE	2	0.23
A1J0C0	9/2/2014	USACE UXO QA	GILBANE	2	0.23
A1J0C1	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J0C2	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J0C3	9/22/2014	USACE UXO QA	GILBANE	2	0.23
A1J0C4	9/22/2014	USACE UXO QA	GILBANE	2	0.23
A1J0C5	9/22/2014	USACE UXO QA	GILBANE	2	0.23
A1J0C6	9/22/2014	USACE UXO QA	GILBANE	2	0.23
A1J0C7	9/9/2014	USACE UXO QA	GILBANE	2	0.23
A1J0C8	9/9/2014	USACE UXO QA	GILBANE	2	0.23
A1J0C9	9/2/2014	USACE UXO QA	GILBANE	2	0.23
A1J0D0	9/2/2014	USACE UXO QA	GILBANE	2	0.23
A1J0D1	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J0D2	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J0D3	9/22/2014	USACE UXO QA	GILBANE	2	0.23
A1J0D4	9/22/2014	USACE UXO QA	GILBANE	2	0.23
A1J0D5	9/15/2014	USACE UXO QA	GILBANE	2	0.23
A1J0D6	9/15/2014	USACE UXO QA	GILBANE	2	0.23
A1J0D7	9/9/2014	USACE UXO QA	GILBANE	2	0.23
A1J0D8	9/9/2014	USACE UXO QA	GILBANE	2	0.23
A1J0D9	9/2/2014	USACE UXO QA	GILBANE	2	0.23
A1J0E0	9/2/2014	USACE UXO QA	GILBANE	2	0.23
A1J0E1	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J0E2	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J0E3	9/22/2014	USACE UXO QA	GILBANE	2	0.23
A1J0E4	9/22/2014	USACE UXO QA	GILBANE	2	0.23
A1J0E5	9/15/2014	USACE UXO QA	GILBANE	2	0.23
A1J0E6	9/15/2014	USACE UXO QA	GILBANE	2	0.23
A1J0E7	9/9/2014	USACE UXO QA	GILBANE	2	0.23
A1J0E8	9/9/2014	USACE UXO QA	GILBANE	2	0.23
A1J0E9	9/2/2014	USACE UXO QA	GILBANE	2	0.23
A1J0F0	9/2/2014	USACE UXO QA	GILBANE	2	0.23
A1J0F1	10/6/2014	USACE UXO QA	GILBANE	2	0.23

A1J0F2	10/6/2014	USACE UXO QA	GILBANE	2	0.23
A1J0F3	9/22/2014	USACE UXO QA	GILBANE	2	0.23
A1J0F4	9/22/2014	USACE UXO QA	GILBANE	2	0.23
A1J0F5	9/15/2014	USACE UXO QA	GILBANE	2	0.23
A1J0F6	9/15/2014	USACE UXO QA	GILBANE	2	0.23
A1J0F7	9/9/2014	USACE UXO QA	GILBANE	2	0.23
A1J0F8	9/9/2014	USACE UXO QA	GILBANE	2	0.23
A1J0F9	9/2/2014	USACE UXO QA	GILBANE	2	0.23
A1J0G0	9/2/2014	USACE UXO QA	GILBANE	2	0.23
A1J0G1	10/6/2014	USACE UXO QA	GILBANE	2	0.23
A1J0G2	10/6/2014	USACE UXO QA	GILBANE	2	0.23
A1J0G3	9/22/2014	USACE UXO QA	GILBANE	2	0.23
A1J0G4	9/22/2014	USACE UXO QA	GILBANE	2	0.23
A1J0G5	9/15/2014	USACE UXO QA	GILBANE	2	0.23
A1J0G6	9/15/2014	USACE UXO QA	GILBANE	2	0.23
A1J0G7	9/9/2014	USACE UXO QA	GILBANE	2	0.23
A1J0G8	9/9/2014	USACE UXO QA	GILBANE	2	0.23
A1J0G9	9/2/2014	USACE UXO QA	GILBANE	2	0.23
A1J0H0	9/2/2014	USACE UXO QA	GILBANE	2	0.23
A1J0H1	10/6/2014	USACE UXO QA	GILBANE	2	0.23
A1J0H2	10/6/2014	USACE UXO QA	GILBANE	2	0.23
A1J0H3	9/22/2014	USACE UXO QA	GILBANE	2	0.23
A1J0H4	9/22/2014	USACE UXO QA	GILBANE	2	0.23
A1J0H5	9/15/2014	USACE UXO QA	GILBANE	2	0.23
A1J0H6	9/15/2014	USACE UXO QA	GILBANE	2	0.23
A1J0H7	9/15/2014	USACE UXO QA	GILBANE	2	0.23
A1J0H8	9/15/2014	USACE UXO QA	GILBANE	2	0.23
A1J0H9	9/2/2014	USACE UXO QA	GILBANE	2	0.23
A1J0I0	9/11/2014	USACE UXO QA	GILBANE	2	0.23
A1J0I1	10/6/2014	USACE UXO QA	GILBANE	2	0.23
A1J0I2	10/6/2014	USACE UXO QA	GILBANE	2	0.23
A1J0I3	9/22/2014	USACE UXO QA	GILBANE	2	0.23
A1J0I4	9/22/2014	USACE UXO QA	GILBANE	2	0.23
A1J0I5	9/15/2014	USACE UXO QA	GILBANE	2	0.23
A1J0I6	9/15/2014	USACE UXO QA	GILBANE	2	0.23
A1J0I7	9/15/2014	USACE UXO QA	GILBANE	2	0.23
A1J0I8	9/15/2014	USACE UXO QA	GILBANE	2	0.23
A1J0I9	9/11/2014	USACE UXO QA	GILBANE	2	0.23
A1J0J0	9/11/2014	USACE UXO QA	GILBANE	2	0.23
A1J0J1	10/6/2014	USACE UXO QA	GILBANE	2	0.23
A1J0J2	10/6/2014	USACE UXO QA	GILBANE	2	0.23
A1J0J3	9/22/2014	USACE UXO QA	GILBANE	2	0.23
A1J0J4	9/22/2014	USACE UXO QA	GILBANE	2	0.23
A1J0J5	9/15/2014	USACE UXO QA	GILBANE	2	0.23
A1J0J6	9/15/2014	USACE UXO QA	GILBANE	2	0.23
A1J0J7	9/15/2014	USACE UXO QA	GILBANE	2	0.23
A1J0J8	9/15/2014	USACE UXO QA	GILBANE	2	0.23

A1J0J9	9/11/2014	USACE UXO QA	GILBANE	2	0.23
A1J9A0	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J9A8	10/2/2014	USACE UXO QA	GILBANE	2	0.09
A1J9A9	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J9B0	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J9B7	10/2/2014	USACE UXO QA	GILBANE	2	0.03
A1J9B8	10/2/2014	USACE UXO QA	GILBANE	2	0.22
A1J9B9	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J9C0	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J9C6	10/2/2014	USACE UXO QA	GILBANE	2	0.00
A1J9C7	10/2/2014	USACE UXO QA	GILBANE	2	0.17
A1J9C8	10/2/2014	USACE UXO QA	GILBANE	2	0.23
A1J9C9	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J9D0	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J9D6	10/2/2014	USACE UXO QA	GILBANE	2	0.07
A1J9D7	10/2/2014	USACE UXO QA	GILBANE	2	0.23
A1J9D8	10/2/2014	USACE UXO QA	GILBANE	2	0.23
A1J9D9	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J9E0	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J9E5	10/2/2014	USACE UXO QA	GILBANE	2	0.00
A1J9E6	10/2/2014	USACE UXO QA	GILBANE	2	0.20
A1J9E7	10/2/2014	USACE UXO QA	GILBANE	2	0.23
A1J9E8	10/2/2014	USACE UXO QA	GILBANE	2	0.23
A1J9E9	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J9F0	10/6/2014	USACE UXO QA	GILBANE	2	0.23
A1J9F5	9/29/2014	USACE UXO QA	GILBANE	2	0.09
A1J9F6	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J9F7	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J9F8	10/6/2014	USACE UXO QA	GILBANE	2	0.23
A1J9F9	10/6/2014	USACE UXO QA	GILBANE	2	0.23
A1J9G0	10/6/2014	USACE UXO QA	GILBANE	2	0.23
A1J9G4	9/29/2014	USACE UXO QA	GILBANE	2	0.00
A1J9G5	9/29/2014	USACE UXO QA	GILBANE	2	0.19
A1J9G6	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J9G7	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J9G8	10/6/2014	USACE UXO QA	GILBANE	2	0.23
A1J9G9	10/6/2014	USACE UXO QA	GILBANE	2	0.23
A1J9H0	10/6/2014	USACE UXO QA	GILBANE	2	0.23
A1J9H4	9/29/2014	USACE UXO QA	GILBANE	2	0.06
A1J9H5	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J9H6	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J9H7	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J9H8	10/6/2014	USACE UXO QA	GILBANE	2	0.23
A1J9H9	10/6/2014	USACE UXO QA	GILBANE	2	0.23
A1J9I0	10/6/2014	USACE UXO QA	GILBANE	2	0.23
A1J9I4	9/29/2014	USACE UXO QA	GILBANE	2	0.15
A1J9I5	9/29/2014	USACE UXO QA	GILBANE	2	0.23

A1J9I6	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J9I7	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J9I8	10/6/2014	USACE UXO QA	GILBANE	2	0.23
A1J9I9	10/6/2014	USACE UXO QA	GILBANE	2	0.23
A1J9J0	10/6/2014	USACE UXO QA	GILBANE	2	0.23
A1J9J3	9/29/2014	USACE UXO QA	GILBANE	2	0.01
A1J9J4	9/29/2014	USACE UXO QA	GILBANE	2	0.22
A1J9J5	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J9J6	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J9J7	9/29/2014	USACE UXO QA	GILBANE	2	0.23
A1J9J8	10/6/2014	USACE UXO QA	GILBANE	2	0.23
A1J9J9	10/6/2014	USACE UXO QA	GILBANE	2	0.23
A2E3F0	7/15/2014	USACE UXO QA	GILBANE	1	0.06
A2E3G0	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E3G8	7/15/2014	USACE UXO QA	GILBANE	1	0.06
A2E3G9	7/15/2014	USACE UXO QA	GILBANE	1	0.17
A2E3H0	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E3H6	7/15/2014	USACE UXO QA	GILBANE	1	0.06
A2E3H7	7/15/2014	USACE UXO QA	GILBANE	1	0.17
A2E3H8	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E3H9	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E3I0	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E3I3	7/10/2014	USACE UXO QA	GILBANE	1	0.00
A2E3I4	7/15/2014	USACE UXO QA	GILBANE	1	0.06
A2E3I5	7/15/2014	USACE UXO QA	GILBANE	1	0.18
A2E3I6	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E3I7	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E3I8	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E3I9	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E3J0	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E3J1	7/10/2014	USACE UXO QA	GILBANE	1	0.00
A2E3J2	7/10/2014	USACE UXO QA	GILBANE	1	0.06
A2E3J3	7/10/2014	USACE UXO QA	GILBANE	1	0.18
A2E3J4	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E3J5	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E3J6	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E3J7	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E3J8	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E3J9	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4C6	7/15/2014	USACE UXO QA	GILBANE	1	0.01
A2E4C7	7/9/2014	USACE UXO QA	GILBANE	1	0.03
A2E4D4	7/15/2014	USACE UXO QA	GILBANE	1	0.03
A2E4D5	7/15/2014	USACE UXO QA	GILBANE	1	0.12
A2E4D6	7/15/2014	USACE UXO QA	GILBANE	1	0.21
A2E4D7	7/9/2014	USACE UXO QA	GILBANE	1	0.23
A2E4D8	7/9/2014	USACE UXO QA	GILBANE	1	0.15
A2E4D9	7/9/2014	USACE UXO QA	GILBANE	1	0.02

A2E4E0	7/9/2014	USACE UXO QA	GILBANE	1	0.07
A2E4E2	7/15/2014	USACE UXO QA	GILBANE	1	0.05
A2E4E3	7/15/2014	USACE UXO QA	GILBANE	1	0.15
A2E4E4	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4E5	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4E6	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4E7	7/9/2014	USACE UXO QA	GILBANE	1	0.23
A2E4E8	7/9/2014	USACE UXO QA	GILBANE	1	0.23
A2E4E9	7/9/2014	USACE UXO QA	GILBANE	1	0.21
A2E4F0	7/9/2014	USACE UXO QA	GILBANE	1	0.23
A2E4F1	7/15/2014	USACE UXO QA	GILBANE	1	0.17
A2E4F2	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4F3	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4F4	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4F5	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4F6	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4F7	7/9/2014	USACE UXO QA	GILBANE	1	0.23
A2E4F8	7/9/2014	USACE UXO QA	GILBANE	1	0.23
A2E4F9	7/9/2014	USACE UXO QA	GILBANE	1	0.23
A2E4G0	8/13/2013	USACE UXO QA	GILBANE	1	0.01
A2E4G0	7/9/2014	USACE UXO QA	GILBANE	1	0.22
A2E4G1	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4G2	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4G3	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4G4	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4G5	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4G6	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4G7	7/9/2014	USACE UXO QA	GILBANE	1	0.23
A2E4G8	7/9/2014	USACE UXO QA	GILBANE	1	0.23
A2E4G9	7/9/2014	USACE UXO QA	GILBANE	1	0.23
A2E4H0	8/13/2013	USACE UXO QA	GILBANE	1	0.15
A2E4H0	7/9/2014	USACE UXO QA	GILBANE	1	0.08
A2E4H1	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4H2	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4H3	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4H4	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4H5	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4H6	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4H7	7/9/2014	USACE UXO QA	GILBANE	1	0.23
A2E4H8	7/9/2014	USACE UXO QA	GILBANE	1	0.23
A2E4H9	8/13/2013	USACE UXO QA	GILBANE	1	0.00
A2E4H9	7/9/2014	USACE UXO QA	GILBANE	1	0.23
A2E4I0	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2E4I1	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4I2	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4I3	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4I4	7/15/2014	USACE UXO QA	GILBANE	1	0.23

A2E4I5	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4I6	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4I7	7/9/2014	USACE UXO QA	GILBANE	1	0.23
A2E4I8	7/9/2014	USACE UXO QA	GILBANE	1	0.23
A2E4I9	8/13/2013	USACE UXO QA	GILBANE	1	0.13
A2E4I9	7/9/2014	USACE UXO QA	GILBANE	1	0.10
A2E4J0	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2E4J1	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4J2	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4J3	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4J4	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4J5	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4J6	7/15/2014	USACE UXO QA	GILBANE	1	0.23
A2E4J7	7/9/2014	USACE UXO QA	GILBANE	1	0.23
A2E4J8	8/13/2013	USACE UXO QA	GILBANE	1	0.09
A2E4J8	7/9/2014	USACE UXO QA	GILBANE	1	0.14
A2E4J9	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2E5E1	7/9/2014	USACE UXO QA	GILBANE	1	0.00
A2E5F1	8/13/2013	USACE UXO QA	GILBANE	1	0.01
A2E5F1	7/9/2014	USACE UXO QA	GILBANE	1	0.15
A2E5F2	8/13/2013	USACE UXO QA	GILBANE	1	0.04
A2E5F2	7/9/2014	USACE UXO QA	GILBANE	1	0.00
A2E5G1	8/13/2013	USACE UXO QA	GILBANE	1	0.17
A2E5G1	7/9/2014	USACE UXO QA	GILBANE	1	0.06
A2E5G2	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2E5G3	8/13/2013	USACE UXO QA	GILBANE	1	0.10
A2E5H1	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2E5H2	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2E5H3	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2E5H4	8/13/2013	USACE UXO QA	GILBANE	1	0.08
A2E5I1	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2E5I2	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2E5I3	8/13/2013	USACE UXO QA	GILBANE	1	0.22
A2E5I4	8/13/2013	USACE UXO QA	GILBANE	1	0.05
A2E5J1	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2E5J2	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2E5J3	8/13/2013	USACE UXO QA	GILBANE	1	0.07
A2F1J0	7/16/2014	USACE UXO QA	GILBANE	1	0.00
A2F2A0	8/4/2014	USACE UXO QA	GILBANE	1	0.06
A2F2A9	8/4/2014	USACE UXO QA	GILBANE	1	0.00
A2F2B0	8/4/2014	USACE UXO QA	GILBANE	1	0.23
A2F2B7	8/4/2014	USACE UXO QA	GILBANE	1	0.01
A2F2B8	8/4/2014	USACE UXO QA	GILBANE	1	0.08
A2F2B9	8/4/2014	USACE UXO QA	GILBANE	1	0.18
A2F2C0	8/4/2014	USACE UXO QA	GILBANE	1	0.23
A2F2C4	8/4/2014	USACE UXO QA	GILBANE	1	0.01
A2F2C5	8/4/2014	USACE UXO QA	GILBANE	1	0.07

A2F2C6	8/4/2014	USACE UXO QA	GILBANE	1	0.14
A2F2C7	8/4/2014	USACE UXO QA	GILBANE	1	0.21
A2F2C8	8/4/2014	USACE UXO QA	GILBANE	1	0.23
A2F2C9	8/4/2014	USACE UXO QA	GILBANE	1	0.23
A2F2D0	8/4/2014	USACE UXO QA	GILBANE	1	0.23
A2F2D3	8/4/2014	USACE UXO QA	GILBANE	1	0.10
A2F2D4	8/4/2014	USACE UXO QA	GILBANE	1	0.23
A2F2D5	8/4/2014	USACE UXO QA	GILBANE	1	0.23
A2F2D6	8/4/2014	USACE UXO QA	GILBANE	1	0.23
A2F2D7	8/4/2014	USACE UXO QA	GILBANE	1	0.23
A2F2D8	8/4/2014	USACE UXO QA	GILBANE	1	0.23
A2F2D9	8/4/2014	USACE UXO QA	GILBANE	1	0.23
A2F2E0	7/29/2014	USACE UXO QA	GILBANE	1	0.23
A2F2E2	7/29/2014	USACE UXO QA	GILBANE	1	0.00
A2F2E3	7/29/2014	USACE UXO QA	GILBANE	1	0.20
A2F2E4	7/29/2014	USACE UXO QA	GILBANE	1	0.23
A2F2E5	7/29/2014	USACE UXO QA	GILBANE	1	0.23
A2F2E6	7/29/2014	USACE UXO QA	GILBANE	1	0.23
A2F2E7	7/29/2014	USACE UXO QA	GILBANE	1	0.23
A2F2E8	7/29/2014	USACE UXO QA	GILBANE	1	0.23
A2F2E9	7/29/2014	USACE UXO QA	GILBANE	1	0.23
A2F2F0	7/29/2014	USACE UXO QA	GILBANE	1	0.23
A2F2F2	7/29/2014	USACE UXO QA	GILBANE	1	0.06
A2F2F3	7/29/2014	USACE UXO QA	GILBANE	1	0.23
A2F2F4	7/29/2014	USACE UXO QA	GILBANE	1	0.23
A2F2F5	7/29/2014	USACE UXO QA	GILBANE	1	0.23
A2F2F6	7/29/2014	USACE UXO QA	GILBANE	1	0.23
A2F2F7	7/29/2014	USACE UXO QA	GILBANE	1	0.23
A2F2F8	7/29/2014	USACE UXO QA	GILBANE	1	0.23
A2F2F9	7/29/2014	USACE UXO QA	GILBANE	1	0.23
A2F2G0	7/22/2014	USACE UXO QA	GILBANE	1	0.23
A2F2G2	7/22/2014	USACE UXO QA	GILBANE	1	0.15
A2F2G3	7/22/2014	USACE UXO QA	GILBANE	1	0.23
A2F2G4	7/22/2014	USACE UXO QA	GILBANE	1	0.23
A2F2G5	7/22/2014	USACE UXO QA	GILBANE	1	0.23
A2F2G6	7/22/2014	USACE UXO QA	GILBANE	1	0.23
A2F2G7	7/22/2014	USACE UXO QA	GILBANE	1	0.23
A2F2G8	7/22/2014	USACE UXO QA	GILBANE	1	0.23
A2F2G9	7/22/2014	USACE UXO QA	GILBANE	1	0.23
A2F2H0	7/22/2014	USACE UXO QA	GILBANE	1	0.23
A2F2H1	7/22/2014	USACE UXO QA	GILBANE	1	0.02
A2F2H2	7/22/2014	USACE UXO QA	GILBANE	1	0.22
A2F2H3	7/22/2014	USACE UXO QA	GILBANE	1	0.23
A2F2H4	7/22/2014	USACE UXO QA	GILBANE	1	0.23
A2F2H5	7/22/2014	USACE UXO QA	GILBANE	1	0.23
A2F2H6	7/22/2014	USACE UXO QA	GILBANE	1	0.23
A2F2H7	7/22/2014	USACE UXO QA	GILBANE	1	0.23

A2F2H8	7/22/2014	USACE UXO QA	GILBANE	1	0.23
A2F2H9	7/22/2014	USACE UXO QA	GILBANE	1	0.23
A2F2I0	7/16/2014	USACE UXO QA	GILBANE	1	0.23
A2F2I1	7/16/2014	USACE UXO QA	GILBANE	1	0.11
A2F2I2	7/16/2014	USACE UXO QA	GILBANE	1	0.23
A2F2I3	7/16/2014	USACE UXO QA	GILBANE	1	0.23
A2F2I4	7/16/2014	USACE UXO QA	GILBANE	1	0.23
A2F2I5	7/16/2014	USACE UXO QA	GILBANE	1	0.23
A2F2I6	7/16/2014	USACE UXO QA	GILBANE	1	0.23
A2F2I7	7/16/2014	USACE UXO QA	GILBANE	1	0.23
A2F2I8	7/16/2014	USACE UXO QA	GILBANE	1	0.23
A2F2I9	7/16/2014	USACE UXO QA	GILBANE	1	0.23
A2F2J0	7/16/2014	USACE UXO QA	GILBANE	1	0.23
A2F2J1	7/16/2014	USACE UXO QA	GILBANE	1	0.20
A2F2J2	7/16/2014	USACE UXO QA	GILBANE	1	0.23
A2F2J3	7/16/2014	USACE UXO QA	GILBANE	1	0.23
A2F2J4	7/16/2014	USACE UXO QA	GILBANE	1	0.23
A2F2J5	7/16/2014	USACE UXO QA	GILBANE	1	0.23
A2F2J6	7/16/2014	USACE UXO QA	GILBANE	1	0.23
A2F2J7	7/16/2014	USACE UXO QA	GILBANE	1	0.23
A2F2J8	7/16/2014	USACE UXO QA	GILBANE	1	0.23
A2F2J9	7/16/2014	USACE UXO QA	GILBANE	1	0.23
A2F3A0	8/5/2014	USACE UXO QA	GILBANE	1	0.23
A2F3A1	7/10/2014	USACE UXO QA	GILBANE	1	0.18
A2F3A2	7/10/2014	USACE UXO QA	GILBANE	1	0.23
A2F3A3	7/10/2014	USACE UXO QA	GILBANE	1	0.23
A2F3A4	7/24/2014	USACE UXO QA	GILBANE	1	0.23
A2F3A5	7/24/2014	USACE UXO QA	GILBANE	1	0.23
A2F3A6	7/24/2014	USACE UXO QA	GILBANE	1	0.23
A2F3A7	7/24/2014	USACE UXO QA	GILBANE	1	0.23
A2F3A8	7/30/2014	USACE UXO QA	GILBANE	1	0.23
A2F3A9	8/5/2014	USACE UXO QA	GILBANE	1	0.23
A2F3B0	8/5/2014	USACE UXO QA	GILBANE	1	0.23
A2F3B1	7/10/2014	USACE UXO QA	GILBANE	1	0.23
A2F3B2	7/10/2014	USACE UXO QA	GILBANE	1	0.23
A2F3B3	7/10/2014	USACE UXO QA	GILBANE	1	0.23
A2F3B4	7/24/2014	USACE UXO QA	GILBANE	1	0.23
A2F3B5	7/24/2014	USACE UXO QA	GILBANE	1	0.23
A2F3B6	7/24/2014	USACE UXO QA	GILBANE	1	0.23
A2F3B7	7/24/2014	USACE UXO QA	GILBANE	1	0.23
A2F3B8	7/30/2014	USACE UXO QA	GILBANE	1	0.23
A2F3B9	8/5/2014	USACE UXO QA	GILBANE	1	0.23
A2F3C0	8/5/2014	USACE UXO QA	GILBANE	1	0.23
A2F3C1	7/10/2014	USACE UXO QA	GILBANE	1	0.23
A2F3C2	7/10/2014	USACE UXO QA	GILBANE	1	0.23
A2F3C3	7/10/2014	USACE UXO QA	GILBANE	1	0.23
A2F3C4	7/24/2014	USACE UXO QA	GILBANE	1	0.23

A2F3C5	7/24/2014	USACE UXO QA	GILBANE	1	0.23
A2F3C6	7/24/2014	USACE UXO QA	GILBANE	1	0.23
A2F3C7	7/24/2014	USACE UXO QA	GILBANE	1	0.23
A2F3C8	7/30/2014	USACE UXO QA	GILBANE	1	0.23
A2F3C9	8/5/2014	USACE UXO QA	GILBANE	1	0.23
A2F3D0	8/5/2014	USACE UXO QA	GILBANE	1	0.23
A2F3D1	7/10/2014	USACE UXO QA	GILBANE	1	0.23
A2F3D2	7/10/2014	USACE UXO QA	GILBANE	1	0.23
A2F3D3	7/10/2014	USACE UXO QA	GILBANE	1	0.23
A2F3D4	7/24/2014	USACE UXO QA	GILBANE	1	0.23
A2F3D5	7/24/2014	USACE UXO QA	GILBANE	1	0.23
A2F3D6	7/24/2014	USACE UXO QA	GILBANE	1	0.23
A2F3D7	7/24/2014	USACE UXO QA	GILBANE	1	0.23
A2F3D8	7/30/2014	USACE UXO QA	GILBANE	1	0.23
A2F3D9	8/5/2014	USACE UXO QA	GILBANE	1	0.23
A2F3E0	8/5/2014	USACE UXO QA	GILBANE	1	0.23
A2F3E1	7/10/2014	USACE UXO QA	GILBANE	1	0.23
A2F3E2	7/10/2014	USACE UXO QA	GILBANE	1	0.23
A2F3E3	7/10/2014	USACE UXO QA	GILBANE	1	0.23
A2F3E4	7/24/2014	USACE UXO QA	GILBANE	1	0.23
A2F3E5	7/24/2014	USACE UXO QA	GILBANE	1	0.23
A2F3E6	7/24/2014	USACE UXO QA	GILBANE	1	0.23
A2F3E7	7/24/2014	USACE UXO QA	GILBANE	1	0.23
A2F3E8	7/30/2014	USACE UXO QA	GILBANE	1	0.23
A2F3E9	8/5/2014	USACE UXO QA	GILBANE	1	0.23
A2F3F0	8/5/2014	USACE UXO QA	GILBANE	1	0.23
A2F3F1	7/10/2014	USACE UXO QA	GILBANE	1	0.23
A2F3F2	7/10/2014	USACE UXO QA	GILBANE	1	0.23
A2F3F3	7/10/2014	USACE UXO QA	GILBANE	1	0.23
A2F3F4	7/24/2014	USACE UXO QA	GILBANE	1	0.23
A2F3F5	7/24/2014	USACE UXO QA	GILBANE	1	0.23
A2F3F6	7/24/2014	USACE UXO QA	GILBANE	1	0.23
A2F3F7	7/24/2014	USACE UXO QA	GILBANE	1	0.23
A2F3F8	7/30/2014	USACE UXO QA	GILBANE	1	0.23
A2F3F9	8/5/2014	USACE UXO QA	GILBANE	1	0.23
A2F3G0	8/5/2014	USACE UXO QA	GILBANE	1	0.23
A2F3G1	7/17/2014	USACE UXO QA	GILBANE	1	0.23
A2F3G2	7/17/2014	USACE UXO QA	GILBANE	1	0.23
A2F3G3	7/17/2014	USACE UXO QA	GILBANE	1	0.23
A2F3G4	7/17/2014	USACE UXO QA	GILBANE	1	0.23
A2F3G5	7/17/2014	USACE UXO QA	GILBANE	1	0.23
A2F3G6	7/30/2014	USACE UXO QA	GILBANE	1	0.23
A2F3G7	7/30/2014	USACE UXO QA	GILBANE	1	0.23
A2F3G8	7/30/2014	USACE UXO QA	GILBANE	1	0.23
A2F3G9	8/5/2014	USACE UXO QA	GILBANE	1	0.23
A2F3H0	8/8/2013	USACE UXO QA	GILBANE	1	0.12
A2F3H0	8/5/2014	USACE UXO QA	GILBANE	1	0.11

A2F3H1	7/17/2014	USACE UXO QA	GILBANE	1	0.23
A2F3H2	7/17/2014	USACE UXO QA	GILBANE	1	0.23
A2F3H3	7/17/2014	USACE UXO QA	GILBANE	1	0.23
A2F3H4	7/17/2014	USACE UXO QA	GILBANE	1	0.23
A2F3H5	7/17/2014	USACE UXO QA	GILBANE	1	0.23
A2F3H6	7/30/2014	USACE UXO QA	GILBANE	1	0.23
A2F3H7	7/30/2014	USACE UXO QA	GILBANE	1	0.23
A2F3H8	7/30/2014	USACE UXO QA	GILBANE	1	0.23
A2F3H9	8/8/2013	USACE UXO QA	GILBANE	1	0.00
A2F3H9	8/5/2014	USACE UXO QA	GILBANE	1	0.23
A2F3I0	8/8/2013	USACE UXO QA	GILBANE	1	0.23
A2F3I1	7/17/2014	USACE UXO QA	GILBANE	1	0.23
A2F3I2	7/17/2014	USACE UXO QA	GILBANE	1	0.23
A2F3I3	7/17/2014	USACE UXO QA	GILBANE	1	0.23
A2F3I4	7/17/2014	USACE UXO QA	GILBANE	1	0.23
A2F3I5	7/17/2014	USACE UXO QA	GILBANE	1	0.23
A2F3I6	7/30/2014	USACE UXO QA	GILBANE	1	0.23
A2F3I7	7/30/2014	USACE UXO QA	GILBANE	1	0.23
A2F3I8	8/8/2013	USACE UXO QA	GILBANE	1	0.00
A2F3I8	7/30/2014	USACE UXO QA	GILBANE	1	0.23
A2F3I9	8/8/2013	USACE UXO QA	GILBANE	1	0.13
A2F3I9	8/5/2014	USACE UXO QA	GILBANE	1	0.10
A2F3J0	8/8/2013	USACE UXO QA	GILBANE	1	0.23
A2F3J1	7/17/2014	USACE UXO QA	GILBANE	1	0.23
A2F3J2	7/17/2014	USACE UXO QA	GILBANE	1	0.23
A2F3J3	7/17/2014	USACE UXO QA	GILBANE	1	0.23
A2F3J4	7/17/2014	USACE UXO QA	GILBANE	1	0.23
A2F3J5	7/17/2014	USACE UXO QA	GILBANE	1	0.23
A2F3J6	7/30/2014	USACE UXO QA	GILBANE	1	0.23
A2F3J7	8/8/2013	USACE UXO QA	GILBANE	1	0.00
A2F3J7	7/30/2014	USACE UXO QA	GILBANE	1	0.23
A2F3J8	8/8/2013	USACE UXO QA	GILBANE	1	0.14
A2F3J8	7/30/2014	USACE UXO QA	GILBANE	1	0.09
A2F3J9	8/8/2013	USACE UXO QA	GILBANE	1	0.23
A2F4A0	8/15/2013	USACE UXO QA	GILBANE	1	0.23
A2F4A1	7/14/2014	USACE UXO QA	GILBANE	1	0.23
A2F4A2	7/14/2014	USACE UXO QA	GILBANE	1	0.23
A2F4A3	7/14/2014	USACE UXO QA	GILBANE	1	0.23
A2F4A4	7/14/2014	USACE UXO QA	GILBANE	1	0.23
A2F4A5	7/14/2014	USACE UXO QA	GILBANE	1	0.23
A2F4A6	7/14/2014	USACE UXO QA	GILBANE	1	0.23
A2F4A7	8/15/2013	USACE UXO QA	GILBANE	1	0.06
A2F4A7	7/9/2014	USACE UXO QA	GILBANE	1	0.16
A2F4A8	8/15/2013	USACE UXO QA	GILBANE	1	0.23
A2F4A8	7/9/2014	USACE UXO QA	GILBANE	1	0.00
A2F4A9	8/15/2013	USACE UXO QA	GILBANE	1	0.23
A2F4B0	8/15/2013	USACE UXO QA	GILBANE	1	0.23

A2F4B1	7/14/2014	USACE UXO QA	GILBANE	1	0.23
A2F4B2	7/14/2014	USACE UXO QA	GILBANE	1	0.21
A2F4B3	7/14/2014	USACE UXO QA	GILBANE	1	0.22
A2F4B4	7/14/2014	USACE UXO QA	GILBANE	1	0.23
A2F4B5	7/14/2014	USACE UXO QA	GILBANE	1	0.23
A2F4B6	8/15/2013	USACE UXO QA	GILBANE	1	0.06
A2F4B6	7/14/2014	USACE UXO QA	GILBANE	1	0.16
A2F4B7	8/15/2013	USACE UXO QA	GILBANE	1	0.22
A2F4B7	7/9/2014	USACE UXO QA	GILBANE	1	0.01
A2F4B8	8/15/2013	USACE UXO QA	GILBANE	1	0.23
A2F4B9	8/15/2013	USACE UXO QA	GILBANE	1	0.23
A2F4C0	8/15/2013	USACE UXO QA	GILBANE	1	0.17
A2F4C1	7/14/2014	USACE UXO QA	GILBANE	1	0.23
A2F4C2	7/14/2014	USACE UXO QA	GILBANE	1	0.22
A2F4C3	7/14/2014	USACE UXO QA	GILBANE	1	0.22
A2F4C4	7/14/2014	USACE UXO QA	GILBANE	1	0.23
A2F4C5	8/15/2013	USACE UXO QA	GILBANE	1	0.07
A2F4C5	7/14/2014	USACE UXO QA	GILBANE	1	0.16
A2F4C6	8/15/2013	USACE UXO QA	GILBANE	1	0.22
A2F4C6	7/14/2014	USACE UXO QA	GILBANE	1	0.01
A2F4C7	8/15/2013	USACE UXO QA	GILBANE	1	0.23
A2F4C8	8/15/2013	USACE UXO QA	GILBANE	1	0.23
A2F4C9	8/15/2013	USACE UXO QA	GILBANE	1	0.23
A2F4D0	8/13/2013	USACE UXO QA	GILBANE	1	0.10
A2F4D1	7/14/2014	USACE UXO QA	GILBANE	1	0.23
A2F4D2	7/14/2014	USACE UXO QA	GILBANE	1	0.23
A2F4D3	7/14/2014	USACE UXO QA	GILBANE	1	0.23
A2F4D4	8/13/2013	USACE UXO QA	GILBANE	1	0.08
A2F4D4	7/14/2014	USACE UXO QA	GILBANE	1	0.15
A2F4D5	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2F4D5	7/14/2014	USACE UXO QA	GILBANE	1	0.00
A2F4D6	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2F4D7	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2F4D8	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2F4D9	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2F4E0	8/13/2013	USACE UXO QA	GILBANE	1	0.09
A2F4E1	7/14/2014	USACE UXO QA	GILBANE	1	0.22
A2F4E2	7/14/2014	USACE UXO QA	GILBANE	1	0.23
A2F4E3	8/13/2013	USACE UXO QA	GILBANE	1	0.09
A2F4E3	7/14/2014	USACE UXO QA	GILBANE	1	0.14
A2F4E4	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2F4E4	7/14/2014	USACE UXO QA	GILBANE	1	0.00
A2F4E5	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2F4E6	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2F4E7	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2F4E8	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2F4E9	8/13/2013	USACE UXO QA	GILBANE	1	0.23

A2F4F0	8/13/2013	USACE UXO QA	GILBANE	1	0.01
A2F4F1	7/14/2014	USACE UXO QA	GILBANE	1	0.23
A2F4F2	8/13/2013	USACE UXO QA	GILBANE	1	0.10
A2F4F2	7/14/2014	USACE UXO QA	GILBANE	1	0.13
A2F4F3	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2F4F3	7/14/2014	USACE UXO QA	GILBANE	1	0.00
A2F4F4	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2F4F5	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2F4F6	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2F4F7	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2F4F8	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2F4F9	8/13/2013	USACE UXO QA	GILBANE	1	0.21
A2F4G1	8/13/2013	USACE UXO QA	GILBANE	1	0.11
A2F4G1	7/14/2014	USACE UXO QA	GILBANE	1	0.12
A2F4G2	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2F4G2	7/14/2014	USACE UXO QA	GILBANE	1	0.00
A2F4G3	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2F4G4	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2F4G5	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2F4G6	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2F4G7	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2F4G8	8/13/2013	USACE UXO QA	GILBANE	1	0.21
A2F4G9	8/13/2013	USACE UXO QA	GILBANE	1	0.07
A2F4H1	8/8/2013	USACE UXO QA	GILBANE	1	0.23
A2F4H2	8/8/2013	USACE UXO QA	GILBANE	1	0.23
A2F4H3	8/8/2013	USACE UXO QA	GILBANE	1	0.23
A2F4H4	8/8/2013	USACE UXO QA	GILBANE	1	0.23
A2F4H5	8/8/2013	USACE UXO QA	GILBANE	1	0.23
A2F4H6	8/8/2013	USACE UXO QA	GILBANE	1	0.23
A2F4H7	8/8/2013	USACE UXO QA	GILBANE	1	0.15
A2F4H8	8/8/2013	USACE UXO QA	GILBANE	1	0.02
A2F4I1	8/8/2013	USACE UXO QA	GILBANE	1	0.23
A2F4I2	8/8/2013	USACE UXO QA	GILBANE	1	0.23
A2F4I3	8/8/2013	USACE UXO QA	GILBANE	1	0.23
A2F4I4	8/8/2013	USACE UXO QA	GILBANE	1	0.23
A2F4I5	8/8/2013	USACE UXO QA	GILBANE	1	0.21
A2F4I6	8/8/2013	USACE UXO QA	GILBANE	1	0.07
A2F4J1	8/8/2013	USACE UXO QA	GILBANE	1	0.23
A2F4J2	8/8/2013	USACE UXO QA	GILBANE	1	0.23
A2F4J3	8/8/2013	USACE UXO QA	GILBANE	1	0.23
A2F4J4	8/8/2013	USACE UXO QA	GILBANE	1	0.17
A2F4J5	8/8/2013	USACE UXO QA	GILBANE	1	0.02
A2F5A1	8/15/2013	USACE UXO QA	GILBANE	1	0.23
A2F5A2	8/15/2013	USACE UXO QA	GILBANE	1	0.10
A2F5B1	8/15/2013	USACE UXO QA	GILBANE	1	0.13
A2F5C1	8/15/2013	USACE UXO QA	GILBANE	1	0.00
A2G1A0	8/7/2014	USACE UXO QA	GILBANE	1	0.06

A2G1B0	8/7/2014	USACE UXO QA	GILBANE	1	0.16
A2G1C0	8/7/2014	USACE UXO QA	GILBANE	1	0.23
A2G1C9	8/7/2014	USACE UXO QA	GILBANE	1	0.02
A2G1D0	8/7/2014	USACE UXO QA	GILBANE	1	0.23
A2G1D9	8/7/2014	USACE UXO QA	GILBANE	1	0.11
A2G1E0	8/7/2014	USACE UXO QA	GILBANE	1	0.23
A2G1E8	8/7/2014	USACE UXO QA	GILBANE	1	0.00
A2G1E9	8/7/2014	USACE UXO QA	GILBANE	1	0.20
A2G1F0	8/7/2014	USACE UXO QA	GILBANE	1	0.23
A2G1F8	8/7/2014	USACE UXO QA	GILBANE	1	0.07
A2G1F9	8/7/2014	USACE UXO QA	GILBANE	1	0.23
A2G1G0	8/7/2014	USACE UXO QA	GILBANE	1	0.23
A2G1G8	8/7/2014	USACE UXO QA	GILBANE	1	0.16
A2G1G9	8/7/2014	USACE UXO QA	GILBANE	1	0.23
A2G1H0	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2G1H0	8/7/2014	USACE UXO QA	GILBANE	1	0.22
A2G1H6	8/8/2013	USACE UXO QA	GILBANE	2	0.01
A2G1H7	8/7/2014	USACE UXO QA	GILBANE	1	0.03
A2G1H8	8/7/2014	USACE UXO QA	GILBANE	1	0.23
A2G1H9	8/7/2014	USACE UXO QA	GILBANE	1	0.23
A2G1I0	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2G1I0	8/7/2014	USACE UXO QA	GILBANE	1	0.05
A2G1I6	8/8/2013	USACE UXO QA	GILBANE	2	0.14
A2G1I7	8/13/2013	USACE UXO QA	GILBANE	2	0.09
A2G1I7	5/7/2010	USACE UXO QA	SHAW	2	0.09
A2G1I7	5/7/2010	USACE UXO QA	SHAW	1	0.02
A2G1I8	5/25/2010	USACE UXO QA	SHAW	1	0.19
A2G1I8	8/7/2014	USACE UXO QA	GILBANE	1	0.04
A2G1I9	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2G1I9	8/7/2014	USACE UXO QA	GILBANE	1	0.14
A2G1J0	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2G1J5	8/8/2013	USACE UXO QA	GILBANE	2	0.03
A2G1J6	8/8/2013	USACE UXO QA	GILBANE	2	0.22
A2G1J7	8/8/2013	USACE UXO QA	GILBANE	2	0.23
A2G1J8	8/13/2013	USACE UXO QA	GILBANE	2	0.08
A2G1J8	5/7/2010	USACE UXO QA	SHAW	2	0.08
A2G1J8	5/7/2010	USACE UXO QA	SHAW	1	0.02
A2G1J9	5/25/2010	USACE UXO QA	SHAW	1	0.20
A2G2A0	8/12/2014	USACE UXO QA	GILBANE	1	0.23
A2G2A1	8/12/2014	USACE UXO QA	GILBANE	1	0.23
A2G2A2	8/12/2014	USACE UXO QA	GILBANE	1	0.23
A2G2A3	8/12/2014	USACE UXO QA	GILBANE	1	0.23
A2G2A4	8/12/2014	USACE UXO QA	GILBANE	1	0.23
A2G2A5	8/12/2014	USACE UXO QA	GILBANE	1	0.23
A2G2A6	8/12/2014	USACE UXO QA	GILBANE	1	0.23
A2G2A7	8/12/2014	USACE UXO QA	GILBANE	1	0.23
A2G2A8	8/12/2014	USACE UXO QA	GILBANE	1	0.23

A2G2A9	8/12/2014	USACE UXO QA	GILBANE	1	0.23
A2G2B0	8/12/2014	USACE UXO QA	GILBANE	1	0.23
A2G2B1	8/12/2014	USACE UXO QA	GILBANE	1	0.23
A2G2B2	8/12/2014	USACE UXO QA	GILBANE	1	0.23
A2G2B3	8/12/2014	USACE UXO QA	GILBANE	1	0.23
A2G2B4	8/12/2014	USACE UXO QA	GILBANE	1	0.23
A2G2B5	8/12/2014	USACE UXO QA	GILBANE	1	0.23
A2G2B6	8/12/2014	USACE UXO QA	GILBANE	1	0.23
A2G2B7	8/12/2014	USACE UXO QA	GILBANE	1	0.23
A2G2B8	8/12/2014	USACE UXO QA	GILBANE	1	0.23
A2G2B9	8/12/2014	USACE UXO QA	GILBANE	1	0.23
A2G2C0	8/6/2014	USACE UXO QA	GILBANE	1	0.23
A2G2C1	8/6/2014	USACE UXO QA	GILBANE	1	0.23
A2G2C2	8/6/2014	USACE UXO QA	GILBANE	1	0.23
A2G2C3	8/6/2014	USACE UXO QA	GILBANE	1	0.23
A2G2C4	8/6/2014	USACE UXO QA	GILBANE	1	0.23
A2G2C5	8/6/2014	USACE UXO QA	GILBANE	1	0.23
A2G2C6	8/6/2014	USACE UXO QA	GILBANE	1	0.23
A2G2C7	8/6/2014	USACE UXO QA	GILBANE	1	0.23
A2G2C8	8/6/2014	USACE UXO QA	GILBANE	1	0.23
A2G2C9	8/6/2014	USACE UXO QA	GILBANE	1	0.23
A2G2D0	8/6/2014	USACE UXO QA	GILBANE	1	0.23
A2G2D1	8/6/2014	USACE UXO QA	GILBANE	1	0.23
A2G2D2	8/6/2014	USACE UXO QA	GILBANE	1	0.23
A2G2D3	8/6/2014	USACE UXO QA	GILBANE	1	0.23
A2G2D4	8/6/2014	USACE UXO QA	GILBANE	1	0.23
A2G2D5	8/6/2014	USACE UXO QA	GILBANE	1	0.23
A2G2D6	8/6/2014	USACE UXO QA	GILBANE	1	0.23
A2G2D7	8/6/2014	USACE UXO QA	GILBANE	1	0.23
A2G2D8	8/6/2014	USACE UXO QA	GILBANE	1	0.23
A2G2D9	8/6/2014	USACE UXO QA	GILBANE	1	0.23
A2G2E0	7/31/2014	USACE UXO QA	GILBANE	1	0.23
A2G2E1	7/31/2014	USACE UXO QA	GILBANE	1	0.23
A2G2E2	7/31/2014	USACE UXO QA	GILBANE	1	0.23
A2G2E3	7/31/2014	USACE UXO QA	GILBANE	1	0.23
A2G2E4	7/31/2014	USACE UXO QA	GILBANE	1	0.23
A2G2E5	7/31/2014	USACE UXO QA	GILBANE	1	0.23
A2G2E6	7/31/2014	USACE UXO QA	GILBANE	1	0.23
A2G2E7	7/31/2014	USACE UXO QA	GILBANE	1	0.23
A2G2E8	7/31/2014	USACE UXO QA	GILBANE	1	0.23
A2G2E9	7/31/2014	USACE UXO QA	GILBANE	1	0.23
A2G2F0	7/31/2014	USACE UXO QA	GILBANE	1	0.23
A2G2F1	7/31/2014	USACE UXO QA	GILBANE	1	0.23
A2G2F2	7/31/2014	USACE UXO QA	GILBANE	1	0.23
A2G2F3	7/31/2014	USACE UXO QA	GILBANE	1	0.23
A2G2F4	7/31/2014	USACE UXO QA	GILBANE	1	0.23
A2G2F5	7/31/2014	USACE UXO QA	GILBANE	1	0.23

A2G2F6	7/31/2014	USACE UXO QA	GILBANE	1	0.23
A2G2F7	7/31/2014	USACE UXO QA	GILBANE	1	0.23
A2G2F8	7/31/2014	USACE UXO QA	GILBANE	1	0.23
A2G2F9	7/31/2014	USACE UXO QA	GILBANE	1	0.23
A2G2G0	7/23/2014	USACE UXO QA	GILBANE	1	0.23
A2G2G1	7/23/2014	USACE UXO QA	GILBANE	1	0.23
A2G2G2	7/23/2014	USACE UXO QA	GILBANE	1	0.23
A2G2G3	7/23/2014	USACE UXO QA	GILBANE	1	0.23
A2G2G4	7/23/2014	USACE UXO QA	GILBANE	1	0.23
A2G2G5	7/23/2014	USACE UXO QA	GILBANE	1	0.23
A2G2G6	7/23/2014	USACE UXO QA	GILBANE	1	0.23
A2G2G7	7/23/2014	USACE UXO QA	GILBANE	1	0.23
A2G2G8	7/23/2014	USACE UXO QA	GILBANE	1	0.23
A2G2G9	7/23/2014	USACE UXO QA	GILBANE	1	0.23
A2G2H0	7/23/2014	USACE UXO QA	GILBANE	1	0.23
A2G2H1	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2G2H1	7/23/2014	USACE UXO QA	GILBANE	1	0.10
A2G2H2	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2G2H2	7/23/2014	USACE UXO QA	GILBANE	1	0.05
A2G2H3	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2G2H3	7/23/2014	USACE UXO QA	GILBANE	1	0.07
A2G2H4	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2G2H4	7/23/2014	USACE UXO QA	GILBANE	1	0.13
A2G2H5	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2G2H5	7/23/2014	USACE UXO QA	GILBANE	1	0.20
A2G2H6	7/23/2014	USACE UXO QA	GILBANE	1	0.23
A2G2H7	7/23/2014	USACE UXO QA	GILBANE	1	0.23
A2G2H8	7/23/2014	USACE UXO QA	GILBANE	1	0.23
A2G2H9	7/23/2014	USACE UXO QA	GILBANE	1	0.23
A2G2I0	7/23/2014	USACE UXO QA	GILBANE	1	0.23
A2G2I1	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2G2I2	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2G2I3	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2G2I4	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2G2I5	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2G2I5	7/23/2014	USACE UXO QA	GILBANE	1	0.00
A2G2I6	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2G2I6	7/23/2014	USACE UXO QA	GILBANE	1	0.12
A2G2I7	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2G2I7	7/23/2014	USACE UXO QA	GILBANE	1	0.23
A2G2I8	7/23/2014	USACE UXO QA	GILBANE	1	0.23
A2G2I9	7/23/2014	USACE UXO QA	GILBANE	1	0.23
A2G2J0	8/6/2013	USACE UXO QA	GILBANE	1	0.05
A2G2J0	7/23/2014	USACE UXO QA	GILBANE	1	0.18
A2G2J1	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2G2J2	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2G2J3	5/25/2010	USACE UXO QA	SHAW	1	0.23

A2G2J4	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2G2J5	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2G2J6	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2G2J7	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2G2J7	7/23/2014	USACE UXO QA	GILBANE	1	0.02
A2G2J8	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2G2J8	7/23/2014	USACE UXO QA	GILBANE	1	0.11
A2G2J9	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2G2J9	7/23/2014	USACE UXO QA	GILBANE	1	0.19
A2G3A0	8/20/2013	USACE UXO QA	GILBANE	1	0.23
A2G3A1	7/29/2014	USACE UXO QA	GILBANE	1	0.23
A2G3A2	7/28/2014	USACE UXO QA	GILBANE	1	0.23
A2G3A3	7/28/2014	USACE UXO QA	GILBANE	1	0.23
A2G3A4	7/28/2014	USACE UXO QA	GILBANE	1	0.23
A2G3A5	7/28/2014	USACE UXO QA	GILBANE	1	0.23
A2G3A6	7/28/2014	USACE UXO QA	GILBANE	1	0.23
A2G3A7	8/21/2013	USACE UXO QA	GILBANE	1	0.09
A2G3A7	7/28/2014	USACE UXO QA	GILBANE	1	0.14
A2G3A8	8/21/2013	USACE UXO QA	GILBANE	1	0.23
A2G3A9	8/20/2013	USACE UXO QA	GILBANE	1	0.23
A2G3B0	8/20/2013	USACE UXO QA	GILBANE	1	0.23
A2G3B1	7/28/2014	USACE UXO QA	GILBANE	1	0.23
A2G3B2	7/28/2014	USACE UXO QA	GILBANE	1	0.23
A2G3B3	7/28/2014	USACE UXO QA	GILBANE	1	0.23
A2G3B4	7/28/2014	USACE UXO QA	GILBANE	1	0.23
A2G3B5	7/28/2014	USACE UXO QA	GILBANE	1	0.23
A2G3B6	8/19/2013	USACE UXO QA	GILBANE	1	0.04
A2G3B6	7/28/2014	USACE UXO QA	GILBANE	1	0.19
A2G3B7	8/19/2013	USACE UXO QA	GILBANE	1	0.22
A2G3B7	7/28/2014	USACE UXO QA	GILBANE	1	0.01
A2G3B8	8/19/2013	USACE UXO QA	GILBANE	1	0.23
A2G3B9	8/20/2013	USACE UXO QA	GILBANE	1	0.23
A2G3C0	8/19/2013	USACE UXO QA	GILBANE	1	0.19
A2G3C1	7/28/2014	USACE UXO QA	GILBANE	1	0.23
A2G3C2	7/28/2014	USACE UXO QA	GILBANE	1	0.23
A2G3C3	7/28/2014	USACE UXO QA	GILBANE	1	0.23
A2G3C4	7/28/2014	USACE UXO QA	GILBANE	1	0.23
A2G3C5	8/19/2013	USACE UXO QA	GILBANE	1	0.01
A2G3C5	7/28/2014	USACE UXO QA	GILBANE	1	0.22
A2G3C6	8/19/2013	USACE UXO QA	GILBANE	1	0.20
A2G3C6	7/28/2014	USACE UXO QA	GILBANE	1	0.03
A2G3C7	8/19/2013	USACE UXO QA	GILBANE	1	0.23
A2G3C8	8/19/2013	USACE UXO QA	GILBANE	1	0.23
A2G3C9	8/19/2013	USACE UXO QA	GILBANE	1	0.23
A2G3D0	8/19/2013	USACE UXO QA	GILBANE	1	0.01
A2G3D1	7/28/2014	USACE UXO QA	GILBANE	1	0.23
A2G3D2	7/28/2014	USACE UXO QA	GILBANE	1	0.23

A2G3D3	7/28/2014	USACE UXO QA	GILBANE	1	0.23
A2G3D4	7/28/2014	USACE UXO QA	GILBANE	1	0.23
A2G3D5	8/19/2013	USACE UXO QA	GILBANE	1	0.07
A2G3D5	7/28/2014	USACE UXO QA	GILBANE	1	0.16
A2G3D6	8/19/2013	USACE UXO QA	GILBANE	1	0.23
A2G3D7	8/19/2013	USACE UXO QA	GILBANE	1	0.23
A2G3D8	8/19/2013	USACE UXO QA	GILBANE	1	0.23
A2G3D9	8/19/2013	USACE UXO QA	GILBANE	1	0.16
A2G3E1	7/21/2014	USACE UXO QA	GILBANE	1	0.23
A2G3E2	7/21/2014	USACE UXO QA	GILBANE	1	0.23
A2G3E3	7/21/2014	USACE UXO QA	GILBANE	1	0.23
A2G3E4	7/21/2014	USACE UXO QA	GILBANE	1	0.23
A2G3E5	8/13/2013	USACE UXO QA	GILBANE	1	0.11
A2G3E5	7/21/2014	USACE UXO QA	GILBANE	1	0.12
A2G3E6	8/19/2013	USACE UXO QA	GILBANE	1	0.23
A2G3E7	8/19/2013	USACE UXO QA	GILBANE	1	0.23
A2G3E8	8/19/2013	USACE UXO QA	GILBANE	1	0.23
A2G3E9	8/19/2013	USACE UXO QA	GILBANE	1	0.04
A2G3F0	8/13/2013	USACE UXO QA	GILBANE	1	0.00
A2G3F1	7/21/2014	USACE UXO QA	GILBANE	1	0.23
A2G3F2	7/21/2014	USACE UXO QA	GILBANE	1	0.23
A2G3F3	7/21/2014	USACE UXO QA	GILBANE	1	0.23
A2G3F4	8/13/2013	USACE UXO QA	GILBANE	1	0.00
A2G3F4	7/21/2014	USACE UXO QA	GILBANE	1	0.23
A2G3F5	8/13/2013	USACE UXO QA	GILBANE	1	0.17
A2G3F5	7/21/2014	USACE UXO QA	GILBANE	1	0.06
A2G3F6	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2G3F7	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2G3F8	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2G3F9	8/13/2013	USACE UXO QA	GILBANE	1	0.15
A2G3G0	8/13/2013	USACE UXO QA	GILBANE	1	0.11
A2G3G1	7/21/2014	USACE UXO QA	GILBANE	1	0.23
A2G3G2	7/21/2014	USACE UXO QA	GILBANE	1	0.23
A2G3G3	7/21/2014	USACE UXO QA	GILBANE	1	0.23
A2G3G4	8/13/2013	USACE UXO QA	GILBANE	1	0.09
A2G3G4	7/21/2014	USACE UXO QA	GILBANE	1	0.14
A2G3G5	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2G3G6	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2G3G7	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2G3G8	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2G3G9	8/13/2013	USACE UXO QA	GILBANE	1	0.23
A2G3H0	8/6/2013	USACE UXO QA	GILBANE	1	0.05
A2G3H1	7/21/2014	USACE UXO QA	GILBANE	1	0.23
A2G3H2	8/6/2013	USACE UXO QA	GILBANE	1	0.00
A2G3H2	7/21/2014	USACE UXO QA	GILBANE	1	0.23
A2G3H3	8/6/2013	USACE UXO QA	GILBANE	1	0.11
A2G3H3	7/21/2014	USACE UXO QA	GILBANE	1	0.12

A2G3H4	8/6/2013	USACE UXO QA	GILBANE	1	0.23
A2G3H4	7/21/2014	USACE UXO QA	GILBANE	1	0.00
A2G3H5	8/6/2013	USACE UXO QA	GILBANE	1	0.23
A2G3H6	8/6/2013	USACE UXO QA	GILBANE	1	0.23
A2G3H7	8/6/2013	USACE UXO QA	GILBANE	1	0.23
A2G3H8	8/6/2013	USACE UXO QA	GILBANE	1	0.23
A2G3H9	8/6/2013	USACE UXO QA	GILBANE	1	0.22
A2G3I1	8/6/2013	USACE UXO QA	GILBANE	1	0.06
A2G3I1	7/21/2014	USACE UXO QA	GILBANE	1	0.17
A2G3I2	8/6/2013	USACE UXO QA	GILBANE	1	0.18
A2G3I2	7/21/2014	USACE UXO QA	GILBANE	1	0.05
A2G3I3	8/6/2013	USACE UXO QA	GILBANE	1	0.23
A2G3I4	8/6/2013	USACE UXO QA	GILBANE	1	0.23
A2G3I5	8/6/2013	USACE UXO QA	GILBANE	1	0.23
A2G3I6	8/6/2013	USACE UXO QA	GILBANE	1	0.23
A2G3I7	8/6/2013	USACE UXO QA	GILBANE	1	0.23
A2G3I8	8/6/2013	USACE UXO QA	GILBANE	1	0.22
A2G3I9	8/6/2013	USACE UXO QA	GILBANE	1	0.05
A2G3J1	8/6/2013	USACE UXO QA	GILBANE	1	0.23
A2G3J1	7/21/2014	USACE UXO QA	GILBANE	1	0.00
A2G3J2	8/6/2013	USACE UXO QA	GILBANE	1	0.23
A2G3J3	8/6/2013	USACE UXO QA	GILBANE	1	0.23
A2G3J4	8/6/2013	USACE UXO QA	GILBANE	1	0.23
A2G3J5	8/6/2013	USACE UXO QA	GILBANE	1	0.23
A2G3J6	8/6/2013	USACE UXO QA	GILBANE	1	0.23
A2G3J7	8/6/2013	USACE UXO QA	GILBANE	1	0.18
A2G3J8	8/6/2013	USACE UXO QA	GILBANE	1	0.05
A2G4A1	8/20/2013	USACE UXO QA	GILBANE	1	0.23
A2G4A2	8/20/2013	USACE UXO QA	GILBANE	1	0.23
A2G4A3	8/20/2013	USACE UXO QA	GILBANE	1	0.13
A2G4A4	8/20/2013	USACE UXO QA	GILBANE	1	0.00
A2G4B1	8/20/2013	USACE UXO QA	GILBANE	1	0.22
A2G4B2	8/20/2013	USACE UXO QA	GILBANE	1	0.08
A2G4C1	8/19/2013	USACE UXO QA	GILBANE	1	0.04
A2H1A0	5/25/2010	USACE UXO QA	SHAW	1	0.19
A2H1A5	8/8/2013	USACE UXO QA	GILBANE	2	0.14
A2H1A6	8/8/2013	USACE UXO QA	GILBANE	2	0.23
A2H1A7	8/13/2013	USACE UXO QA	GILBANE	2	0.23
A2H1A8	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H1A8	8/13/2013	USACE UXO QA	GILBANE	2	0.23
A2H1A9	8/13/2013	USACE UXO QA	GILBANE	2	0.08
A2H1A9	5/7/2010	USACE UXO QA	SHAW	2	0.08
A2H1A9	5/7/2010	USACE UXO QA	SHAW	1	0.02
A2H1B0	8/15/2013	USACE UXO QA	GILBANE	2	0.10
A2H1B0	5/7/2010	USACE UXO QA	SHAW	2	0.10
A2H1B0	5/7/2010	USACE UXO QA	SHAW	1	0.02
A2H1B4	8/8/2013	USACE UXO QA	GILBANE	2	0.04

A2H1B5	8/8/2013	USACE UXO QA	GILBANE	2	0.23
A2H1B6	8/8/2013	USACE UXO QA	GILBANE	2	0.23
A2H1B7	8/13/2013	USACE UXO QA	GILBANE	2	0.23
A2H1B8	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H1B8	8/13/2013	USACE UXO QA	GILBANE	2	0.23
A2H1B9	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H1B9	8/13/2013	USACE UXO QA	GILBANE	2	0.23
A2H1C0	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H1C0	8/15/2013	USACE UXO QA	GILBANE	2	0.23
A2H1C4	8/8/2013	USACE UXO QA	GILBANE	2	0.17
A2H1C5	8/8/2013	USACE UXO QA	GILBANE	2	0.23
A2H1C6	8/8/2013	USACE UXO QA	GILBANE	2	0.23
A2H1C7	8/13/2013	USACE UXO QA	GILBANE	2	0.23
A2H1C8	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H1C8	8/13/2013	USACE UXO QA	GILBANE	2	0.23
A2H1C9	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H1C9	8/13/2013	USACE UXO QA	GILBANE	2	0.23
A2H1D0	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H1D0	8/15/2013	USACE UXO QA	GILBANE	2	0.23
A2H1D4	8/8/2013	USACE UXO QA	GILBANE	2	0.10
A2H1D4	8/14/2014	USACE UXO QA	GILBANE	2	0.03
A2H1D5	8/8/2013	USACE UXO QA	GILBANE	2	0.23
A2H1D6	8/8/2013	USACE UXO QA	GILBANE	2	0.23
A2H1D7	8/13/2013	USACE UXO QA	GILBANE	2	0.23
A2H1D8	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H1D8	8/13/2013	USACE UXO QA	GILBANE	2	0.23
A2H1D9	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H1D9	8/13/2013	USACE UXO QA	GILBANE	2	0.23
A2H1E0	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H1E0	8/15/2013	USACE UXO QA	GILBANE	2	0.23
A2H1E3	8/14/2014	USACE UXO QA	GILBANE	2	0.02
A2H1E4	8/8/2013	USACE UXO QA	GILBANE	2	0.00
A2H1E4	8/14/2014	USACE UXO QA	GILBANE	2	0.20
A2H1E5	8/8/2013	USACE UXO QA	GILBANE	2	0.14
A2H1E5	8/14/2014	USACE UXO QA	GILBANE	2	0.09
A2H1E6	8/8/2013	USACE UXO QA	GILBANE	2	0.23
A2H1E7	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H1E7	8/13/2013	USACE UXO QA	GILBANE	2	0.23
A2H1E8	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H1E8	8/13/2013	USACE UXO QA	GILBANE	2	0.23
A2H1E9	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H1E9	8/13/2013	USACE UXO QA	GILBANE	2	0.23
A2H1F0	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H1F0	8/15/2013	USACE UXO QA	GILBANE	2	0.22
A2H1F2	8/14/2014	USACE UXO QA	GILBANE	2	0.00
A2H1F3	8/14/2014	USACE UXO QA	GILBANE	2	0.16
A2H1F4	8/14/2014	USACE UXO QA	GILBANE	2	0.23

A2H1F5	8/8/2013	USACE UXO QA	GILBANE	2	0.00
A2H1F5	8/14/2014	USACE UXO QA	GILBANE	2	0.23
A2H1F6	8/8/2013	USACE UXO QA	GILBANE	2	0.16
A2H1F6	8/14/2014	USACE UXO QA	GILBANE	2	0.07
A2H1F7	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H1F7	8/13/2013	USACE UXO QA	GILBANE	2	0.23
A2H1F8	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H1F8	8/13/2013	USACE UXO QA	GILBANE	2	0.23
A2H1F9	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H1F9	8/15/2013	USACE UXO QA	GILBANE	2	0.23
A2H1G0	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H1G0	8/15/2013	USACE UXO QA	GILBANE	2	0.03
A2H1G2	8/14/2014	USACE UXO QA	GILBANE	2	0.13
A2H1G3	8/14/2014	USACE UXO QA	GILBANE	2	0.23
A2H1G4	8/14/2014	USACE UXO QA	GILBANE	2	0.23
A2H1G5	8/14/2014	USACE UXO QA	GILBANE	2	0.23
A2H1G6	8/8/2013	USACE UXO QA	GILBANE	2	0.02
A2H1G6	8/14/2014	USACE UXO QA	GILBANE	2	0.21
A2H1G7	8/13/2013	USACE UXO QA	GILBANE	2	0.20
A2H1G7	8/14/2014	USACE UXO QA	GILBANE	2	0.03
A2H1G8	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H1G8	8/13/2013	USACE UXO QA	GILBANE	2	0.23
A2H1G9	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H1G9	8/15/2013	USACE UXO QA	GILBANE	2	0.20
A2H1H0	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H1H1	8/14/2014	USACE UXO QA	GILBANE	2	0.10
A2H1H2	8/14/2014	USACE UXO QA	GILBANE	2	0.23
A2H1H3	8/14/2014	USACE UXO QA	GILBANE	2	0.23
A2H1H4	8/14/2014	USACE UXO QA	GILBANE	2	0.23
A2H1H5	8/14/2014	USACE UXO QA	GILBANE	2	0.23
A2H1H6	2/3/2015	USACE UXO QA	GILBANE	2	0.23
A2H1H7	8/13/2013	USACE UXO QA	GILBANE	2	0.04
A2H1H7	8/14/2014	USACE UXO QA	GILBANE	2	0.19
A2H1H8	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H1H8	8/13/2013	USACE UXO QA	GILBANE	2	0.16
A2H1H9	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H1H9	8/15/2013	USACE UXO QA	GILBANE	2	0.02
A2H1I0	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H1I1	8/14/2014	USACE UXO QA	GILBANE	2	0.23
A2H1I2	8/14/2014	USACE UXO QA	GILBANE	2	0.23
A2H1I3	8/14/2014	USACE UXO QA	GILBANE	2	0.23
A2H1I4	8/14/2014	USACE UXO QA	GILBANE	2	0.23
A2H1I5	8/14/2014	USACE UXO QA	GILBANE	2	0.23
A2H1I6	8/14/2014	USACE UXO QA	GILBANE	2	0.23
A2H1I7	8/14/2014	USACE UXO QA	GILBANE	2	0.23
A2H1I8	8/14/2014	USACE UXO QA	GILBANE	2	0.23
A2H1I9	5/7/2010	USACE UXO QA	SHAW	2	0.23

A2H1J0	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H1J1	8/14/2014	USACE UXO QA	GILBANE	2	0.23
A2H1J2	8/14/2014	USACE UXO QA	GILBANE	2	0.23
A2H1J3	8/14/2014	USACE UXO QA	GILBANE	2	0.23
A2H1J4	8/14/2014	USACE UXO QA	GILBANE	2	0.23
A2H1J5	8/14/2014	USACE UXO QA	GILBANE	2	0.23
A2H1J6	8/14/2014	USACE UXO QA	GILBANE	2	0.23
A2H1J7	2/3/2015	USACE UXO QA	GILBANE	2	0.23
A2H1J8	8/14/2014	USACE UXO QA	GILBANE	2	0.23
A2H1J9	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H2A0	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2A0	7/31/2013	USACE UXO QA	GILBANE	1	0.05
A2H2A0	8/6/2014	USACE UXO QA	GILBANE	1	0.01
A2H2A1	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2A2	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2A3	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2A4	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2A5	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2A6	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2A7	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2A8	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2A9	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2A9	8/6/2014	USACE UXO QA	GILBANE	1	0.00
A2H2B0	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2B1	5/25/2010	USACE UXO QA	SHAW	1	0.18
A2H2B2	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2B3	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2B4	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2B5	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2B6	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2B7	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2B8	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2B9	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2C0	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2C1	8/15/2013	USACE UXO QA	GILBANE	2	0.11
A2H2C1	5/7/2010	USACE UXO QA	SHAW	2	0.11
A2H2C1	5/7/2010	USACE UXO QA	SHAW	1	0.01
A2H2C2	8/15/2013	USACE UXO QA	GILBANE	2	0.00
A2H2C2	5/25/2010	USACE UXO QA	SHAW	1	0.17
A2H2C2	5/25/2010	USACE UXO QA	SHAW	2	0.00
A2H2C3	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2C4	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2C5	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2C6	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2C7	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2C8	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2C9	5/25/2010	USACE UXO QA	SHAW	1	0.23

A2H2D0	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2D1	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H2D1	8/15/2013	USACE UXO QA	GILBANE	2	0.23
A2H2D2	8/15/2013	USACE UXO QA	GILBANE	2	0.11
A2H2D2	5/7/2010	USACE UXO QA	SHAW	2	0.11
A2H2D2	5/7/2010	USACE UXO QA	SHAW	1	0.01
A2H2D3	5/25/2010	USACE UXO QA	SHAW	1	0.17
A2H2D4	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2D5	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2D6	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2D7	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2D8	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2D9	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2E0	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2E1	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H2E1	8/15/2013	USACE UXO QA	GILBANE	2	0.23
A2H2E2	5/25/2010	USACE UXO QA	SHAW	2	0.23
A2H2E2	8/15/2013	USACE UXO QA	GILBANE	2	0.12
A2H2E3	8/15/2013	USACE UXO QA	GILBANE	2	0.00
A2H2E3	5/25/2010	USACE UXO QA	SHAW	2	0.13
A2H2E3	5/25/2010	USACE UXO QA	SHAW	1	0.00
A2H2E4	5/25/2010	USACE UXO QA	SHAW	1	0.14
A2H2E4	5/25/2010	USACE UXO QA	SHAW	2	0.00
A2H2E5	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2E6	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2E7	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2E8	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2E9	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2F0	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2F1	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H2F1	8/15/2013	USACE UXO QA	GILBANE	2	0.07
A2H2F2	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H2F3	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H2F4	5/7/2010	USACE UXO QA	SHAW	2	0.17
A2H2F5	5/25/2010	USACE UXO QA	SHAW	1	0.11
A2H2F5	5/25/2010	USACE UXO QA	SHAW	2	0.01
A2H2F6	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2F7	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2F8	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2F9	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2G0	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2G1	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H2G2	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H2G3	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H2G4	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H2G5	5/7/2010	USACE UXO QA	SHAW	2	0.18
A2H2G6	5/25/2010	USACE UXO QA	SHAW	1	0.12

A2H2G6	5/25/2010	USACE UXO QA	SHAW	2	0.01
A2H2G7	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2G8	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2G9	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2H0	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2H1	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H2H2	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H2H3	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H2H4	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H2H5	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H2H6	5/7/2010	USACE UXO QA	SHAW	2	0.11
A2H2H6	5/7/2010	USACE UXO QA	SHAW	1	0.01
A2H2H7	5/25/2010	USACE UXO QA	SHAW	1	0.21
A2H2H8	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2H9	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2I0	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2I1	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H2I2	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H2I3	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H2I4	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H2I5	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H2I6	5/7/2010	USACE UXO QA	SHAW	2	0.20
A2H2I7	5/25/2010	USACE UXO QA	SHAW	1	0.14
A2H2I7	5/25/2010	USACE UXO QA	SHAW	2	0.00
A2H2I8	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2I9	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2J0	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2J1	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H2J2	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H2J3	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H2J4	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H2J5	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H2J6	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2H2J7	5/25/2010	USACE UXO QA	SHAW	1	0.07
A2H2J7	5/25/2010	USACE UXO QA	SHAW	2	0.04
A2H2J8	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H2J9	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H3A1	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H3A1	8/26/2013	USACE UXO QA	GILBANE	1	0.21
A2H3A2	8/26/2013	USACE UXO QA	GILBANE	1	0.23
A2H3A3	7/31/2013	USACE UXO QA	GILBANE	1	0.23
A2H3A4	7/31/2013	USACE UXO QA	GILBANE	1	0.21
A2H3A5	7/31/2013	USACE UXO QA	GILBANE	1	0.15
A2H3A6	7/31/2013	USACE UXO QA	GILBANE	1	0.07
A2H3A7	7/31/2013	USACE UXO QA	GILBANE	1	0.00
A2H3B1	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H3B1	7/31/2013	USACE UXO QA	GILBANE	1	0.02

A2H3B2	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H3B2	7/31/2013	USACE UXO QA	GILBANE	1	0.03
A2H3B3	7/31/2013	USACE UXO QA	GILBANE	1	0.09
A2H3B4	7/31/2013	USACE UXO QA	GILBANE	1	0.00
A2H3C1	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H3C2	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H3C2	7/31/2013	USACE UXO QA	GILBANE	1	0.00
A2H3C3	5/25/2010	USACE UXO QA	SHAW	1	0.19
A2H3C3	7/31/2013	USACE UXO QA	GILBANE	1	0.02
A2H3C4	8/6/2014	USACE UXO QA	GILBANE	1	0.04
A2H3D1	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H3D2	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H3D3	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H3D4	8/6/2014	USACE UXO QA	GILBANE	1	0.22
A2H3D5	8/6/2014	USACE UXO QA	GILBANE	1	0.11
A2H3D6	8/6/2014	USACE UXO QA	GILBANE	1	0.00
A2H3E1	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H3E2	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H3E3	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H3E4	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H3E5	8/6/2014	USACE UXO QA	GILBANE	1	0.21
A2H3E6	8/6/2014	USACE UXO QA	GILBANE	1	0.02
A2H3F1	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H3F2	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H3F3	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H3F4	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H3F5	8/6/2014	USACE UXO QA	GILBANE	1	0.08
A2H3G1	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H3G2	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H3G3	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H3G4	5/25/2010	USACE UXO QA	SHAW	1	0.11
A2H3H1	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H3H2	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H3H3	5/25/2010	USACE UXO QA	SHAW	1	0.12
A2H3I1	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2H3I2	5/25/2010	USACE UXO QA	SHAW	1	0.11
A2H3J1	5/25/2010	USACE UXO QA	SHAW	1	0.11
A2I1A0	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I1A1	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1A2	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1A3	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1A4	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1A5	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1A6	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1A7	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1A8	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1A9	8/20/2014	USACE UXO QA	GILBANE	2	0.23

A2I1B0	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I1B1	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1B2	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1B3	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1B4	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1B5	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1B6	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1B7	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1B8	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1B9	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1C0	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I1C1	8/26/2014	USACE UXO QA	GILBANE	2	0.23
A2I1C2	8/26/2014	USACE UXO QA	GILBANE	2	0.23
A2I1C3	8/26/2014	USACE UXO QA	GILBANE	2	0.23
A2I1C4	8/26/2014	USACE UXO QA	GILBANE	2	0.23
A2I1C5	8/26/2014	USACE UXO QA	GILBANE	2	0.23
A2I1C6	8/26/2014	USACE UXO QA	GILBANE	2	0.23
A2I1C7	8/26/2014	USACE UXO QA	GILBANE	2	0.23
A2I1C8	8/26/2014	USACE UXO QA	GILBANE	2	0.23
A2I1C9	8/26/2014	USACE UXO QA	GILBANE	2	0.23
A2I1D0	8/26/2014	USACE UXO QA	GILBANE	2	0.23
A2I1D1	8/26/2014	USACE UXO QA	GILBANE	2	0.23
A2I1D2	8/26/2014	USACE UXO QA	GILBANE	2	0.23
A2I1D3	8/26/2014	USACE UXO QA	GILBANE	2	0.23
A2I1D4	8/26/2014	USACE UXO QA	GILBANE	2	0.23
A2I1D5	8/26/2014	USACE UXO QA	GILBANE	2	0.23
A2I1D6	8/26/2014	USACE UXO QA	GILBANE	2	0.23
A2I1D7	8/26/2014	USACE UXO QA	GILBANE	2	0.23
A2I1D8	8/26/2014	USACE UXO QA	GILBANE	2	0.23
A2I1D9	12/22/2014	USACE UXO QA	GILBANE	2	0.23
A2I1E0	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1E1	12/22/2014	USACE UXO QA	GILBANE	2	0.23
A2I1E2	9/3/2014	USACE UXO QA	GILBANE	2	0.23
A2I1E3	9/3/2014	USACE UXO QA	GILBANE	2	0.23
A2I1E4	9/3/2014	USACE UXO QA	GILBANE	2	0.23
A2I1E5	9/3/2014	USACE UXO QA	GILBANE	2	0.23
A2I1E6	12/22/2014	USACE UXO QA	GILBANE	2	0.23
A2I1E7	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1E8	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1E9	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1F0	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1F1	12/22/2014	USACE UXO QA	GILBANE	2	0.23
A2I1F2	9/3/2014	USACE UXO QA	GILBANE	2	0.23
A2I1F3	12/22/2014	USACE UXO QA	GILBANE	2	0.23
A2I1F4	9/3/2014	USACE UXO QA	GILBANE	2	0.23
A2I1F5	9/3/2014	USACE UXO QA	GILBANE	2	0.23
A2I1F6	12/22/2014	USACE UXO QA	GILBANE	2	0.23

A2I1F7	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1F8	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1F9	12/22/2014	USACE UXO QA	GILBANE	2	0.23
A2I1G0	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1G1	12/22/2014	USACE UXO QA	GILBANE	2	0.23
A2I1G2	9/3/2014	USACE UXO QA	GILBANE	2	0.23
A2I1G3	12/22/2014	USACE UXO QA	GILBANE	2	0.23
A2I1G4	9/3/2014	USACE UXO QA	GILBANE	2	0.23
A2I1G5	9/3/2014	USACE UXO QA	GILBANE	2	0.23
A2I1G6	12/22/2014	USACE UXO QA	GILBANE	2	0.23
A2I1G7	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1G8	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1G9	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1H0	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1H1	12/22/2014	USACE UXO QA	GILBANE	2	0.23
A2I1H2	9/3/2014	USACE UXO QA	GILBANE	2	0.23
A2I1H3	12/22/2014	USACE UXO QA	GILBANE	2	0.23
A2I1H4	9/3/2014	USACE UXO QA	GILBANE	2	0.23
A2I1H5	9/3/2014	USACE UXO QA	GILBANE	2	0.23
A2I1H6	9/3/2014	USACE UXO QA	GILBANE	2	0.23
A2I1H7	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1H8	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1H9	12/22/2014	USACE UXO QA	GILBANE	2	0.23
A2I1I0	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1I1	12/22/2014	USACE UXO QA	GILBANE	2	0.23
A2I1I2	12/22/2014	USACE UXO QA	GILBANE	2	0.23
A2I1I3	9/3/2014	USACE UXO QA	GILBANE	2	0.23
A2I1I4	12/22/2014	USACE UXO QA	GILBANE	2	0.23
A2I1I5	9/3/2014	USACE UXO QA	GILBANE	2	0.23
A2I1I6	12/22/2014	USACE UXO QA	GILBANE	2	0.23
A2I1I7	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1I8	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1I9	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1J0	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1J1	8/27/2014	USACE UXO QA	GILBANE	2	0.23
A2I1J2	8/27/2014	USACE UXO QA	GILBANE	2	0.23
A2I1J3	8/27/2014	USACE UXO QA	GILBANE	2	0.23
A2I1J4	8/27/2014	USACE UXO QA	GILBANE	2	0.23
A2I1J5	8/27/2014	USACE UXO QA	GILBANE	2	0.23
A2I1J6	8/27/2014	USACE UXO QA	GILBANE	2	0.23
A2I1J7	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1J8	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I1J9	8/20/2014	USACE UXO QA	GILBANE	2	0.23
A2I2A0	5/25/2010	USACE UXO QA	SHAW	1	0.10
A2I2A1	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2A2	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2A3	5/7/2010	USACE UXO QA	SHAW	2	0.23

A2I2A4	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2A5	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2A6	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2A7	5/7/2010	USACE UXO QA	SHAW	2	0.11
A2I2A7	5/7/2010	USACE UXO QA	SHAW	1	0.01
A2I2A8	5/25/2010	USACE UXO QA	SHAW	1	0.22
A2I2A9	5/25/2010	USACE UXO QA	SHAW	1	0.23
A2I2B1	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2B2	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2B3	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2B4	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2B5	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2B6	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2B7	5/7/2010	USACE UXO QA	SHAW	2	0.17
A2I2B8	5/25/2010	USACE UXO QA	SHAW	1	0.17
A2I2B9	5/25/2010	USACE UXO QA	SHAW	1	0.09
A2I2C1	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2C2	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2C3	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2C4	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2C5	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2C6	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2C7	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2C7	8/20/2012	USACE UXO QA	GILBANE	2	0.00
A2I2C8	8/20/2012	USACE UXO QA	GILBANE	2	0.03
A2I2C8	5/7/2010	USACE UXO QA	SHAW	2	0.06
A2I2C8	5/7/2010	USACE UXO QA	SHAW	1	0.01
A2I2D1	8/11/2014	USACE UXO QA	GILBANE	2	0.23
A2I2D2	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2D3	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2D4	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2D5	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2D6	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2D6	8/20/2012	USACE UXO QA	GILBANE	2	0.00
A2I2D7	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2D7	8/20/2012	USACE UXO QA	GILBANE	2	0.13
A2I2D8	5/7/2010	USACE UXO QA	SHAW	2	0.22
A2I2D8	8/20/2012	USACE UXO QA	GILBANE	2	0.22
A2I2D9	8/20/2012	USACE UXO QA	GILBANE	2	0.07
A2I2E0	8/22/2012	USACE UXO QA	GILBANE	2	0.07
A2I2E1	8/11/2014	USACE UXO QA	GILBANE	2	0.23
A2I2E2	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2E3	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2E4	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2E5	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2E5	8/20/2012	USACE UXO QA	GILBANE	2	0.01
A2I2E6	5/7/2010	USACE UXO QA	SHAW	2	0.23

A2I2E6	8/20/2012	USACE UXO QA	GILBANE	2	0.16
A2I2E7	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2E7	8/20/2012	USACE UXO QA	GILBANE	2	0.23
A2I2E8	8/20/2012	USACE UXO QA	GILBANE	2	0.23
A2I2E9	8/20/2012	USACE UXO QA	GILBANE	2	0.22
A2I2F0	8/20/2012	USACE UXO QA	GILBANE	2	0.23
A2I2F1	8/11/2014	USACE UXO QA	GILBANE	2	0.23
A2I2F2	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2F3	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2F4	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2F4	8/20/2012	USACE UXO QA	GILBANE	2	0.07
A2I2F5	5/7/2010	USACE UXO QA	SHAW	2	0.23
A2I2F5	8/20/2012	USACE UXO QA	GILBANE	2	0.20
A2I2F6	8/20/2012	USACE UXO QA	GILBANE	2	0.23
A2I2F7	8/20/2012	USACE UXO QA	GILBANE	2	0.23
A2I2F8	8/20/2012	USACE UXO QA	GILBANE	2	0.23
A2I2F9	8/20/2012	USACE UXO QA	GILBANE	2	0.23
A2I2G0	8/22/2012	USACE UXO QA	GILBANE	2	0.23
A2I2G1	8/11/2014	USACE UXO QA	GILBANE	2	0.23
A2I2G2	8/26/2012	USACE UXO QA	GILBANE	2	0.00
A2I2G2	8/11/2014	USACE UXO QA	GILBANE	2	0.23
A2I2G3	8/26/2012	USACE UXO QA	GILBANE	2	0.15
A2I2G3	8/11/2014	USACE UXO QA	GILBANE	2	0.07
A2I2G4	8/26/2012	USACE UXO QA	GILBANE	2	0.23
A2I2G5	8/26/2012	USACE UXO QA	GILBANE	2	0.23
A2I2G6	8/26/2012	USACE UXO QA	GILBANE	2	0.23
A2I2G7	8/26/2012	USACE UXO QA	GILBANE	2	0.23
A2I2G8	8/26/2012	USACE UXO QA	GILBANE	2	0.23
A2I2G9	8/22/2012	USACE UXO QA	GILBANE	2	0.23
A2I2H0	8/22/2012	USACE UXO QA	GILBANE	2	0.23
A2I2H1	8/11/2014	USACE UXO QA	GILBANE	2	0.23
A2I2H2	8/11/2014	USACE UXO QA	GILBANE	2	0.23
A2I2H3	8/26/2012	USACE UXO QA	GILBANE	2	0.16
A2I2H3	8/11/2014	USACE UXO QA	GILBANE	2	0.07
A2I2H4	8/26/2012	USACE UXO QA	GILBANE	2	0.23
A2I2H5	8/26/2012	USACE UXO QA	GILBANE	2	0.23
A2I2H6	8/26/2012	USACE UXO QA	GILBANE	2	0.23
A2I2H7	8/26/2012	USACE UXO QA	GILBANE	2	0.23
A2I2H8	8/26/2012	USACE UXO QA	GILBANE	2	0.23
A2I2H9	8/22/2012	USACE UXO QA	GILBANE	2	0.23
A2I2I0	8/22/2012	USACE UXO QA	GILBANE	2	0.23
A2I2I1	8/11/2014	USACE UXO QA	GILBANE	2	0.23
A2I2I2	8/11/2014	USACE UXO QA	GILBANE	2	0.23
A2I2I3	8/26/2012	USACE UXO QA	GILBANE	2	0.05
A2I2I3	8/11/2014	USACE UXO QA	GILBANE	2	0.18
A2I2I4	8/26/2012	USACE UXO QA	GILBANE	2	0.23
A2I2I4	8/11/2014	USACE UXO QA	GILBANE	2	0.00

A2I2I5	8/26/2012	USACE UXO QA	GILBANE	2	0.23
A2I2I6	8/26/2012	USACE UXO QA	GILBANE	2	0.23
A2I2I7	8/26/2012	USACE UXO QA	GILBANE	2	0.23
A2I2I8	8/26/2012	USACE UXO QA	GILBANE	2	0.23
A2I2I9	8/22/2012	USACE UXO QA	GILBANE	2	0.23
A2I2J0	8/22/2012	USACE UXO QA	GILBANE	2	0.23
A2I2J1	8/11/2014	USACE UXO QA	GILBANE	2	0.23
A2I2J2	8/11/2014	USACE UXO QA	GILBANE	2	0.23
A2I2J3	8/11/2014	USACE UXO QA	GILBANE	2	0.23
A2I2J4	8/26/2012	USACE UXO QA	GILBANE	2	0.16
A2I2J4	8/11/2014	USACE UXO QA	GILBANE	2	0.07
A2I2J5	8/26/2012	USACE UXO QA	GILBANE	2	0.23
A2I2J6	8/26/2012	USACE UXO QA	GILBANE	2	0.23
A2I2J7	8/26/2012	USACE UXO QA	GILBANE	2	0.23
A2I2J8	8/26/2012	USACE UXO QA	GILBANE	2	0.23
A2I2J9	8/22/2012	USACE UXO QA	GILBANE	2	0.23
A2I3F1	8/20/2012	USACE UXO QA	GILBANE	2	0.08
A2I3G1	8/22/2012	USACE UXO QA	GILBANE	2	0.23
A2I3G2	8/22/2012	USACE UXO QA	GILBANE	2	0.08
A2I3H1	8/22/2012	USACE UXO QA	GILBANE	2	0.23
A2I3H2	8/22/2012	USACE UXO QA	GILBANE	2	0.23
A2I3H3	8/22/2012	USACE UXO QA	GILBANE	2	0.10
A2I3H4	8/22/2012	USACE UXO QA	GILBANE	2	0.00
A2I3I1	8/22/2012	USACE UXO QA	GILBANE	2	0.23
A2I3I2	8/22/2012	USACE UXO QA	GILBANE	2	0.23
A2I3I3	8/22/2012	USACE UXO QA	GILBANE	2	0.23
A2I3I4	8/22/2012	USACE UXO QA	GILBANE	2	0.17
A2I3I5	8/22/2012	USACE UXO QA	GILBANE	2	0.02
A2I3J1	8/22/2012	USACE UXO QA	GILBANE	2	0.23
A2I3J2	8/22/2012	USACE UXO QA	GILBANE	2	0.23
A2I3J3	8/22/2012	USACE UXO QA	GILBANE	2	0.23
A2I3J4	8/22/2012	USACE UXO QA	GILBANE	2	0.23
A2I3J5	8/22/2012	USACE UXO QA	GILBANE	2	0.11
A2J1A0	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1A1	8/27/2014	USACE UXO QA	GILBANE	2	0.23
A2J1A2	8/25/2014	USACE UXO QA	GILBANE	2	0.23
A2J1A3	8/25/2014	USACE UXO QA	GILBANE	2	0.23
A2J1A4	8/25/2014	USACE UXO QA	GILBANE	2	0.23
A2J1A5	8/25/2014	USACE UXO QA	GILBANE	2	0.23
A2J1A6	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1A7	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1A8	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1A9	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1B0	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1B1	8/27/2014	USACE UXO QA	GILBANE	2	0.23
A2J1B2	8/25/2014	USACE UXO QA	GILBANE	2	0.23
A2J1B3	8/25/2014	USACE UXO QA	GILBANE	2	0.23

A2J1B4	8/25/2014	USACE UXO QA	GILBANE	2	0.23
A2J1B5	8/25/2014	USACE UXO QA	GILBANE	2	0.23
A2J1B6	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1B7	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1B8	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1B9	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1C0	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1C1	8/27/2014	USACE UXO QA	GILBANE	2	0.23
A2J1C2	8/25/2014	USACE UXO QA	GILBANE	2	0.23
A2J1C3	8/25/2014	USACE UXO QA	GILBANE	2	0.23
A2J1C4	8/25/2014	USACE UXO QA	GILBANE	2	0.23
A2J1C5	8/25/2014	USACE UXO QA	GILBANE	2	0.23
A2J1C6	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1C7	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1C8	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1C9	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1D0	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1D1	8/27/2014	USACE UXO QA	GILBANE	2	0.23
A2J1D2	8/25/2014	USACE UXO QA	GILBANE	2	0.23
A2J1D3	8/25/2014	USACE UXO QA	GILBANE	2	0.23
A2J1D4	8/25/2014	USACE UXO QA	GILBANE	2	0.23
A2J1D5	8/25/2014	USACE UXO QA	GILBANE	2	0.23
A2J1D6	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1D7	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1D8	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1D9	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1E0	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1E1	8/27/2014	USACE UXO QA	GILBANE	2	0.23
A2J1E2	8/25/2014	USACE UXO QA	GILBANE	2	0.23
A2J1E3	8/25/2014	USACE UXO QA	GILBANE	2	0.23
A2J1E4	8/25/2014	USACE UXO QA	GILBANE	2	0.23
A2J1E5	8/25/2014	USACE UXO QA	GILBANE	2	0.23
A2J1E6	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1E7	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1E8	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1E9	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1F0	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1F1	8/27/2014	USACE UXO QA	GILBANE	2	0.23
A2J1F2	8/25/2014	USACE UXO QA	GILBANE	2	0.23
A2J1F3	8/25/2014	USACE UXO QA	GILBANE	2	0.23
A2J1F4	8/25/2014	USACE UXO QA	GILBANE	2	0.23
A2J1F5	8/25/2014	USACE UXO QA	GILBANE	2	0.23
A2J1F6	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1F7	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1F8	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1F9	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1G0	8/19/2014	USACE UXO QA	GILBANE	2	0.23

A2J1G1	8/27/2014	USACE UXO QA	GILBANE	2	0.23
A2J1G2	8/25/2014	USACE UXO QA	GILBANE	2	0.23
A2J1G3	8/25/2014	USACE UXO QA	GILBANE	2	0.23
A2J1G4	8/25/2014	USACE UXO QA	GILBANE	2	0.23
A2J1G5	8/25/2014	USACE UXO QA	GILBANE	2	0.23
A2J1G6	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1G7	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1G8	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1G9	8/19/2014	USACE UXO QA	GILBANE	2	0.23
A2J1H0	8/27/2014	USACE UXO QA	GILBANE	2	0.23
A2J1H1	8/27/2014	USACE UXO QA	GILBANE	2	0.23
A2J1H2	8/27/2014	USACE UXO QA	GILBANE	2	0.23
A2J1H3	8/27/2014	USACE UXO QA	GILBANE	2	0.23
A2J1H4	8/27/2014	USACE UXO QA	GILBANE	2	0.23
A2J1H5	8/27/2014	USACE UXO QA	GILBANE	2	0.23
A2J1H6	8/27/2014	USACE UXO QA	GILBANE	2	0.23
A2J1H7	8/27/2014	USACE UXO QA	GILBANE	2	0.23
A2J1H8	8/27/2014	USACE UXO QA	GILBANE	2	0.23
A2J1H9	8/27/2014	USACE UXO QA	GILBANE	2	0.23
A2J1I0	8/27/2012	USACE UXO QA	GILBANE	2	0.01
A2J1I0	9/11/2014	USACE UXO QA	GILBANE	2	0.22
A2J1I1	9/11/2014	USACE UXO QA	GILBANE	2	0.23
A2J1I2	9/11/2014	USACE UXO QA	GILBANE	2	0.23
A2J1I3	9/11/2014	USACE UXO QA	GILBANE	2	0.23
A2J1I4	9/11/2014	USACE UXO QA	GILBANE	2	0.23
A2J1I5	9/11/2014	USACE UXO QA	GILBANE	2	0.23
A2J1I6	9/11/2014	USACE UXO QA	GILBANE	2	0.23
A2J1I7	9/11/2014	USACE UXO QA	GILBANE	2	0.23
A2J1I8	9/11/2014	USACE UXO QA	GILBANE	2	0.23
A2J1I9	9/11/2014	USACE UXO QA	GILBANE	2	0.23
A2J1J0	8/27/2012	USACE UXO QA	GILBANE	2	0.03
A2J1J0	9/11/2014	USACE UXO QA	GILBANE	2	0.08
A2J1J0	8/27/2012	USACE UXO QA	GILBANE	3	0.01
A2J1J0	11/19/2014	USACE UXO QA	GILBANE	3	0.00
A2J1J1	9/11/2014	USACE UXO QA	GILBANE	2	0.23
A2J1J2	9/11/2014	USACE UXO QA	GILBANE	2	0.23
A2J1J3	9/11/2014	USACE UXO QA	GILBANE	2	0.21
A2J1J4	9/11/2014	USACE UXO QA	GILBANE	2	0.16
A2J1J5	11/17/2014	USACE UXO QA	GILBANE	2	0.16
A2J1J6	9/11/2014	USACE UXO QA	GILBANE	2	0.15
A2J1J7	9/11/2014	USACE UXO QA	GILBANE	2	0.14
A2J1J8	9/11/2014	USACE UXO QA	GILBANE	2	0.13
A2J1J9	9/11/2014	USACE UXO QA	GILBANE	2	0.11
A2J1J9	11/19/2014	USACE UXO QA	GILBANE	3	0.00
A2J2A0	8/15/2012	USACE UXO QA	GILBANE	2	0.23
A2J2A1	8/13/2014	USACE UXO QA	GILBANE	2	0.23
A2J2A2	8/13/2014	USACE UXO QA	GILBANE	2	0.23

A2J2A3	8/13/2014	USACE UXO QA	GILBANE	2	0.23
A2J2A4	8/15/2012	USACE UXO QA	GILBANE	2	0.15
A2J2A4	8/13/2014	USACE UXO QA	GILBANE	2	0.08
A2J2A5	8/15/2012	USACE UXO QA	GILBANE	2	0.23
A2J2A6	8/15/2012	USACE UXO QA	GILBANE	2	0.23
A2J2A7	8/15/2012	USACE UXO QA	GILBANE	2	0.23
A2J2A8	8/15/2012	USACE UXO QA	GILBANE	2	0.23
A2J2A9	8/15/2012	USACE UXO QA	GILBANE	2	0.23
A2J2B0	8/15/2012	USACE UXO QA	GILBANE	2	0.23
A2J2B1	8/13/2014	USACE UXO QA	GILBANE	2	0.23
A2J2B2	8/13/2014	USACE UXO QA	GILBANE	2	0.23
A2J2B3	8/15/2012	USACE UXO QA	GILBANE	2	0.02
A2J2B3	8/13/2014	USACE UXO QA	GILBANE	2	0.21
A2J2B4	8/15/2012	USACE UXO QA	GILBANE	2	0.22
A2J2B4	8/13/2014	USACE UXO QA	GILBANE	2	0.00
A2J2B5	8/15/2012	USACE UXO QA	GILBANE	2	0.23
A2J2B6	8/15/2012	USACE UXO QA	GILBANE	2	0.23
A2J2B7	8/15/2012	USACE UXO QA	GILBANE	2	0.23
A2J2B8	8/15/2012	USACE UXO QA	GILBANE	2	0.23
A2J2B9	8/15/2012	USACE UXO QA	GILBANE	2	0.23
A2J2C0	8/28/2012	USACE UXO QA	GILBANE	2	0.23
A2J2C1	8/13/2014	USACE UXO QA	GILBANE	2	0.23
A2J2C2	8/13/2014	USACE UXO QA	GILBANE	2	0.23
A2J2C3	8/23/2012	USACE UXO QA	GILBANE	2	0.11
A2J2C3	8/13/2014	USACE UXO QA	GILBANE	2	0.12
A2J2C4	8/23/2012	USACE UXO QA	GILBANE	2	0.23
A2J2C5	8/23/2012	USACE UXO QA	GILBANE	2	0.23
A2J2C6	8/23/2012	USACE UXO QA	GILBANE	2	0.23
A2J2C7	8/23/2012	USACE UXO QA	GILBANE	2	0.23
A2J2C8	8/28/2012	USACE UXO QA	GILBANE	2	0.23
A2J2C9	8/28/2012	USACE UXO QA	GILBANE	2	0.23
A2J2D0	8/28/2012	USACE UXO QA	GILBANE	2	0.23
A2J2D1	8/13/2014	USACE UXO QA	GILBANE	2	0.23
A2J2D2	8/23/2012	USACE UXO QA	GILBANE	2	0.00
A2J2D2	8/13/2014	USACE UXO QA	GILBANE	2	0.23
A2J2D3	8/23/2012	USACE UXO QA	GILBANE	2	0.21
A2J2D3	8/13/2014	USACE UXO QA	GILBANE	2	0.02
A2J2D4	8/23/2012	USACE UXO QA	GILBANE	2	0.23
A2J2D5	8/23/2012	USACE UXO QA	GILBANE	2	0.23
A2J2D6	8/23/2012	USACE UXO QA	GILBANE	2	0.23
A2J2D7	8/23/2012	USACE UXO QA	GILBANE	2	0.23
A2J2D8	8/28/2012	USACE UXO QA	GILBANE	2	0.23
A2J2D9	8/28/2012	USACE UXO QA	GILBANE	2	0.23
A2J2E0	8/28/2012	USACE UXO QA	GILBANE	2	0.23
A2J2E1	8/13/2014	USACE UXO QA	GILBANE	2	0.23
A2J2E2	8/23/2012	USACE UXO QA	GILBANE	2	0.07
A2J2E2	8/13/2014	USACE UXO QA	GILBANE	2	0.15

A2J2E3	8/23/2012	USACE UXO QA	GILBANE	2	0.23
A2J2E4	8/23/2012	USACE UXO QA	GILBANE	2	0.23
A2J2E5	8/23/2012	USACE UXO QA	GILBANE	2	0.23
A2J2E6	8/23/2012	USACE UXO QA	GILBANE	2	0.23
A2J2E7	8/23/2012	USACE UXO QA	GILBANE	2	0.23
A2J2E8	8/28/2012	USACE UXO QA	GILBANE	2	0.23
A2J2E9	8/28/2012	USACE UXO QA	GILBANE	2	0.23
A2J2F0	8/28/2012	USACE UXO QA	GILBANE	2	0.23
A2J2F1	8/13/2014	USACE UXO QA	GILBANE	2	0.23
A2J2F2	8/23/2012	USACE UXO QA	GILBANE	2	0.17
A2J2F2	8/13/2014	USACE UXO QA	GILBANE	2	0.06
A2J2F3	8/23/2012	USACE UXO QA	GILBANE	2	0.23
A2J2F4	8/23/2012	USACE UXO QA	GILBANE	2	0.23
A2J2F5	8/23/2012	USACE UXO QA	GILBANE	2	0.23
A2J2F6	8/23/2012	USACE UXO QA	GILBANE	2	0.23
A2J2F7	8/23/2012	USACE UXO QA	GILBANE	2	0.23
A2J2F8	8/28/2012	USACE UXO QA	GILBANE	2	0.23
A2J2F9	8/28/2012	USACE UXO QA	GILBANE	2	0.23
A2J2G0	9/11/2012	USACE UXO QA	GILBANE	2	0.23
A2J2G1	8/27/2012	USACE UXO QA	GILBANE	2	0.04
A2J2G1	8/13/2014	USACE UXO QA	GILBANE	2	0.19
A2J2G2	8/27/2012	USACE UXO QA	GILBANE	2	0.23
A2J2G2	8/13/2014	USACE UXO QA	GILBANE	2	0.00
A2J2G3	8/27/2012	USACE UXO QA	GILBANE	2	0.23
A2J2G4	8/27/2012	USACE UXO QA	GILBANE	2	0.23
A2J2G5	8/27/2012	USACE UXO QA	GILBANE	2	0.23
A2J2G6	8/27/2012	USACE UXO QA	GILBANE	2	0.23
A2J2G7	9/11/2012	USACE UXO QA	GILBANE	2	0.23
A2J2G8	9/11/2012	USACE UXO QA	GILBANE	2	0.23
A2J2G9	9/11/2012	USACE UXO QA	GILBANE	2	0.23
A2J2H0	9/11/2012	USACE UXO QA	GILBANE	2	0.23
A2J2H1	8/27/2012	USACE UXO QA	GILBANE	2	0.13
A2J2H1	8/13/2014	USACE UXO QA	GILBANE	2	0.10
A2J2H2	8/27/2012	USACE UXO QA	GILBANE	2	0.23
A2J2H3	8/27/2012	USACE UXO QA	GILBANE	2	0.23
A2J2H4	8/27/2012	USACE UXO QA	GILBANE	2	0.23
A2J2H5	8/27/2012	USACE UXO QA	GILBANE	2	0.23
A2J2H6	8/27/2012	USACE UXO QA	GILBANE	2	0.23
A2J2H7	9/11/2012	USACE UXO QA	GILBANE	2	0.23
A2J2H8	9/11/2012	USACE UXO QA	GILBANE	2	0.23
A2J2H9	9/11/2012	USACE UXO QA	GILBANE	2	0.23
A2J2I0	9/11/2012	USACE UXO QA	GILBANE	2	0.14
A2J2I1	8/27/2012	USACE UXO QA	GILBANE	2	0.22
A2J2I1	8/13/2014	USACE UXO QA	GILBANE	2	0.01
A2J2I2	8/27/2012	USACE UXO QA	GILBANE	2	0.23
A2J2I3	8/27/2012	USACE UXO QA	GILBANE	2	0.23
A2J2I4	8/27/2012	USACE UXO QA	GILBANE	2	0.23

A2J2I5	8/27/2012	USACE UXO QA	GILBANE	2	0.23
A2J2I6	8/27/2012	USACE UXO QA	GILBANE	2	0.23
A2J2I7	9/11/2012	USACE UXO QA	GILBANE	2	0.23
A2J2I8	9/11/2012	USACE UXO QA	GILBANE	2	0.23
A2J2I9	9/11/2012	USACE UXO QA	GILBANE	2	0.21
A2J2J0	9/11/2012	USACE UXO QA	GILBANE	3	0.01
A2J2J1	8/27/2012	USACE UXO QA	GILBANE	2	0.10
A2J2J1	8/27/2012	USACE UXO QA	GILBANE	3	0.01
A2J2J2	8/27/2012	USACE UXO QA	GILBANE	3	0.02
A2J2J2	8/27/2012	USACE UXO QA	GILBANE	2	0.10
A2J2J3	8/27/2012	USACE UXO QA	GILBANE	2	0.09
A2J2J3	8/27/2012	USACE UXO QA	GILBANE	3	0.02
A2J2J4	8/27/2012	USACE UXO QA	GILBANE	2	0.09
A2J2J4	8/27/2012	USACE UXO QA	GILBANE	3	0.03
A2J2J5	8/27/2012	USACE UXO QA	GILBANE	2	0.08
A2J2J5	8/27/2012	USACE UXO QA	GILBANE	3	0.04
A2J2J6	8/27/2012	USACE UXO QA	GILBANE	2	0.06
A2J2J6	8/27/2012	USACE UXO QA	GILBANE	3	0.05
A2J2J7	9/11/2012	USACE UXO QA	GILBANE	2	0.03
A2J2J7	9/11/2012	USACE UXO QA	GILBANE	3	0.08
A2J2J8	9/11/2012	USACE UXO QA	GILBANE	2	0.01
A2J2J8	9/11/2012	USACE UXO QA	GILBANE	3	0.11
A2J2J9	9/11/2012	USACE UXO QA	GILBANE	3	0.13
A2J3A1	8/15/2012	USACE UXO QA	GILBANE	2	0.23
A2J3A2	8/15/2012	USACE UXO QA	GILBANE	2	0.23
A2J3A3	8/15/2012	USACE UXO QA	GILBANE	2	0.23
A2J3A4	8/15/2012	USACE UXO QA	GILBANE	2	0.23
A2J3A5	8/15/2012	USACE UXO QA	GILBANE	2	0.12
A2J3B1	8/15/2012	USACE UXO QA	GILBANE	2	0.23
A2J3B2	8/15/2012	USACE UXO QA	GILBANE	2	0.23
A2J3B3	8/15/2012	USACE UXO QA	GILBANE	2	0.23
A2J3B4	8/15/2012	USACE UXO QA	GILBANE	2	0.21
A2J3B5	8/15/2012	USACE UXO QA	GILBANE	2	0.02
A2J3C1	8/28/2012	USACE UXO QA	GILBANE	2	0.23
A2J3C2	8/28/2012	USACE UXO QA	GILBANE	2	0.23
A2J3C3	8/28/2012	USACE UXO QA	GILBANE	2	0.23
A2J3C4	8/28/2012	USACE UXO QA	GILBANE	2	0.09
A2J3D1	8/28/2012	USACE UXO QA	GILBANE	2	0.23
A2J3D2	8/28/2012	USACE UXO QA	GILBANE	2	0.23
A2J3D3	8/28/2012	USACE UXO QA	GILBANE	2	0.17
A2J3D4	8/28/2012	USACE UXO QA	GILBANE	2	0.00
A2J3E1	8/28/2012	USACE UXO QA	GILBANE	2	0.23
A2J3E2	8/28/2012	USACE UXO QA	GILBANE	2	0.22
A2J3E3	8/28/2012	USACE UXO QA	GILBANE	2	0.03
A2J3F1	8/28/2012	USACE UXO QA	GILBANE	2	0.23
A2J3F2	8/28/2012	USACE UXO QA	GILBANE	2	0.12
A2J3G1	9/11/2012	USACE UXO QA	GILBANE	2	0.20

A2J3G2	9/11/2012	USACE UXO QA	GILBANE	2	0.01
A2J3H1	9/11/2012	USACE UXO QA	GILBANE	2	0.08
A2J3I1	9/11/2012	USACE UXO QA	GILBANE	2	0.00
B1A0A0	9/23/2014	USACE UXO QA	GILBANE	2	0.07
B1A0A0	11/3/2014	USACE UXO QA	GILBANE	3	0.05
B1A0A1	9/23/2014	USACE UXO QA	GILBANE	2	0.23
B1A0A2	9/23/2014	USACE UXO QA	GILBANE	2	0.23
B1A0A3	9/23/2014	USACE UXO QA	GILBANE	2	0.23
B1A0A4	9/23/2014	USACE UXO QA	GILBANE	2	0.23
B1A0A5	9/23/2014	USACE UXO QA	GILBANE	2	0.23
B1A0A6	9/23/2014	USACE UXO QA	GILBANE	2	0.23
B1A0A7	9/23/2014	USACE UXO QA	GILBANE	2	0.20
B1A0A8	9/23/2014	USACE UXO QA	GILBANE	2	0.15
B1A0A9	9/23/2014	USACE UXO QA	GILBANE	2	0.09
B1A0A9	11/3/2014	USACE UXO QA	GILBANE	3	0.02
B1A0B0	11/3/2014	USACE UXO QA	GILBANE	3	0.23
B1A0B1	9/23/2014	USACE UXO QA	GILBANE	2	0.23
B1A0B2	9/23/2014	USACE UXO QA	GILBANE	2	0.22
B1A0B3	9/23/2014	USACE UXO QA	GILBANE	2	0.16
B1A0B4	9/23/2014	USACE UXO QA	GILBANE	2	0.11
B1A0B4	10/16/2014	USACE UXO QA	GILBANE	3	0.01
B1A0B5	9/23/2014	USACE UXO QA	GILBANE	2	0.05
B1A0B5	10/16/2014	USACE UXO QA	GILBANE	3	0.06
B1A0B6	9/23/2014	USACE UXO QA	GILBANE	2	0.01
B1A0B6	10/16/2014	USACE UXO QA	GILBANE	3	0.10
B1A0B7	10/27/2014	USACE UXO QA	GILBANE	3	0.14
B1A0B8	10/27/2014	USACE UXO QA	GILBANE	3	0.19
B1A0B9	11/3/2014	USACE UXO QA	GILBANE	3	0.23
B1A0C0	11/3/2014	USACE UXO QA	GILBANE	3	0.23
B1A0C1	9/23/2014	USACE UXO QA	GILBANE	2	0.10
B1A0C1	10/8/2014	USACE UXO QA	GILBANE	3	0.02
B1A0C2	10/8/2014	USACE UXO QA	GILBANE	3	0.11
B1A0C2	9/23/2014	USACE UXO QA	GILBANE	2	0.01
B1A0C3	10/8/2014	USACE UXO QA	GILBANE	3	0.18
B1A0C4	10/16/2014	USACE UXO QA	GILBANE	3	0.23
B1A0C5	10/16/2014	USACE UXO QA	GILBANE	3	0.23
B1A0C6	10/16/2014	USACE UXO QA	GILBANE	3	0.23
B1A0C7	10/27/2014	USACE UXO QA	GILBANE	3	0.23
B1A0C8	10/27/2014	USACE UXO QA	GILBANE	3	0.23
B1A0C9	11/3/2014	USACE UXO QA	GILBANE	3	0.23
B1A0D0	11/3/2014	USACE UXO QA	GILBANE	3	0.23
B1A0D1	10/8/2014	USACE UXO QA	GILBANE	3	0.19
B1A0D2	10/8/2014	USACE UXO QA	GILBANE	3	0.23
B1A0D3	10/8/2014	USACE UXO QA	GILBANE	3	0.23
B1A0D4	10/16/2014	USACE UXO QA	GILBANE	3	0.23
B1A0D5	10/16/2014	USACE UXO QA	GILBANE	3	0.23
B1A0D6	10/16/2014	USACE UXO QA	GILBANE	3	0.23

B1A0D7	10/27/2014	USACE UXO QA	GILBANE	3	0.23
B1A0D8	10/27/2014	USACE UXO QA	GILBANE	3	0.23
B1A0D9	11/3/2014	USACE UXO QA	GILBANE	3	0.23
B1A0E0	11/18/2014	USACE UXO QA	GILBANE	3	0.23
B1A0E1	10/8/2014	USACE UXO QA	GILBANE	3	0.23
B1A0E2	10/8/2014	USACE UXO QA	GILBANE	3	0.23
B1A0E3	10/8/2014	USACE UXO QA	GILBANE	3	0.23
B1A0E4	10/16/2014	USACE UXO QA	GILBANE	3	0.23
B1A0E5	10/16/2014	USACE UXO QA	GILBANE	3	0.23
B1A0E6	10/16/2014	USACE UXO QA	GILBANE	3	0.23
B1A0E7	10/27/2014	USACE UXO QA	GILBANE	3	0.23
B1A0E8	10/27/2014	USACE UXO QA	GILBANE	3	0.23
B1A0E9	11/3/2014	USACE UXO QA	GILBANE	3	0.23
B1A0F0	11/3/2014	USACE UXO QA	GILBANE	3	0.23
B1A0F1	10/8/2014	USACE UXO QA	GILBANE	3	0.23
B1A0F2	10/8/2014	USACE UXO QA	GILBANE	3	0.23
B1A0F3	10/8/2014	USACE UXO QA	GILBANE	3	0.23
B1A0F4	10/16/2014	USACE UXO QA	GILBANE	3	0.23
B1A0F5	10/16/2014	USACE UXO QA	GILBANE	3	0.23
B1A0F6	10/16/2014	USACE UXO QA	GILBANE	3	0.23
B1A0F7	10/27/2014	USACE UXO QA	GILBANE	3	0.23
B1A0F8	10/27/2014	USACE UXO QA	GILBANE	3	0.23
B1A0F9	11/3/2014	USACE UXO QA	GILBANE	3	0.23
B1A0G0	11/3/2014	USACE UXO QA	GILBANE	3	0.23
B1A0G1	10/8/2014	USACE UXO QA	GILBANE	3	0.23
B1A0G2	10/8/2014	USACE UXO QA	GILBANE	3	0.23
B1A0G3	10/8/2014	USACE UXO QA	GILBANE	3	0.23
B1A0G4	10/16/2014	USACE UXO QA	GILBANE	3	0.23
B1A0G5	10/16/2014	USACE UXO QA	GILBANE	3	0.23
B1A0G6	10/16/2014	USACE UXO QA	GILBANE	3	0.23
B1A0G7	10/27/2014	USACE UXO QA	GILBANE	3	0.23
B1A0G8	10/27/2014	USACE UXO QA	GILBANE	3	0.23
B1A0G9	11/3/2014	USACE UXO QA	GILBANE	3	0.23
B1A0H0	11/3/2014	USACE UXO QA	GILBANE	3	0.23
B1A0H1	10/8/2014	USACE UXO QA	GILBANE	3	0.23
B1A0H2	10/8/2014	USACE UXO QA	GILBANE	3	0.23
B1A0H3	10/8/2014	USACE UXO QA	GILBANE	3	0.23
B1A0H4	10/16/2014	USACE UXO QA	GILBANE	3	0.23
B1A0H5	10/16/2014	USACE UXO QA	GILBANE	3	0.23
B1A0H6	10/16/2014	USACE UXO QA	GILBANE	3	0.23
B1A0H7	10/27/2014	USACE UXO QA	GILBANE	3	0.23
B1A0H8	10/27/2014	USACE UXO QA	GILBANE	3	0.23
B1A0H9	11/3/2014	USACE UXO QA	GILBANE	3	0.23
B1A0I0	11/3/2014	USACE UXO QA	GILBANE	3	0.23
B1A0I1	10/8/2014	USACE UXO QA	GILBANE	3	0.23
B1A0I2	10/8/2014	USACE UXO QA	GILBANE	3	0.23
B1A0I3	10/8/2014	USACE UXO QA	GILBANE	3	0.23

B1A0I4	10/16/2014	USACE UXO QA	GILBANE	3	0.23
B1A0I5	10/16/2014	USACE UXO QA	GILBANE	3	0.23
B1A0I6	10/16/2014	USACE UXO QA	GILBANE	3	0.23
B1A0I7	10/27/2014	USACE UXO QA	GILBANE	3	0.23
B1A0I8	10/27/2014	USACE UXO QA	GILBANE	3	0.23
B1A0I9	11/3/2014	USACE UXO QA	GILBANE	3	0.23
B1A0J0	11/3/2014	USACE UXO QA	GILBANE	3	0.23
B1A0J1	10/8/2014	USACE UXO QA	GILBANE	3	0.23
B1A0J2	10/8/2014	USACE UXO QA	GILBANE	3	0.23
B1A0J3	10/8/2014	USACE UXO QA	GILBANE	3	0.23
B1A0J4	10/16/2014	USACE UXO QA	GILBANE	3	0.23
B1A0J5	10/16/2014	USACE UXO QA	GILBANE	3	0.23
B1A0J6	10/16/2014	USACE UXO QA	GILBANE	3	0.23
B1A0J7	10/27/2014	USACE UXO QA	GILBANE	3	0.23
B1A0J8	10/27/2014	USACE UXO QA	GILBANE	3	0.23
B1A0J9	11/3/2014	USACE UXO QA	GILBANE	3	0.23
B1A9A0	9/18/2014	USACE UXO QA	GILBANE	2	0.23
B1A9A3	9/24/2014	USACE UXO QA	GILBANE	2	0.07
B1A9A4	9/24/2014	USACE UXO QA	GILBANE	2	0.23
B1A9A5	9/24/2014	USACE UXO QA	GILBANE	2	0.23
B1A9A6	9/24/2014	USACE UXO QA	GILBANE	2	0.23
B1A9A7	9/18/2014	USACE UXO QA	GILBANE	2	0.23
B1A9A8	9/18/2014	USACE UXO QA	GILBANE	2	0.23
B1A9A9	9/18/2014	USACE UXO QA	GILBANE	2	0.23
B1A9B0	9/18/2014	USACE UXO QA	GILBANE	2	0.23
B1A9B3	9/24/2014	USACE UXO QA	GILBANE	2	0.13
B1A9B4	9/24/2014	USACE UXO QA	GILBANE	2	0.23
B1A9B5	9/24/2014	USACE UXO QA	GILBANE	2	0.23
B1A9B6	9/24/2014	USACE UXO QA	GILBANE	2	0.23
B1A9B7	9/18/2014	USACE UXO QA	GILBANE	2	0.23
B1A9B8	9/18/2014	USACE UXO QA	GILBANE	2	0.23
B1A9B9	9/18/2014	USACE UXO QA	GILBANE	2	0.23
B1A9C0	9/18/2014	USACE UXO QA	GILBANE	2	0.23
B1A9C3	9/24/2014	USACE UXO QA	GILBANE	2	0.18
B1A9C4	9/24/2014	USACE UXO QA	GILBANE	2	0.23
B1A9C5	9/24/2014	USACE UXO QA	GILBANE	2	0.23
B1A9C6	9/24/2014	USACE UXO QA	GILBANE	2	0.23
B1A9C7	9/18/2014	USACE UXO QA	GILBANE	2	0.23
B1A9C8	9/18/2014	USACE UXO QA	GILBANE	2	0.23
B1A9C9	9/18/2014	USACE UXO QA	GILBANE	2	0.23
B1A9D0	9/18/2014	USACE UXO QA	GILBANE	2	0.10
B1A9D0	10/2/2014	USACE UXO QA	GILBANE	3	0.01
B1A9D2	9/24/2014	USACE UXO QA	GILBANE	2	0.01
B1A9D3	9/24/2014	USACE UXO QA	GILBANE	2	0.23
B1A9D4	9/24/2014	USACE UXO QA	GILBANE	2	0.23
B1A9D5	9/24/2014	USACE UXO QA	GILBANE	2	0.23
B1A9D6	9/24/2014	USACE UXO QA	GILBANE	2	0.23

B1A9D7	9/18/2014	USACE UXO QA	GILBANE	2	0.23
B1A9D8	9/18/2014	USACE UXO QA	GILBANE	2	0.23
B1A9D9	9/18/2014	USACE UXO QA	GILBANE	2	0.23
B1A9E0	10/2/2014	USACE UXO QA	GILBANE	3	0.17
B1A9E0	9/18/2014	USACE UXO QA	GILBANE	2	0.00
B1A9E2	9/24/2014	USACE UXO QA	GILBANE	2	0.04
B1A9E3	9/24/2014	USACE UXO QA	GILBANE	2	0.23
B1A9E4	9/24/2014	USACE UXO QA	GILBANE	2	0.23
B1A9E5	9/24/2014	USACE UXO QA	GILBANE	2	0.23
B1A9E6	9/24/2014	USACE UXO QA	GILBANE	2	0.23
B1A9E7	9/18/2014	USACE UXO QA	GILBANE	2	0.23
B1A9E8	9/18/2014	USACE UXO QA	GILBANE	2	0.23
B1A9E9	10/2/2014	USACE UXO QA	GILBANE	3	0.00
B1A9E9	9/18/2014	USACE UXO QA	GILBANE	2	0.13
B1A9F0	10/2/2014	USACE UXO QA	GILBANE	3	0.23
B1A9F2	9/24/2014	USACE UXO QA	GILBANE	2	0.07
B1A9F3	9/24/2014	USACE UXO QA	GILBANE	2	0.23
B1A9F4	9/24/2014	USACE UXO QA	GILBANE	2	0.23
B1A9F5	9/24/2014	USACE UXO QA	GILBANE	2	0.23
B1A9F6	9/24/2014	USACE UXO QA	GILBANE	2	0.23
B1A9F7	9/18/2014	USACE UXO QA	GILBANE	2	0.20
B1A9F8	9/18/2014	USACE UXO QA	GILBANE	2	0.10
B1A9F8	10/2/2014	USACE UXO QA	GILBANE	3	0.02
B1A9F9	9/18/2014	USACE UXO QA	GILBANE	2	0.00
B1A9F9	10/2/2014	USACE UXO QA	GILBANE	3	0.16
B1A9G0	10/2/2014	USACE UXO QA	GILBANE	3	0.23
B1A9G2	9/24/2014	USACE UXO QA	GILBANE	2	0.10
B1A9G3	9/24/2014	USACE UXO QA	GILBANE	2	0.19
B1A9G4	10/1/2014	USACE UXO QA	GILBANE	3	0.00
B1A9G4	9/24/2014	USACE UXO QA	GILBANE	2	0.12
B1A9G5	9/24/2014	USACE UXO QA	GILBANE	2	0.07
B1A9G5	10/1/2014	USACE UXO QA	GILBANE	3	0.04
B1A9G6	9/24/2014	USACE UXO QA	GILBANE	2	0.02
B1A9G6	10/1/2014	USACE UXO QA	GILBANE	3	0.09
B1A9G7	10/1/2014	USACE UXO QA	GILBANE	3	0.14
B1A9G8	10/2/2014	USACE UXO QA	GILBANE	3	0.21
B1A9G9	10/2/2014	USACE UXO QA	GILBANE	3	0.23
B1A9H0	10/2/2014	USACE UXO QA	GILBANE	3	0.23
B1A9H2	10/1/2014	USACE UXO QA	GILBANE	3	0.05
B1A9H2	9/24/2014	USACE UXO QA	GILBANE	2	0.01
B1A9H3	10/1/2014	USACE UXO QA	GILBANE	3	0.15
B1A9H4	10/1/2014	USACE UXO QA	GILBANE	3	0.21
B1A9H5	10/1/2014	USACE UXO QA	GILBANE	3	0.23
B1A9H6	10/1/2014	USACE UXO QA	GILBANE	3	0.23
B1A9H7	10/1/2014	USACE UXO QA	GILBANE	3	0.23
B1A9H8	10/2/2014	USACE UXO QA	GILBANE	3	0.23
B1A9H9	10/2/2014	USACE UXO QA	GILBANE	3	0.23

B1A9I0	10/2/2014	USACE UXO QA	GILBANE	3	0.23
B1A9I2	10/1/2014	USACE UXO QA	GILBANE	3	0.13
B1A9I3	10/1/2014	USACE UXO QA	GILBANE	3	0.23
B1A9I4	10/1/2014	USACE UXO QA	GILBANE	3	0.23
B1A9I5	10/1/2014	USACE UXO QA	GILBANE	3	0.23
B1A9I6	10/1/2014	USACE UXO QA	GILBANE	3	0.23
B1A9I7	10/1/2014	USACE UXO QA	GILBANE	3	0.23
B1A9I8	10/2/2014	USACE UXO QA	GILBANE	3	0.23
B1A9I9	10/2/2014	USACE UXO QA	GILBANE	3	0.23
B1A9J0	10/2/2014	USACE UXO QA	GILBANE	3	0.23
B1A9J2	10/1/2014	USACE UXO QA	GILBANE	3	0.13
B1A9J3	10/1/2014	USACE UXO QA	GILBANE	3	0.23
B1A9J4	10/1/2014	USACE UXO QA	GILBANE	3	0.23
B1A9J5	10/1/2014	USACE UXO QA	GILBANE	3	0.23
B1A9J6	10/1/2014	USACE UXO QA	GILBANE	3	0.23
B1A9J7	10/1/2014	USACE UXO QA	GILBANE	3	0.23
B1A9J8	10/2/2014	USACE UXO QA	GILBANE	3	0.23
B1A9J9	10/2/2014	USACE UXO QA	GILBANE	3	0.23
B1B0A0	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0A1	2/12/2015	USACE UXO QA	GILBANE	3	0.23
B1B0A2	2/12/2015	USACE UXO QA	GILBANE	3	0.23
B1B0A3	2/12/2015	USACE UXO QA	GILBANE	3	0.23
B1B0A4	2/12/2015	USACE UXO QA	GILBANE	3	0.23
B1B0A5	2/12/2015	USACE UXO QA	GILBANE	3	0.23
B1B0A6	2/12/2015	USACE UXO QA	GILBANE	3	0.23
B1B0A7	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0A8	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0A9	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0B0	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0B1	2/12/2015	USACE UXO QA	GILBANE	3	0.23
B1B0B2	2/12/2015	USACE UXO QA	GILBANE	3	0.23
B1B0B3	2/12/2015	USACE UXO QA	GILBANE	3	0.23
B1B0B4	2/12/2015	USACE UXO QA	GILBANE	3	0.23
B1B0B5	2/12/2015	USACE UXO QA	GILBANE	3	0.23
B1B0B6	2/12/2015	USACE UXO QA	GILBANE	3	0.23
B1B0B7	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0B8	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0B9	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0C0	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0C1	3/2/2015	USACE UXO QA	GILBANE	3	0.23
B1B0C2	3/2/2015	USACE UXO QA	GILBANE	3	0.23
B1B0C3	2/26/2015	USACE UXO QA	GILBANE	3	0.23
B1B0C4	2/26/2015	USACE UXO QA	GILBANE	3	0.23
B1B0C5	2/24/2015	USACE UXO QA	GILBANE	3	0.23
B1B0C6	2/24/2015	USACE UXO QA	GILBANE	3	0.23
B1B0C7	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0C8	12/23/2014	USACE UXO QA	GILBANE	3	0.23

B1B0C9	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0D0	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0D1	3/2/2015	USACE UXO QA	GILBANE	3	0.23
B1B0D2	3/2/2015	USACE UXO QA	GILBANE	3	0.23
B1B0D3	2/26/2015	USACE UXO QA	GILBANE	3	0.23
B1B0D4	2/26/2015	USACE UXO QA	GILBANE	3	0.23
B1B0D5	2/24/2015	USACE UXO QA	GILBANE	3	0.23
B1B0D6	2/24/2015	USACE UXO QA	GILBANE	3	0.23
B1B0D7	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0D8	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0D9	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0E0	8/14/2012	USACE UXO QA	GILBANE	3	0.02
B1B0E0	12/23/2014	USACE UXO QA	GILBANE	3	0.21
B1B0E1	3/2/2015	USACE UXO QA	GILBANE	3	0.23
B1B0E2	3/2/2015	USACE UXO QA	GILBANE	3	0.23
B1B0E3	2/26/2015	USACE UXO QA	GILBANE	3	0.23
B1B0E4	2/26/2015	USACE UXO QA	GILBANE	3	0.23
B1B0E5	2/24/2015	USACE UXO QA	GILBANE	3	0.23
B1B0E6	2/24/2015	USACE UXO QA	GILBANE	3	0.23
B1B0E7	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0E8	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0E9	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0F0	8/14/2012	USACE UXO QA	GILBANE	3	0.06
B1B0F0	12/23/2014	USACE UXO QA	GILBANE	3	0.17
B1B0F1	3/2/2015	USACE UXO QA	GILBANE	3	0.23
B1B0F2	3/2/2015	USACE UXO QA	GILBANE	3	0.23
B1B0F3	2/26/2015	USACE UXO QA	GILBANE	3	0.23
B1B0F4	2/26/2015	USACE UXO QA	GILBANE	3	0.23
B1B0F5	2/24/2015	USACE UXO QA	GILBANE	3	0.23
B1B0F6	2/24/2015	USACE UXO QA	GILBANE	3	0.23
B1B0F7	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0F8	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0F9	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0G0	8/13/2012	USACE UXO QA	GILBANE	3	0.11
B1B0G0	12/23/2014	USACE UXO QA	GILBANE	3	0.12
B1B0G1	3/2/2015	USACE UXO QA	GILBANE	3	0.23
B1B0G2	3/2/2015	USACE UXO QA	GILBANE	3	0.23
B1B0G3	2/26/2015	USACE UXO QA	GILBANE	3	0.23
B1B0G4	2/26/2015	USACE UXO QA	GILBANE	3	0.23
B1B0G5	2/24/2015	USACE UXO QA	GILBANE	3	0.23
B1B0G6	2/24/2015	USACE UXO QA	GILBANE	3	0.23
B1B0G7	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0G8	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0G9	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0H0	8/13/2012	USACE UXO QA	GILBANE	3	0.15
B1B0H0	12/23/2014	USACE UXO QA	GILBANE	3	0.08
B1B0H1	3/2/2015	USACE UXO QA	GILBANE	3	0.23

B1B0H2	3/2/2015	USACE UXO QA	GILBANE	3	0.23
B1B0H3	2/26/2015	USACE UXO QA	GILBANE	3	0.23
B1B0H4	2/26/2015	USACE UXO QA	GILBANE	3	0.23
B1B0H5	2/24/2015	USACE UXO QA	GILBANE	3	0.23
B1B0H6	2/24/2015	USACE UXO QA	GILBANE	3	0.23
B1B0H7	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0H8	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0H9	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0I0	8/13/2012	USACE UXO QA	GILBANE	3	0.19
B1B0I0	12/23/2014	USACE UXO QA	GILBANE	3	0.04
B1B0I1	3/2/2015	USACE UXO QA	GILBANE	3	0.23
B1B0I2	3/2/2015	USACE UXO QA	GILBANE	3	0.23
B1B0I3	2/26/2015	USACE UXO QA	GILBANE	3	0.23
B1B0I4	2/26/2015	USACE UXO QA	GILBANE	3	0.23
B1B0I5	2/24/2015	USACE UXO QA	GILBANE	3	0.23
B1B0I6	2/24/2015	USACE UXO QA	GILBANE	3	0.23
B1B0I7	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0I8	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0I9	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0J0	8/8/2012	USACE UXO QA	GILBANE	3	0.23
B1B0J0	12/23/2014	USACE UXO QA	GILBANE	3	0.00
B1B0J1	3/2/2015	USACE UXO QA	GILBANE	3	0.23
B1B0J2	3/2/2015	USACE UXO QA	GILBANE	3	0.23
B1B0J3	2/26/2015	USACE UXO QA	GILBANE	3	0.23
B1B0J4	2/26/2015	USACE UXO QA	GILBANE	3	0.23
B1B0J5	2/24/2015	USACE UXO QA	GILBANE	3	0.23
B1B0J6	2/24/2015	USACE UXO QA	GILBANE	3	0.23
B1B0J7	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0J8	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1B0J9	8/8/2012	USACE UXO QA	GILBANE	3	0.01
B1B0J9	12/23/2014	USACE UXO QA	GILBANE	3	0.22
B1B9A0	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9A2	12/22/2014	USACE UXO QA	GILBANE	3	0.13
B1B9A3	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9A4	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9A5	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9A6	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9A7	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9A8	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9A9	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9B0	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9B2	12/22/2014	USACE UXO QA	GILBANE	3	0.12
B1B9B3	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9B4	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9B5	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9B6	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9B7	12/22/2014	USACE UXO QA	GILBANE	3	0.23

B1B9B8	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9B9	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9C0	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9C2	12/22/2014	USACE UXO QA	GILBANE	3	0.10
B1B9C3	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9C4	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9C5	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9C6	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9C7	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9C8	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9C9	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9D0	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9D2	12/22/2014	USACE UXO QA	GILBANE	3	0.07
B1B9D3	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9D4	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9D5	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9D6	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9D7	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9D8	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9D9	12/22/2014	USACE UXO QA	GILBANE	3	0.23
B1B9E0	2/12/2015	USACE UXO QA	GILBANE	3	0.23
B1B9E2	2/12/2015	USACE UXO QA	GILBANE	3	0.04
B1B9E3	2/12/2015	USACE UXO QA	GILBANE	3	0.23
B1B9E4	2/12/2015	USACE UXO QA	GILBANE	3	0.23
B1B9E5	2/12/2015	USACE UXO QA	GILBANE	3	0.23
B1B9E6	2/12/2015	USACE UXO QA	GILBANE	3	0.23
B1B9E7	2/12/2015	USACE UXO QA	GILBANE	3	0.23
B1B9E8	2/12/2015	USACE UXO QA	GILBANE	3	0.23
B1B9E9	2/12/2015	USACE UXO QA	GILBANE	3	0.23
B1B9F0	2/25/2015	USACE UXO QA	GILBANE	3	0.23
B1B9F2	3/4/2015	USACE UXO QA	GILBANE	3	0.00
B1B9F3	3/4/2015	USACE UXO QA	GILBANE	3	0.22
B1B9F4	3/4/2015	USACE UXO QA	GILBANE	3	0.23
B1B9F5	3/4/2015	USACE UXO QA	GILBANE	3	0.23
B1B9F6	3/4/2015	USACE UXO QA	GILBANE	3	0.23
B1B9F7	2/25/2015	USACE UXO QA	GILBANE	3	0.23
B1B9F8	2/25/2015	USACE UXO QA	GILBANE	3	0.23
B1B9F9	2/25/2015	USACE UXO QA	GILBANE	3	0.23
B1B9G0	2/25/2015	USACE UXO QA	GILBANE	3	0.23
B1B9G3	3/4/2015	USACE UXO QA	GILBANE	3	0.18
B1B9G4	3/4/2015	USACE UXO QA	GILBANE	3	0.23
B1B9G5	3/4/2015	USACE UXO QA	GILBANE	3	0.23
B1B9G6	3/4/2015	USACE UXO QA	GILBANE	3	0.23
B1B9G7	2/25/2015	USACE UXO QA	GILBANE	3	0.23
B1B9G8	2/25/2015	USACE UXO QA	GILBANE	3	0.23
B1B9G9	2/25/2015	USACE UXO QA	GILBANE	3	0.23
B1B9H0	2/25/2015	USACE UXO QA	GILBANE	3	0.23

B1B9H3	3/4/2015	USACE UXO QA	GILBANE	3	0.13
B1B9H4	3/4/2015	USACE UXO QA	GILBANE	3	0.23
B1B9H5	3/4/2015	USACE UXO QA	GILBANE	3	0.23
B1B9H6	3/4/2015	USACE UXO QA	GILBANE	3	0.23
B1B9H7	2/25/2015	USACE UXO QA	GILBANE	3	0.23
B1B9H8	2/25/2015	USACE UXO QA	GILBANE	3	0.23
B1B9H9	2/25/2015	USACE UXO QA	GILBANE	3	0.23
B1B9I0	2/25/2015	USACE UXO QA	GILBANE	3	0.23
B1B9I3	3/4/2015	USACE UXO QA	GILBANE	3	0.06
B1B9I4	3/4/2015	USACE UXO QA	GILBANE	3	0.23
B1B9I5	3/4/2015	USACE UXO QA	GILBANE	3	0.23
B1B9I6	3/4/2015	USACE UXO QA	GILBANE	3	0.23
B1B9I7	2/25/2015	USACE UXO QA	GILBANE	3	0.23
B1B9I8	2/25/2015	USACE UXO QA	GILBANE	3	0.23
B1B9I9	2/25/2015	USACE UXO QA	GILBANE	3	0.23
B1B9J0	1/28/2015	USACE UXO QA	GILBANE	3	0.23
B1B9J3	1/28/2015	USACE UXO QA	GILBANE	3	0.01
B1B9J4	1/28/2015	USACE UXO QA	GILBANE	3	0.21
B1B9J5	1/28/2015	USACE UXO QA	GILBANE	3	0.23
B1B9J6	3/4/2015	USACE UXO QA	GILBANE	3	0.21
B1B9J7	1/28/2015	USACE UXO QA	GILBANE	3	0.23
B1B9J8	1/28/2015	USACE UXO QA	GILBANE	3	0.22
B1B9J9	1/28/2015	USACE UXO QA	GILBANE	3	0.23
B1C0A0	8/8/2012	USACE UXO QA	GILBANE	3	0.23
B1C0A1	10/14/2014	USACE UXO QA	GILBANE	3	0.23
B1C0A2	10/14/2014	USACE UXO QA	GILBANE	3	0.23
B1C0A3	10/14/2014	USACE UXO QA	GILBANE	3	0.23
B1C0A4	10/14/2014	USACE UXO QA	GILBANE	3	0.23
B1C0A5	10/14/2014	USACE UXO QA	GILBANE	3	0.23
B1C0A6	10/7/2014	USACE UXO QA	GILBANE	3	0.23
B1C0A7	10/7/2014	USACE UXO QA	GILBANE	3	0.20
B1C0A8	10/7/2014	USACE UXO QA	GILBANE	3	0.23
B1C0A9	8/8/2012	USACE UXO QA	GILBANE	3	0.05
B1C0A9	10/7/2014	USACE UXO QA	GILBANE	3	0.18
B1C0B0	8/6/2012	USACE UXO QA	GILBANE	3	0.23
B1C0B1	10/14/2014	USACE UXO QA	GILBANE	3	0.23
B1C0B2	10/14/2014	USACE UXO QA	GILBANE	3	0.23
B1C0B3	10/14/2014	USACE UXO QA	GILBANE	3	0.23
B1C0B4	10/14/2014	USACE UXO QA	GILBANE	3	0.23
B1C0B5	10/14/2014	USACE UXO QA	GILBANE	3	0.23
B1C0B6	10/7/2014	USACE UXO QA	GILBANE	3	0.23
B1C0B7	10/7/2014	USACE UXO QA	GILBANE	3	0.23
B1C0B8	10/7/2014	USACE UXO QA	GILBANE	3	0.23
B1C0B9	8/6/2012	USACE UXO QA	GILBANE	3	0.09
B1C0B9	10/7/2014	USACE UXO QA	GILBANE	3	0.13
B1C0C0	8/6/2012	USACE UXO QA	GILBANE	3	0.23
B1C0C1	10/14/2014	USACE UXO QA	GILBANE	3	0.23

B1C0C2	10/14/2014	USACE UXO QA	GILBANE	3	0.23
B1C0C3	10/14/2014	USACE UXO QA	GILBANE	3	0.23
B1C0C4	10/14/2014	USACE UXO QA	GILBANE	3	0.23
B1C0C5	10/14/2014	USACE UXO QA	GILBANE	3	0.23
B1C0C6	10/7/2014	USACE UXO QA	GILBANE	3	0.23
B1C0C7	10/7/2014	USACE UXO QA	GILBANE	3	0.23
B1C0C8	10/7/2014	USACE UXO QA	GILBANE	3	0.23
B1C0C9	8/6/2012	USACE UXO QA	GILBANE	3	0.14
B1C0C9	10/7/2014	USACE UXO QA	GILBANE	3	0.09
B1C0D0	8/6/2012	USACE UXO QA	GILBANE	3	0.17
B1C0D1	10/14/2014	USACE UXO QA	GILBANE	3	0.23
B1C0D2	10/14/2014	USACE UXO QA	GILBANE	3	0.22
B1C0D3	10/14/2014	USACE UXO QA	GILBANE	3	0.20
B1C0D4	10/14/2014	USACE UXO QA	GILBANE	3	0.19
B1C0D5	10/14/2014	USACE UXO QA	GILBANE	3	0.18
B1C0D6	10/7/2014	USACE UXO QA	GILBANE	3	0.17
B1C0D7	10/7/2014	USACE UXO QA	GILBANE	3	0.16
B1C0D8	10/7/2014	USACE UXO QA	GILBANE	3	0.15
B1C0D9	8/6/2012	USACE UXO QA	GILBANE	3	0.11
B1C0D9	10/7/2014	USACE UXO QA	GILBANE	3	0.03
B1C0E1	10/14/2014	USACE UXO QA	GILBANE	3	0.00
B1C9A0	10/17/2014	USACE UXO QA	GILBANE	3	0.23
B1C9A4	12/23/2014	USACE UXO QA	GILBANE	3	0.14
B1C9A5	1/28/2015	USACE UXO QA	GILBANE	3	0.23
B1C9A6	12/23/2014	USACE UXO QA	GILBANE	3	0.22
B1C9A7	12/23/2014	USACE UXO QA	GILBANE	3	0.15
B1C9A8	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1C9A9	10/17/2014	USACE UXO QA	GILBANE	3	0.23
B1C9B0	10/17/2014	USACE UXO QA	GILBANE	3	0.23
B1C9B4	12/23/2014	USACE UXO QA	GILBANE	3	0.06
B1C9B5	1/28/2015	USACE UXO QA	GILBANE	3	0.23
B1C9B6	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1C9B7	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1C9B8	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1C9B9	10/17/2014	USACE UXO QA	GILBANE	3	0.23
B1C9C0	10/17/2014	USACE UXO QA	GILBANE	3	0.23
B1C9C4	12/23/2014	USACE UXO QA	GILBANE	3	0.00
B1C9C5	1/28/2015	USACE UXO QA	GILBANE	3	0.21
B1C9C6	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1C9C7	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1C9C8	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1C9C9	10/17/2014	USACE UXO QA	GILBANE	3	0.23
B1C9D0	10/17/2014	USACE UXO QA	GILBANE	3	0.23
B1C9D5	12/23/2014	USACE UXO QA	GILBANE	3	0.14
B1C9D6	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1C9D7	12/23/2014	USACE UXO QA	GILBANE	3	0.23
B1C9D8	12/23/2014	USACE UXO QA	GILBANE	3	0.23

B1C9D9	10/17/2014	USACE UXO QA	GILBANE	3	0.23
B1C9E0	10/17/2014	USACE UXO QA	GILBANE	3	0.01
B1C9E5	12/23/2014	USACE UXO QA	GILBANE	3	0.03
B1C9E6	12/23/2014	USACE UXO QA	GILBANE	3	0.06
B1C9E7	12/23/2014	USACE UXO QA	GILBANE	3	0.05
B1C9E8	12/23/2014	USACE UXO QA	GILBANE	3	0.03
B1C9E9	10/17/2014	USACE UXO QA	GILBANE	3	0.02
B2A1A0	9/4/2012	USACE UXO QA	GILBANE	3	0.20
B2A1A0	11/19/2014	USACE UXO QA	GILBANE	3	0.03
B2A1A1	11/17/2014	USACE UXO QA	GILBANE	3	0.05
B2A1A1	9/23/2014	USACE UXO QA	GILBANE	2	0.06
B2A1A2	11/17/2014	USACE UXO QA	GILBANE	3	0.08
B2A1A2	9/23/2014	USACE UXO QA	GILBANE	2	0.04
B2A1A3	9/23/2014	USACE UXO QA	GILBANE	2	0.00
B2A1A3	11/18/2014	USACE UXO QA	GILBANE	3	0.13
B2A1A4	11/18/2014	USACE UXO QA	GILBANE	3	0.18
B2A1A5	11/19/2014	USACE UXO QA	GILBANE	3	0.19
B2A1A6	11/19/2014	USACE UXO QA	GILBANE	3	0.20
B2A1A7	11/19/2014	USACE UXO QA	GILBANE	3	0.21
B2A1A8	11/19/2014	USACE UXO QA	GILBANE	3	0.22
B2A1A9	9/4/2012	USACE UXO QA	GILBANE	3	0.01
B2A1A9	11/19/2014	USACE UXO QA	GILBANE	3	0.22
B2A1B0	9/4/2012	USACE UXO QA	GILBANE	3	0.23
B2A1B1	11/17/2014	USACE UXO QA	GILBANE	3	0.23
B2A1B2	11/17/2014	USACE UXO QA	GILBANE	3	0.23
B2A1B3	11/18/2014	USACE UXO QA	GILBANE	3	0.23
B2A1B4	11/18/2014	USACE UXO QA	GILBANE	3	0.23
B2A1B5	11/19/2014	USACE UXO QA	GILBANE	3	0.23
B2A1B6	11/19/2014	USACE UXO QA	GILBANE	3	0.23
B2A1B7	11/19/2014	USACE UXO QA	GILBANE	3	0.23
B2A1B8	11/19/2014	USACE UXO QA	GILBANE	3	0.23
B2A1B9	9/4/2012	USACE UXO QA	GILBANE	3	0.11
B2A1B9	11/19/2014	USACE UXO QA	GILBANE	3	0.12
B2A1C0	9/4/2012	USACE UXO QA	GILBANE	3	0.23
B2A1C1	11/17/2014	USACE UXO QA	GILBANE	3	0.23
B2A1C2	11/17/2014	USACE UXO QA	GILBANE	3	0.23
B2A1C3	11/18/2014	USACE UXO QA	GILBANE	3	0.23
B2A1C4	11/18/2014	USACE UXO QA	GILBANE	3	0.23
B2A1C5	11/19/2014	USACE UXO QA	GILBANE	3	0.23
B2A1C6	11/19/2014	USACE UXO QA	GILBANE	3	0.23
B2A1C7	11/19/2014	USACE UXO QA	GILBANE	3	0.23
B2A1C8	9/4/2012	USACE UXO QA	GILBANE	3	0.02
B2A1C8	11/19/2014	USACE UXO QA	GILBANE	3	0.21
B2A1C9	9/4/2012	USACE UXO QA	GILBANE	3	0.22
B2A1C9	11/19/2014	USACE UXO QA	GILBANE	3	0.01
B2A1D0	9/4/2012	USACE UXO QA	GILBANE	3	0.23
B2A1D1	11/17/2014	USACE UXO QA	GILBANE	3	0.23

B2A1D2	11/17/2014	USACE UXO QA	GILBANE	3	0.23
B2A1D3	11/18/2014	USACE UXO QA	GILBANE	3	0.23
B2A1D4	11/18/2014	USACE UXO QA	GILBANE	3	0.23
B2A1D5	11/19/2014	USACE UXO QA	GILBANE	3	0.23
B2A1D6	11/19/2014	USACE UXO QA	GILBANE	3	0.23
B2A1D7	11/19/2014	USACE UXO QA	GILBANE	3	0.23
B2A1D8	9/4/2012	USACE UXO QA	GILBANE	3	0.14
B2A1D8	11/19/2014	USACE UXO QA	GILBANE	3	0.09
B2A1D9	9/4/2012	USACE UXO QA	GILBANE	3	0.23
B2A1E0	9/4/2012	USACE UXO QA	GILBANE	3	0.23
B2A1E1	11/18/2014	USACE UXO QA	GILBANE	3	0.23
B2A1E2	11/17/2014	USACE UXO QA	GILBANE	3	0.23
B2A1E3	11/18/2014	USACE UXO QA	GILBANE	3	0.23
B2A1E4	11/18/2014	USACE UXO QA	GILBANE	3	0.23
B2A1E5	11/19/2014	USACE UXO QA	GILBANE	3	0.23
B2A1E6	11/19/2014	USACE UXO QA	GILBANE	3	0.23
B2A1E7	9/4/2012	USACE UXO QA	GILBANE	3	0.08
B2A1E7	11/19/2014	USACE UXO QA	GILBANE	3	0.15
B2A1E8	9/4/2012	USACE UXO QA	GILBANE	3	0.23
B2A1E8	11/19/2014	USACE UXO QA	GILBANE	3	0.00
B2A1E9	9/4/2012	USACE UXO QA	GILBANE	3	0.23
B2A1F0	9/4/2012	USACE UXO QA	GILBANE	3	0.23
B2A1F1	11/17/2014	USACE UXO QA	GILBANE	3	0.23
B2A1F2	11/17/2014	USACE UXO QA	GILBANE	3	0.23
B2A1F3	11/18/2014	USACE UXO QA	GILBANE	3	0.23
B2A1F4	11/18/2014	USACE UXO QA	GILBANE	3	0.23
B2A1F5	11/19/2014	USACE UXO QA	GILBANE	3	0.23
B2A1F6	9/4/2012	USACE UXO QA	GILBANE	3	0.07
B2A1F6	11/19/2014	USACE UXO QA	GILBANE	3	0.16
B2A1F7	9/4/2012	USACE UXO QA	GILBANE	3	0.23
B2A1F7	11/19/2014	USACE UXO QA	GILBANE	3	0.00
B2A1F8	9/4/2012	USACE UXO QA	GILBANE	3	0.23
B2A1F9	9/4/2012	USACE UXO QA	GILBANE	3	0.23
B2A1G0	8/9/2012	USACE UXO QA	GILBANE	3	0.23
B2A1G1	11/17/2014	USACE UXO QA	GILBANE	3	0.23
B2A1G2	11/17/2014	USACE UXO QA	GILBANE	3	0.23
B2A1G3	11/18/2014	USACE UXO QA	GILBANE	3	0.23
B2A1G4	11/18/2014	USACE UXO QA	GILBANE	3	0.23
B2A1G5	8/9/2012	USACE UXO QA	GILBANE	3	0.07
B2A1G5	11/19/2014	USACE UXO QA	GILBANE	3	0.16
B2A1G6	8/9/2012	USACE UXO QA	GILBANE	3	0.22
B2A1G6	11/19/2014	USACE UXO QA	GILBANE	3	0.00
B2A1G7	8/9/2012	USACE UXO QA	GILBANE	3	0.23
B2A1G8	8/9/2012	USACE UXO QA	GILBANE	3	0.23
B2A1G9	8/9/2012	USACE UXO QA	GILBANE	3	0.23
B2A1H0	8/9/2012	USACE UXO QA	GILBANE	3	0.23
B2A1H1	11/17/2014	USACE UXO QA	GILBANE	3	0.23

B2A1H2	11/17/2014	USACE UXO QA	GILBANE	3	0.23
B2A1H3	11/18/2014	USACE UXO QA	GILBANE	3	0.23
B2A1H4	8/9/2012	USACE UXO QA	GILBANE	3	0.07
B2A1H4	11/18/2014	USACE UXO QA	GILBANE	3	0.16
B2A1H5	8/9/2012	USACE UXO QA	GILBANE	3	0.22
B2A1H5	11/19/2014	USACE UXO QA	GILBANE	3	0.01
B2A1H6	8/9/2012	USACE UXO QA	GILBANE	3	0.23
B2A1H7	8/9/2012	USACE UXO QA	GILBANE	3	0.23
B2A1H8	8/9/2012	USACE UXO QA	GILBANE	3	0.23
B2A1H9	8/9/2012	USACE UXO QA	GILBANE	3	0.23
B2A1I0	8/7/2012	USACE UXO QA	GILBANE	3	0.23
B2A1I1	11/17/2014	USACE UXO QA	GILBANE	3	0.23
B2A1I2	11/17/2014	USACE UXO QA	GILBANE	3	0.23
B2A1I3	8/7/2012	USACE UXO QA	GILBANE	3	0.07
B2A1I3	11/18/2014	USACE UXO QA	GILBANE	3	0.16
B2A1I4	8/7/2012	USACE UXO QA	GILBANE	3	0.22
B2A1I4	11/18/2014	USACE UXO QA	GILBANE	3	0.01
B2A1I5	8/7/2012	USACE UXO QA	GILBANE	3	0.23
B2A1I6	8/7/2012	USACE UXO QA	GILBANE	3	0.23
B2A1I7	8/7/2012	USACE UXO QA	GILBANE	3	0.23
B2A1I8	8/7/2012	USACE UXO QA	GILBANE	3	0.23
B2A1I9	8/7/2012	USACE UXO QA	GILBANE	3	0.23
B2A1J0	8/7/2012	USACE UXO QA	GILBANE	3	0.23
B2A1J1	11/17/2014	USACE UXO QA	GILBANE	3	0.23
B2A1J2	8/7/2012	USACE UXO QA	GILBANE	3	0.07
B2A1J2	11/17/2014	USACE UXO QA	GILBANE	3	0.16
B2A1J3	8/7/2012	USACE UXO QA	GILBANE	3	0.22
B2A1J3	11/18/2014	USACE UXO QA	GILBANE	3	0.01
B2A1J4	8/7/2012	USACE UXO QA	GILBANE	3	0.23
B2A1J5	8/7/2012	USACE UXO QA	GILBANE	3	0.23
B2A1J6	8/7/2012	USACE UXO QA	GILBANE	3	0.23
B2A1J7	8/7/2012	USACE UXO QA	GILBANE	3	0.23
B2A1J8	8/7/2012	USACE UXO QA	GILBANE	3	0.23
B2A1J9	8/7/2012	USACE UXO QA	GILBANE	3	0.23
B2A2A1	9/4/2012	USACE UXO QA	GILBANE	3	0.23
B2A2A2	9/11/2012	USACE UXO QA	GILBANE	3	0.23
B2A2A3	9/11/2012	USACE UXO QA	GILBANE	3	0.23
B2A2A4	9/11/2012	USACE UXO QA	GILBANE	3	0.23
B2A2A5	9/11/2012	USACE UXO QA	GILBANE	3	0.23
B2A2A6	9/11/2012	USACE UXO QA	GILBANE	3	0.23
B2A2A7	9/11/2012	USACE UXO QA	GILBANE	3	0.23
B2A2A8	9/11/2012	USACE UXO QA	GILBANE	3	0.23
B2A2A9	9/11/2012	USACE UXO QA	GILBANE	3	0.12
B2A2B1	9/4/2012	USACE UXO QA	GILBANE	3	0.23
B2A2B2	9/11/2012	USACE UXO QA	GILBANE	3	0.23
B2A2B3	9/11/2012	USACE UXO QA	GILBANE	3	0.23
B2A2B4	9/11/2012	USACE UXO QA	GILBANE	3	0.23

B2A2B5	9/11/2012	USACE UXO QA	GILBANE	3	0.23
B2A2B6	9/11/2012	USACE UXO QA	GILBANE	3	0.23
B2A2B7	9/11/2012	USACE UXO QA	GILBANE	3	0.23
B2A2B8	9/11/2012	USACE UXO QA	GILBANE	3	0.21
B2A2B9	9/11/2012	USACE UXO QA	GILBANE	3	0.01
B2A2C1	9/4/2012	USACE UXO QA	GILBANE	3	0.23
B2A2C2	9/6/2012	USACE UXO QA	GILBANE	3	0.23
B2A2C3	9/6/2012	USACE UXO QA	GILBANE	3	0.23
B2A2C4	9/6/2012	USACE UXO QA	GILBANE	3	0.23
B2A2C5	9/6/2012	USACE UXO QA	GILBANE	3	0.23
B2A2C6	9/6/2012	USACE UXO QA	GILBANE	3	0.23
B2A2C7	9/6/2012	USACE UXO QA	GILBANE	3	0.23
B2A2C8	9/6/2012	USACE UXO QA	GILBANE	3	0.08
B2A2D1	9/4/2012	USACE UXO QA	GILBANE	3	0.23
B2A2D2	9/6/2012	USACE UXO QA	GILBANE	3	0.23
B2A2D3	9/6/2012	USACE UXO QA	GILBANE	3	0.23
B2A2D4	9/6/2012	USACE UXO QA	GILBANE	3	0.23
B2A2D5	9/6/2012	USACE UXO QA	GILBANE	3	0.23
B2A2D6	9/6/2012	USACE UXO QA	GILBANE	3	0.23
B2A2D7	9/6/2012	USACE UXO QA	GILBANE	3	0.17
B2A2D8	9/6/2012	USACE UXO QA	GILBANE	3	0.00
B2A2E1	9/4/2012	USACE UXO QA	GILBANE	3	0.23
B2A2E2	9/6/2012	USACE UXO QA	GILBANE	3	0.23
B2A2E3	9/6/2012	USACE UXO QA	GILBANE	3	0.23
B2A2E4	9/6/2012	USACE UXO QA	GILBANE	3	0.23
B2A2E5	9/6/2012	USACE UXO QA	GILBANE	3	0.23
B2A2E6	9/6/2012	USACE UXO QA	GILBANE	3	0.22
B2A2E7	9/6/2012	USACE UXO QA	GILBANE	3	0.04
B2A2F1	9/4/2012	USACE UXO QA	GILBANE	3	0.23
B2A2F2	9/6/2012	USACE UXO QA	GILBANE	3	0.23
B2A2F3	9/6/2012	USACE UXO QA	GILBANE	3	0.23
B2A2F4	9/6/2012	USACE UXO QA	GILBANE	3	0.23
B2A2F5	9/6/2012	USACE UXO QA	GILBANE	3	0.23
B2A2F6	9/6/2012	USACE UXO QA	GILBANE	3	0.12
B2A2G1	8/9/2012	USACE UXO QA	GILBANE	3	0.23
B2A2G2	8/9/2012	USACE UXO QA	GILBANE	3	0.23
B2A2G3	8/9/2012	USACE UXO QA	GILBANE	3	0.23
B2A2G4	8/9/2012	USACE UXO QA	GILBANE	3	0.23
B2A2G5	8/9/2012	USACE UXO QA	GILBANE	3	0.20
B2A2G6	8/9/2012	USACE UXO QA	GILBANE	3	0.01
B2A2H1	8/9/2012	USACE UXO QA	GILBANE	3	0.23
B2A2H2	8/9/2012	USACE UXO QA	GILBANE	3	0.23
B2A2H3	8/9/2012	USACE UXO QA	GILBANE	3	0.23
B2A2H4	8/9/2012	USACE UXO QA	GILBANE	3	0.23
B2A2H5	8/9/2012	USACE UXO QA	GILBANE	3	0.07
B2A2I1	8/7/2012	USACE UXO QA	GILBANE	3	0.23
B2A2I2	8/7/2012	USACE UXO QA	GILBANE	3	0.23

B2A2I3	8/7/2012	USACE UXO QA	GILBANE	3	0.23
B2A2I4	8/7/2012	USACE UXO QA	GILBANE	3	0.12
B2A2J1	8/7/2012	USACE UXO QA	GILBANE	3	0.23
B2A2J2	8/7/2012	USACE UXO QA	GILBANE	3	0.21
B2A2J3	8/7/2012	USACE UXO QA	GILBANE	3	0.06
B2B1A0	8/21/2012	USACE UXO QA	GILBANE	3	0.23
B2B1A1	8/21/2012	USACE UXO QA	GILBANE	3	0.05
B2B1A1	12/23/2014	USACE UXO QA	GILBANE	3	0.18
B2B1A2	8/21/2012	USACE UXO QA	GILBANE	3	0.22
B2B1A2	12/23/2014	USACE UXO QA	GILBANE	3	0.01
B2B1A3	8/21/2012	USACE UXO QA	GILBANE	3	0.23
B2B1A4	8/21/2012	USACE UXO QA	GILBANE	3	0.23
B2B1A5	8/21/2012	USACE UXO QA	GILBANE	3	0.23
B2B1A6	8/21/2012	USACE UXO QA	GILBANE	3	0.23
B2B1A7	8/21/2012	USACE UXO QA	GILBANE	3	0.23
B2B1A8	8/21/2012	USACE UXO QA	GILBANE	3	0.23
B2B1A9	8/21/2012	USACE UXO QA	GILBANE	3	0.23
B2B1B0	8/21/2012	USACE UXO QA	GILBANE	3	0.12
B2B1B1	8/21/2012	USACE UXO QA	GILBANE	3	0.12
B2B1B1	12/23/2014	USACE UXO QA	GILBANE	3	0.11
B2B1B2	8/21/2012	USACE UXO QA	GILBANE	3	0.23
B2B1B3	8/21/2012	USACE UXO QA	GILBANE	3	0.23
B2B1B4	8/21/2012	USACE UXO QA	GILBANE	3	0.23
B2B1B5	8/21/2012	USACE UXO QA	GILBANE	3	0.23
B2B1B6	8/21/2012	USACE UXO QA	GILBANE	3	0.23
B2B1B7	8/21/2012	USACE UXO QA	GILBANE	3	0.23
B2B1B8	8/21/2012	USACE UXO QA	GILBANE	3	0.23
B2B1B9	8/21/2012	USACE UXO QA	GILBANE	3	0.23
B2B1C1	8/16/2012	USACE UXO QA	GILBANE	3	0.16
B2B1C1	12/23/2014	USACE UXO QA	GILBANE	3	0.07
B2B1C2	8/16/2012	USACE UXO QA	GILBANE	3	0.23
B2B1C3	8/16/2012	USACE UXO QA	GILBANE	3	0.23
B2B1C4	8/16/2012	USACE UXO QA	GILBANE	3	0.23
B2B1C5	8/16/2012	USACE UXO QA	GILBANE	3	0.23
B2B1C6	8/16/2012	USACE UXO QA	GILBANE	3	0.23
B2B1C7	8/16/2012	USACE UXO QA	GILBANE	3	0.23
B2B1C8	8/16/2012	USACE UXO QA	GILBANE	3	0.23
B2B1C9	8/16/2012	USACE UXO QA	GILBANE	3	0.12
B2B1D1	8/16/2012	USACE UXO QA	GILBANE	3	0.20
B2B1D1	12/23/2014	USACE UXO QA	GILBANE	3	0.03
B2B1D2	8/16/2012	USACE UXO QA	GILBANE	3	0.23
B2B1D3	8/16/2012	USACE UXO QA	GILBANE	3	0.23
B2B1D4	8/16/2012	USACE UXO QA	GILBANE	3	0.23
B2B1D5	8/16/2012	USACE UXO QA	GILBANE	3	0.23
B2B1D6	8/16/2012	USACE UXO QA	GILBANE	3	0.23
B2B1D7	8/16/2012	USACE UXO QA	GILBANE	3	0.23
B2B1D8	8/16/2012	USACE UXO QA	GILBANE	3	0.22

B2B1D9	8/16/2012	USACE UXO QA	GILBANE	3	0.01
B2B1E1	8/14/2012	USACE UXO QA	GILBANE	3	0.23
B2B1E1	12/23/2014	USACE UXO QA	GILBANE	3	0.00
B2B1E2	8/14/2012	USACE UXO QA	GILBANE	3	0.23
B2B1E3	8/14/2012	USACE UXO QA	GILBANE	3	0.23
B2B1E4	8/14/2012	USACE UXO QA	GILBANE	3	0.23
B2B1E5	8/14/2012	USACE UXO QA	GILBANE	3	0.23
B2B1E6	8/14/2012	USACE UXO QA	GILBANE	3	0.23
B2B1E7	8/14/2012	USACE UXO QA	GILBANE	3	0.23
B2B1E8	8/14/2012	USACE UXO QA	GILBANE	3	0.17
B2B1F1	8/14/2012	USACE UXO QA	GILBANE	3	0.23
B2B1F2	8/14/2012	USACE UXO QA	GILBANE	3	0.23
B2B1F3	8/14/2012	USACE UXO QA	GILBANE	3	0.23
B2B1F4	8/14/2012	USACE UXO QA	GILBANE	3	0.23
B2B1F5	8/14/2012	USACE UXO QA	GILBANE	3	0.23
B2B1F6	8/14/2012	USACE UXO QA	GILBANE	3	0.23
B2B1F7	8/14/2012	USACE UXO QA	GILBANE	3	0.23
B2B1F8	8/14/2012	USACE UXO QA	GILBANE	3	0.12
B2B1G1	8/13/2012	USACE UXO QA	GILBANE	3	0.23
B2B1G2	8/13/2012	USACE UXO QA	GILBANE	3	0.23
B2B1G3	8/13/2012	USACE UXO QA	GILBANE	3	0.23
B2B1G4	8/13/2012	USACE UXO QA	GILBANE	3	0.23
B2B1G5	8/13/2012	USACE UXO QA	GILBANE	3	0.23
B2B1G6	8/13/2012	USACE UXO QA	GILBANE	3	0.23
B2B1G7	8/13/2012	USACE UXO QA	GILBANE	3	0.23
B2B1G8	8/13/2012	USACE UXO QA	GILBANE	3	0.09
B2B1H1	8/13/2012	USACE UXO QA	GILBANE	3	0.23
B2B1H2	8/13/2012	USACE UXO QA	GILBANE	3	0.23
B2B1H3	8/13/2012	USACE UXO QA	GILBANE	3	0.23
B2B1H4	8/13/2012	USACE UXO QA	GILBANE	3	0.23
B2B1H5	8/13/2012	USACE UXO QA	GILBANE	3	0.23
B2B1H6	8/13/2012	USACE UXO QA	GILBANE	3	0.23
B2B1H7	8/13/2012	USACE UXO QA	GILBANE	3	0.23
B2B1H8	8/13/2012	USACE UXO QA	GILBANE	3	0.07
B2B1I1	8/13/2012	USACE UXO QA	GILBANE	3	0.23
B2B1I2	8/13/2012	USACE UXO QA	GILBANE	3	0.23
B2B1I3	8/13/2012	USACE UXO QA	GILBANE	3	0.23
B2B1I4	8/13/2012	USACE UXO QA	GILBANE	3	0.23
B2B1I5	8/13/2012	USACE UXO QA	GILBANE	3	0.23
B2B1I6	8/13/2012	USACE UXO QA	GILBANE	3	0.23
B2B1I7	8/13/2012	USACE UXO QA	GILBANE	3	0.23
B2B1I8	8/13/2012	USACE UXO QA	GILBANE	3	0.05
B2B1J1	8/8/2012	USACE UXO QA	GILBANE	3	0.23
B2B1J2	8/8/2012	USACE UXO QA	GILBANE	3	0.23
B2B1J3	8/8/2012	USACE UXO QA	GILBANE	3	0.23
B2B1J4	8/8/2012	USACE UXO QA	GILBANE	3	0.23
B2B1J5	8/8/2012	USACE UXO QA	GILBANE	3	0.23

B2B1J6	8/8/2012	USACE UXO QA	GILBANE	3	0.23
B2B1J7	8/8/2012	USACE UXO QA	GILBANE	3	0.23
B2B1J8	8/8/2012	USACE UXO QA	GILBANE	3	0.04
B2B2A1	8/21/2012	USACE UXO QA	GILBANE	3	0.17
B2B2A2	8/21/2012	USACE UXO QA	GILBANE	3	0.02
B2B2B1	8/21/2012	USACE UXO QA	GILBANE	3	0.00
B2C1A1	8/8/2012	USACE UXO QA	GILBANE	3	0.23
B2C1A2	8/8/2012	USACE UXO QA	GILBANE	3	0.23
B2C1A3	8/8/2012	USACE UXO QA	GILBANE	3	0.23
B2C1A4	8/8/2012	USACE UXO QA	GILBANE	3	0.23
B2C1A5	8/8/2012	USACE UXO QA	GILBANE	3	0.23
B2C1A6	8/8/2012	USACE UXO QA	GILBANE	3	0.23
B2C1A7	8/8/2012	USACE UXO QA	GILBANE	3	0.23
B2C1A8	8/8/2012	USACE UXO QA	GILBANE	3	0.01
B2C1B1	8/6/2012	USACE UXO QA	GILBANE	3	0.23
B2C1B2	8/6/2012	USACE UXO QA	GILBANE	3	0.23
B2C1B3	8/6/2012	USACE UXO QA	GILBANE	3	0.23
B2C1B4	8/6/2012	USACE UXO QA	GILBANE	3	0.23
B2C1B5	8/6/2012	USACE UXO QA	GILBANE	3	0.23
B2C1B6	8/6/2012	USACE UXO QA	GILBANE	3	0.23
B2C1B7	8/6/2012	USACE UXO QA	GILBANE	3	0.22
B2C1C1	8/6/2012	USACE UXO QA	GILBANE	3	0.23
B2C1C2	8/6/2012	USACE UXO QA	GILBANE	3	0.23
B2C1C3	8/6/2012	USACE UXO QA	GILBANE	3	0.23
B2C1C4	8/6/2012	USACE UXO QA	GILBANE	3	0.23
B2C1C5	8/6/2012	USACE UXO QA	GILBANE	3	0.23
B2C1C6	8/6/2012	USACE UXO QA	GILBANE	3	0.23
B2C1C7	8/6/2012	USACE UXO QA	GILBANE	3	0.19
B2C1D1	8/6/2012	USACE UXO QA	GILBANE	3	0.19
B2C1D2	8/6/2012	USACE UXO QA	GILBANE	3	0.22
B2C1D3	8/6/2012	USACE UXO QA	GILBANE	3	0.23
B2C1D4	8/6/2012	USACE UXO QA	GILBANE	3	0.23
B2C1D5	8/6/2012	USACE UXO QA	GILBANE	3	0.19
B2C1D6	8/6/2012	USACE UXO QA	GILBANE	3	0.14
B2C1D7	8/6/2012	USACE UXO QA	GILBANE	3	0.05
B2C1E3	8/6/2012	USACE UXO QA	GILBANE	3	0.00
B2C1E4	8/6/2012	USACE UXO QA	GILBANE	3	0.00
U0101	8/13/2013	USACE UXO QA	GILBANE	1	0.26
U0101	9/25/2013	USACE UXO QA	GILBANE	1	0.03
U0101	6/17/2014	USACE UXO QA	GILBANE	1	0.03
U0102	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0102	9/25/2013	USACE UXO QA	GILBANE	1	0.04
U0102	6/17/2014	USACE UXO QA	GILBANE	1	0.04
U0103	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0103	9/25/2013	USACE UXO QA	GILBANE	1	0.03
U0103	6/17/2014	USACE UXO QA	GILBANE	1	0.03
U0104	8/13/2013	USACE UXO QA	GILBANE	1	0.23

U0104	9/25/2013	USACE UXO QA	GILBANE	1	0.02
U0104	6/17/2014	USACE UXO QA	GILBANE	1	0.01
U0105	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0105	9/25/2013	USACE UXO QA	GILBANE	1	0.02
U0106	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0106	9/25/2013	USACE UXO QA	GILBANE	1	0.02
U0107	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0107	9/25/2013	USACE UXO QA	GILBANE	1	0.02
U0108	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0108	9/25/2013	USACE UXO QA	GILBANE	1	0.02
U0109	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0109	9/25/2013	USACE UXO QA	GILBANE	1	0.02
U0110	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0110	9/25/2013	USACE UXO QA	GILBANE	1	0.02
U0111	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0111	9/25/2013	USACE UXO QA	GILBANE	1	0.02
U0112	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0112	9/16/2013	USACE UXO QA	GILBANE	1	0.02
U0113	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0113	9/16/2013	USACE UXO QA	GILBANE	1	0.02
U0114	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0114	9/16/2013	USACE UXO QA	GILBANE	1	0.02
U0115	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0115	9/16/2013	USACE UXO QA	GILBANE	1	0.02
U0116	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0116	9/16/2013	USACE UXO QA	GILBANE	1	0.03
U0117	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0117	9/16/2013	USACE UXO QA	GILBANE	1	0.03
U0118	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0118	9/16/2013	USACE UXO QA	GILBANE	1	0.01
U0119	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0119	9/16/2013	USACE UXO QA	GILBANE	1	0.02
U0120	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0120	9/16/2013	USACE UXO QA	GILBANE	1	0.04
U0121	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0121	9/16/2013	USACE UXO QA	GILBANE	1	0.01
U0122	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0122	9/16/2013	USACE UXO QA	GILBANE	1	0.02
U0123	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0123	9/16/2013	USACE UXO QA	GILBANE	1	0.03
U0124	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0124	9/16/2013	USACE UXO QA	GILBANE	1	0.01
U0125	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0125	9/16/2013	USACE UXO QA	GILBANE	1	0.01
U0126	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0126	9/16/2013	USACE UXO QA	GILBANE	1	0.01
U0127	8/13/2013	USACE UXO QA	GILBANE	1	0.23

U0127	9/16/2013	USACE UXO QA	GILBANE	1	0.01
U0128	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0128	9/16/2013	USACE UXO QA	GILBANE	1	0.02
U0129	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0129	9/16/2013	USACE UXO QA	GILBANE	1	0.02
U0130	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0130	9/16/2013	USACE UXO QA	GILBANE	1	0.02
U0131	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0131	9/16/2013	USACE UXO QA	GILBANE	1	0.02
U0132	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0132	9/16/2013	USACE UXO QA	GILBANE	1	0.02
U0133	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0133	9/16/2013	USACE UXO QA	GILBANE	1	0.01
U0134	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0134	9/16/2013	USACE UXO QA	GILBANE	1	0.01
U0135	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0135	9/16/2013	USACE UXO QA	GILBANE	1	0.02
U0136	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0136	9/16/2013	USACE UXO QA	GILBANE	1	0.03
U0137	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0137	9/16/2013	USACE UXO QA	GILBANE	1	0.02
U0138	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0138	9/16/2013	USACE UXO QA	GILBANE	1	0.02
U0139	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0139	9/16/2013	USACE UXO QA	GILBANE	1	0.02
U0140	8/13/2013	USACE UXO QA	GILBANE	1	0.23
U0140	9/16/2013	USACE UXO QA	GILBANE	1	0.01
U0141	8/13/2013	USACE UXO QA	GILBANE	1	0.31
U0141	9/16/2013	USACE UXO QA	GILBANE	1	0.01
U0201	8/14/2013	USACE UXO QA	GILBANE	2	0.16
U0201	10/6/2013	USACE UXO QA	GILBANE	2	0.02
U0202	8/14/2013	USACE UXO QA	GILBANE	2	0.23
U0202	10/6/2013	USACE UXO QA	GILBANE	2	0.03
U0203	8/14/2013	USACE UXO QA	GILBANE	2	0.23
U0203	10/6/2013	USACE UXO QA	GILBANE	2	0.03
U0204	8/14/2013	USACE UXO QA	GILBANE	2	0.23
U0204	10/6/2013	USACE UXO QA	GILBANE	2	0.03
U0205	8/14/2013	USACE UXO QA	GILBANE	2	0.23
U0205	10/6/2013	USACE UXO QA	GILBANE	2	0.03
U0206	8/14/2013	USACE UXO QA	GILBANE	2	0.23
U0206	10/6/2013	USACE UXO QA	GILBANE	2	0.03
U0207	8/14/2013	USACE UXO QA	GILBANE	2	0.23
U0207	10/6/2013	USACE UXO QA	GILBANE	2	0.03
U0207	6/24/2014	USACE UXO QA	GILBANE	2	0.01
U0208	8/14/2013	USACE UXO QA	GILBANE	2	0.23
U0208	10/6/2013	USACE UXO QA	GILBANE	2	0.03
U0208	6/24/2014	USACE UXO QA	GILBANE	2	0.03

U0209	8/14/2013	USACE UXO QA	GILBANE	2	0.23
U0209	10/6/2013	USACE UXO QA	GILBANE	2	0.02
U0209	6/24/2014	USACE UXO QA	GILBANE	2	0.02
U0210	8/14/2013	USACE UXO QA	GILBANE	2	0.23
U0210	10/6/2013	USACE UXO QA	GILBANE	2	0.03
U0210	6/24/2014	USACE UXO QA	GILBANE	2	0.03
U0211	8/14/2013	USACE UXO QA	GILBANE	2	0.23
U0211	9/30/2013	USACE UXO QA	GILBANE	2	0.04
U0211	6/24/2014	USACE UXO QA	GILBANE	2	0.03
U0212	8/14/2013	USACE UXO QA	GILBANE	2	0.23
U0212	9/30/2013	USACE UXO QA	GILBANE	2	0.03
U0212	6/24/2014	USACE UXO QA	GILBANE	2	0.02
U0213	8/14/2013	USACE UXO QA	GILBANE	2	0.23
U0213	9/30/2013	USACE UXO QA	GILBANE	2	0.03
U0213	6/24/2014	USACE UXO QA	GILBANE	2	0.01
U0214	8/14/2013	USACE UXO QA	GILBANE	2	0.23
U0214	9/30/2013	USACE UXO QA	GILBANE	2	0.02
U0215	8/14/2013	USACE UXO QA	GILBANE	2	0.23
U0215	9/30/2013	USACE UXO QA	GILBANE	2	0.02
U0216	8/14/2013	USACE UXO QA	GILBANE	2	0.23
U0216	9/30/2013	USACE UXO QA	GILBANE	2	0.02
U0217	8/14/2013	USACE UXO QA	GILBANE	2	0.23
U0217	9/30/2013	USACE UXO QA	GILBANE	2	0.03
U0218	8/14/2013	USACE UXO QA	GILBANE	2	0.23
U0218	9/30/2013	USACE UXO QA	GILBANE	2	0.03
U0219	8/14/2013	USACE UXO QA	GILBANE	2	0.23
U0219	9/30/2013	USACE UXO QA	GILBANE	2	0.03
U0220	8/14/2013	USACE UXO QA	GILBANE	2	0.23
U0220	9/30/2013	USACE UXO QA	GILBANE	2	0.03
U0221	8/14/2013	USACE UXO QA	GILBANE	2	0.23
U0221	9/30/2013	USACE UXO QA	GILBANE	2	0.03
U0222	8/14/2013	USACE UXO QA	GILBANE	2	0.23
U0222	9/30/2013	USACE UXO QA	GILBANE	2	0.03
U0223	8/14/2013	USACE UXO QA	GILBANE	2	0.23
U0223	9/30/2013	USACE UXO QA	GILBANE	2	0.03
U0224	8/14/2013	USACE UXO QA	GILBANE	2	0.23
U0224	10/3/2013	USACE UXO QA	GILBANE	2	0.08
U0225	8/14/2013	USACE UXO QA	GILBANE	2	0.23
U0225	10/3/2013	USACE UXO QA	GILBANE	2	0.03
U0226	8/13/2013	USACE UXO QA	GILBANE	2	0.23
U0226	10/3/2013	USACE UXO QA	GILBANE	2	0.09
U0227	8/13/2013	USACE UXO QA	GILBANE	2	0.23
U0227	10/3/2013	USACE UXO QA	GILBANE	2	0.03
U0228	8/13/2013	USACE UXO QA	GILBANE	2	0.23
U0228	10/3/2013	USACE UXO QA	GILBANE	2	0.03
U0229	8/13/2013	USACE UXO QA	GILBANE	2	0.23
U0229	10/3/2013	USACE UXO QA	GILBANE	2	0.03

U0230	8/13/2013	USACE UXO QA	GILBANE	2	0.23
U0230	10/3/2013	USACE UXO QA	GILBANE	2	0.02
U0231	8/13/2013	USACE UXO QA	GILBANE	2	0.23
U0231	10/3/2013	USACE UXO QA	GILBANE	2	0.02
U0232	8/13/2013	USACE UXO QA	GILBANE	2	0.23
U0232	10/3/2013	USACE UXO QA	GILBANE	2	0.05
U0233	8/13/2013	USACE UXO QA	GILBANE	2	0.23
U0233	9/26/2013	USACE UXO QA	GILBANE	2	0.03
U0234	8/13/2013	USACE UXO QA	GILBANE	2	0.23
U0234	9/26/2013	USACE UXO QA	GILBANE	2	0.02
U0235	8/13/2013	USACE UXO QA	GILBANE	2	0.23
U0235	9/26/2013	USACE UXO QA	GILBANE	2	0.03
U0236	8/13/2013	USACE UXO QA	GILBANE	2	0.23
U0236	9/26/2013	USACE UXO QA	GILBANE	2	0.02
U0237	8/13/2013	USACE UXO QA	GILBANE	2	0.23
U0237	9/26/2013	USACE UXO QA	GILBANE	2	0.02
U0238	8/13/2013	USACE UXO QA	GILBANE	2	0.23
U0238	9/26/2013	USACE UXO QA	GILBANE	2	0.02
U0239	8/13/2013	USACE UXO QA	GILBANE	2	0.23
U0239	9/26/2013	USACE UXO QA	GILBANE	2	0.03
U0240	8/13/2013	USACE UXO QA	GILBANE	2	0.23
U0240	9/26/2013	USACE UXO QA	GILBANE	2	0.08
U0241	8/13/2013	USACE UXO QA	GILBANE	2	0.23
U0241	9/26/2013	USACE UXO QA	GILBANE	2	0.04
U0242	8/13/2013	USACE UXO QA	GILBANE	2	0.23
U0242	9/26/2013	USACE UXO QA	GILBANE	2	0.03
U0243	8/13/2013	USACE UXO QA	GILBANE	2	0.06
U0243	9/26/2013	USACE UXO QA	GILBANE	2	0.02
U0244	9/26/2013	USACE UXO QA	GILBANE	2	0.02
U0245	9/26/2013	USACE UXO QA	GILBANE	2	0.03
U0245	6/17/2014	USACE UXO QA	GILBANE	2	0.02
U0246	9/26/2013	USACE UXO QA	GILBANE	2	0.05
U0246	6/17/2014	USACE UXO QA	GILBANE	2	0.02
U0247	9/26/2013	USACE UXO QA	GILBANE	2	0.03
U0247	6/17/2014	USACE UXO QA	GILBANE	2	0.03
U0248	9/26/2013	USACE UXO QA	GILBANE	2	0.03
U0248	6/17/2014	USACE UXO QA	GILBANE	2	0.04
U0301	8/19/2013	USACE UXO QA	GILBANE	3	0.21
U0301	10/21/2013	USACE UXO QA	GILBANE	3	0.01
U0302	8/19/2013	USACE UXO QA	GILBANE	3	0.23
U0302	10/21/2013	USACE UXO QA	GILBANE	3	0.01
U0303	8/19/2013	USACE UXO QA	GILBANE	3	0.23
U0303	10/21/2013	USACE UXO QA	GILBANE	3	0.01
U0304	8/19/2013	USACE UXO QA	GILBANE	3	0.23
U0304	10/21/2013	USACE UXO QA	GILBANE	3	0.01
U0305	8/19/2013	USACE UXO QA	GILBANE	3	0.23
U0305	10/21/2013	USACE UXO QA	GILBANE	3	0.03

U0306	8/19/2013	USACE UXO QA	GILBANE	3	0.23
U0306	10/21/2013	USACE UXO QA	GILBANE	3	0.05
U0307	8/19/2013	USACE UXO QA	GILBANE	3	0.23
U0307	10/21/2013	USACE UXO QA	GILBANE	3	0.03
U0308	8/19/2013	USACE UXO QA	GILBANE	3	0.23
U0308	10/21/2013	USACE UXO QA	GILBANE	3	0.03
U0309	8/19/2013	USACE UXO QA	GILBANE	3	0.23
U0309	10/21/2013	USACE UXO QA	GILBANE	3	0.06
U0310	8/19/2013	USACE UXO QA	GILBANE	3	0.23
U0310	10/21/2013	USACE UXO QA	GILBANE	3	0.07
U0311	8/19/2013	USACE UXO QA	GILBANE	3	0.23
U0311	10/21/2013	USACE UXO QA	GILBANE	3	0.03
U0312	8/19/2013	USACE UXO QA	GILBANE	3	0.23
U0312	10/21/2013	USACE UXO QA	GILBANE	3	0.03
U0313	8/19/2013	USACE UXO QA	GILBANE	3	0.23
U0313	10/21/2013	USACE UXO QA	GILBANE	3	0.01
U0314	8/19/2013	USACE UXO QA	GILBANE	3	0.23
U0314	10/21/2013	USACE UXO QA	GILBANE	3	0.02
U0315	8/19/2013	USACE UXO QA	GILBANE	3	0.23
U0315	10/21/2013	USACE UXO QA	GILBANE	3	0.02
U0316	8/19/2013	USACE UXO QA	GILBANE	3	0.23
U0316	10/21/2013	USACE UXO QA	GILBANE	3	0.02
U0317	8/19/2013	USACE UXO QA	GILBANE	3	0.23
U0317	10/21/2013	USACE UXO QA	GILBANE	3	0.01

Appendix E
Explosives Accountability from KEMRON led field work

Form M-6

Team Number: UXO-3 Date: February 21, 2017

Team Leader: Sarabia Project: Fort Ord MMRP

EXPLOSIVES ISSUED Signature of Team Leader:			
Item	**Quantity**	**Lot Number**	**Checker's Initials**
Caps (Detonators)	2 ea.	16MA15X1	NS
Nonel (2,500 ft.)	2 roll	07DE16G1	NS
Det Cord – 100gr	5 ft.	15MY15B2	NS
19 g Perforators	10 ea.	30NOV16C1	NS
EXPLOSIVES EXPENDED Signature of Team Leader:			
Item	**Quantity**	**Lot Number**	**Checker's Initials**
Caps (Detonators)	2 ea.	16MA15X1	NS
Nonel (2,500 ft.)	2 roll	07DE16G1	NS
Det Cord – 100gr	5 ft.	15MY15B2	NS
19 g Perforators	10 ea.	30NOV16C1	NS
EXPLOSIVES RETURNED Signature of SUXOS: Bradley J Olsa			
Item	**Quantity**	**Lot Number**	**Checker's Initials**
None			

I certify the explosives listed above were used for their intended purpose.

Bradley J Olsa

Senior UXO Supervisor

Date: February 21, 2017

032317-0001

Form M-6

Team Number: UXO-3 Date: February 23, 2017

Team Leader: Sarabia Project: Fort Ord MMRP

EXPLOSIVES ISSUED		Signature of Team Leader:	
Item	**Quantity**	**Lot Number**	**Checker's Initials**
Caps (Detonators)	2 ea.	16MA15X1	NS
Nonel (2,500 ft.)	2 roll	07DE16G1	NS
Det Cord – 100gr	100 ft.	15MY15B2	NS
Det Cord – 50gr	180 ft.	16MY14B1	NS
19 g Perforators	115 ea.	30NOV16C1	NS
EXPLOSIVES EXPENDED		**Signature of Team Leader:**	
Item	**Quantity**	**Lot Number**	**Checker's Initials**
Caps (Detonators)	2 ea.	16MA15X1	NS
Nonel (2,500 ft.)	2 roll	07DE16G1	NS
Det Cord – 100gr	100 ft.	15MY15B2	NS
Det Cord – 50gr	180 ft.	16MY14B1	NS
19 g Perforators	115 ea.	30NOV16C1	NS
EXPLOSIVES RETURNED		**Signature of SUXOS:** Bradley J Olso	
Item	**Quantity**	**Lot Number**	**Checker's Initials**
	None		

I certify the explosives listed above were used for their intended purpose.

Bradley J Olso

Senior UXO Supervisor

Date: February 23, 2017

091317-0001

Form M-6

Team Number: UXO-3 Date: September 13, 2017

Team Leader: Sarabia Project: Fort Ord MMRP

EXPLOSIVES ISSUED — Signature of Team Leader:			
Item	**Quantity**	**Lot Number**	**Checker's Initials**
Caps (Detonators)	2 ea.	26SE16X1	NS
Nonel (2,500 ft.)	2 roll	07DE16G1	NS
Det Cord – 100gr	50 ft.	15MY15B2	NS
Det Cord – 50gr	70 ft.	11JY16B1	NS
19 g Perforators	40 ea.	30NOV16C1	NS
EXPLOSIVES EXPENDED — Signature of Team Leader:			
Item	**Quantity**	**Lot Number**	**Checker's Initials**
Caps (Detonators)	2 ea.	26SE16X1	NS
Nonel (2,500 ft.)	2 roll	07DE16G1	NS
Det Cord – 100gr	50 ft.	15MY15B2	NS
Det Cord – 50gr	70 ft.	11JY16B1	NS
19 g Perforators	40 ea.	30NOV16C1	NS
EXPLOSIVES RETURNED — Signature of SUXOS: Bradley J Olsa			
Item	**Quantity**	**Lot Number**	**Checker's Initials**
None			

I certify the explosives listed above were used for their intended purpose.

Bradley J Olsa

Senior UXO Supervisor

Date: September 13, 2017

Appendix F
MRS-BLM Units 1, 2, and 3,
MEC Remedial Action
Technical Memorandum

MRS-BLM Units 1, 2, and 3 MEC Remedial Action Technical Memorandum

Former Fort Ord, California

Prepared For:

U.S. Army Corps of Engineers
Sacramento District
1325 J Street
Sacramento, California 95814-2922

Prepared For KEMRON Environmental Services by:

Gilbane Company
1655 Grant Street, Floor 12
Concord, California 94520

February 2016

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Units 1, 2, and 3 MEC Remedial Action Technical Memorandum

1.0 Introduction

This Technical Memorandum (TM) describes the munitions and explosives of concern (MEC) remedial action that was performed by Gilbane Company (Gilbane) with Chicago Bridge and Iron as a subcontractor within Munitions Response Site (MRS) - Bureau of Land Management (BLM) Units 1, 2, and 3, (Units 1, 2, and 3) (Figure 1). Field work at the site was initiated in June 2012 (vegetation mastication) and was completed in March 2015 (digital geophysical mapping [DGM] in Unit 3). This TM summarizes the work applicable to Units 1, 2, and 3 that was conducted in accordance with the *Final Site-Specific Work Plan, Munitions and Explosives of Concern Remedial Action, MRS-BLM Units 1-5, Former Fort Ord, California* (Final SSWP; Shaw, 2008) and Field Work Variances (FWVs) 03-018, 03-019 and 03-020, which are described further in Section 3.0.

1.1 Site Location

Units 1, 2 and 3 are located in the south western section of the Impact Area Munitions Response Area (MRA) and fall within the MRS-BLM. Units 1, 2, and 3 are adjacent to the Impact Area boundary to the south and the west. They are bounded to the north and east, respectively, by Watkins Gate Road and Austin Road. All three units are shown on Figure 1.

1.2 Purpose

The *Final Work Plan, Remedial Design/Remedial Action, Track 3 Impact Area Munitions Response Area, former Fort Ord, California* (U.S. Army Corps of Engineers [USACE], 2009) specifies that the U.S. Department of the Army (Army) will prepare a TM for the U.S. Environmental Protection Agency and California Department of Toxic Substances Control to present a review of the results of both the surface remediation and the DGM data. This TM provides an evaluation of the work completed to date and, if necessary, describe additional recommended remedial actions based on the evaluation.

The TM is to evaluate surface remediation and DGM information to determine if additional subsurface remediation is required, based on information gathered following completion of the Final SSWP (Shaw, 2008), or as requested by the future property recipient and identified in coordination with the Army. This TM provides the following information:

- Original Scope of Work for Units 1, 2, and 3;
- Remedial work completed at Units 1, 2, and 3, and reasons for modifications to work intended for Units 1, 2, and 3, if any;
- Summary of MEC/Munitions Debris (MD) removed during technology-aided surface MEC removal activities from Units 1, 2, and 3;
- Observation of evidence of potential soil contamination for evaluation under the Site 39/Basewide Range Assessment Program;
- Detail regarding any recommendations for subsurface MEC remediation within Units 1, 2, and 3, either specific to portions of the site or as a whole;
- Conclusions/Summary of Recommendations for Units 1, 2, and 3, either specific to portions of the site or as a whole.

Targets and target debris remaining within the units were removed and recycled to allow surface MEC removal and DGM to be conducted. No latrine pits were documented as part of this remedial action within Units 1, 2, and 3. Target pits located within Unit 2 were documented as part of FWV 03-019 which is included in Appendix A.

2.0 Scope of Work

The scope of work for the project and addressed in this TM entailed vegetation clearance, technology-aided surface MEC removal, and DGM survey across approximately 433 acres of Units 1, 2, and 3. Unit 1 totals approximately 125 acres, Unit 2 totals approximately 166 acres, and Unit 3 totals approximately 142 acres. Ranges remediated for lead soil contamination and the Impact Area MRA 100-foot buffer in Units 1, 2, and 3 are not addressed in this TM.

Approximately 113 acres of vegetation across all three units was removed in 2012 and 2013 to provide containment boundaries for Units 7 and 10 during prescribed burns. Figure 6 shows vegetation clearance in all three units. Technology-aided surface MEC removal and DGM survey were conducted in this acreage following vegetation clearance.

Figure 2 provides a general site layout of Units 1, 2, and 3.

2.1 Vegetation Clearance

Vegetation clearance in Units 1, 2, and 3 began in June 2012 to provide containment boundaries for Units 7 and 10 prescribed burns was completed in 2013. Vegetation clearance in the remainder of Units 1, 2, and 3 was initiated in June 2014 and was completed in October 2014.

2.2 Technology-Aided Surface Munitions and Explosives of Concern Removal

Technology-aided surface MEC removal within Units 1, 2, and 3 began in July 2012 within the containment boundaries for Units 7 and 10 during prescribed burns and the acreage outside of the containment boundaries was ultimately completed in March 2015. Lanes of approximately five feet in width were placed across grids and Schonstedt magnetometers were employed by MEC surface removal team personnel. Prior to the remedial action, four MEC (or Insufficient Data) items were recovered from the units as shown in Table 1. During the vegetation clearance and technology-aided surface MEC removal, 137 MEC items were recovered and are shown in Tables 2 and 4. Cumulative results for the Units 1, 2, and 3 remedial action are shown in Table 3. Quality control/quality assurance (QC/QA) processes were implemented in accordance with the Final SSWP (Shaw, 2008) and FWV 03-018. Surface MEC removal occurred in all grids within Units 1, 2, and 3 as part of this remedial action, with the exception of the ranges

remediated for lead soil contamination, the Impact Area MRA 100-foot buffer in Units 1, 2, and 3, and areas addressed in FWV 03-019.

Surface MEC removal in ranges remediated for lead soil contamination was performed as part of separate soil remedial actions. A summary of the remedial activities completed at these Ranges is presented in the *Final Technical Memorandum, Summary of Remedial Action Completion at Historical Areas 18, 19, 22, 23, 26, 27, 27a, 28, 29, 33, 36, 39/40/40a, 43, 44, and 48 (MRS-BLM), former Fort Ord, CA* (Shaw, 2011).

Surface and subsurface MEC removal was performed in the 100-foot buffer within Units 1, 2, and 3. Although these areas are included as part of Units 1, 2, and 3, the MEC removal work was reported in the *Draft Final Impact Area MRA 100-foot Buffer, MEC Remedial Action, Technical Information Paper, Former Fort Ord, CA* (Gilbane, 2015).

2.3 Digital Geophysical Mapping Survey

The DGM survey addressed in this TM was completed with vehicle-towed EM61-MK2A arrays from January 2013 until March 2015. The DGM survey was completed in two separate phases: 1) containment boundaries for Units 7 and 10 prescribed burns; and, 2) remainder of Units 1, 2, and 3 not included as part of the containment boundaries, and excluding the soil remediation areas and 100-foot buffer. Figure 3 depicts the DGM data collected at Units 1, 2, and 3. Cumulative results for the Units 1, 2, and 3 remedial action are shown in Table 3. Measurement quality objectives were met and QC/QA processes were implemented in accordance with the Final SSWP (Shaw, 2008) and FWV 03-018. Data gaps visible on Figure 3 either were previously surveyed, or are the result of obstacles preventing access to DGM surveys such as gullies, berms, and individual trees or stands of oak trees. Data gaps include the footprints of target boxes addressed in FWV-03-019, which are to be addressed following completion of soil sampling activities.

A DGM survey in portions of Units 1 and 2 was performed as part of a separate remedial action for Range 26 and is documented in the *Range 26 Munitions and Explosives of Concern, Remedial Action, Technical Memorandum, Former Fort Ord, California* (Shaw, 2011). Additionally, subsurface MEC removal incorporating DGM within the 100' buffer was completed within the western boundaries of Units 1, 2, and 3 as part of a separate remedial

action and is documented in the *Draft Final Impact Area MRA 100-foot Buffer, MEC Remedial Action, Technical Information Paper, Former Fort Ord, California.* (Gilbane, 2015). Figure 3 identifies grids within Unis 1, 2 and 3 that had DGM survey performed as part of separate soil remedial actions at Ranges 23, 26 and 27. This work is documented in the *Final (revised) Remedial Action Completion Report, Site 39 Inland Ranges Habitat Reserve, Former Fort Ord, CA* (Gilbane, 2014).

3.0 Approved Changes During Field Work

The work was performed in accordance with the Final SSWP (Shaw, 2008), with the following exceptions documented by FWVs included in Appendix A and outlined below:

• 03-018 (AR# OE—0626N)	Changed QC standards for technology-aided surface MEC removal, increased QC seeding rate from one per four acres to a rate to allow one QC seed per day to be encountered by each Unexploded Ordnance (UXO) team, and updated key sections of the Final SSWP (Shaw, 2008).
• 03-019 (AR# OE—0626O)	Addressed range structures in 24 grids in Unit 2 including target boxes, soil backstops, and military targets that precluded 100% completion of surface MEC removal and DGM survey.
• 03-020 (AR#OE-0626P)	Addressed continuation of technology-aided surface MEC removal in Unit 3 in the event of further encounters of 4 inch Stokes mortars or Livens Projectors.

4.0 Summary of MEC/MD Removed

Four MEC items were encountered and removed from Unit 3 as part of activities which occurred prior to the activities described in this TM. These items are shown in Table 1.

137 MEC items were encountered and removed as part of MEC remediation activities described in this TM. All MEC items removed as part of MEC remediation activities described in this TM are shown in Table 2. These MEC items are shown in Figure 5.

The MD removed from Units 1, 2, and 3 as part of MEC remediation activities described in this TM was recorded based on weight per 100-foot by 100-foot grid. An estimated 17,710 pounds of MD were removed as part of MEC remediation activities described in this TM. Densities of MD weights by grid are shown on Figure 4.

The Range-Related Debris (RRD) and Other Debris (OD) removed as part of MEC remediation activities described in this TM was recorded based on weight per 100-foot by 100-foot grid. An estimated 102,012 pounds of RRD and OD were removed as part of surface MEC removal activities.

5.0 Observations of Evidence of Potential Soil Contamination

During field operations, UXO field personnel noted the presence of former targets, target boxes, berms, and concentrations of bullets. This information has been provided to Basewide Range Assessment (BRA) personnel and will be used as part of the BRA program. The areas denoted on Figure 2 associated with Ranges 23, 26, and 27 were previously evaluated and remediated for soil contamination. The grids in Unit 2 addressed in FWV 03-019 will be addressed as part of the BRA program.

6.0 Recommendations for Additional Subsurface MEC Remediation

The Track 3 ROD identifies the types of areas where additional work (e.g., subsurface MEC removal) would be conducted. Other than the network of fuel break roads and 100-foot buffers, subsurface MEC removals can be conducted in areas to address specific risk and/or land use needs, such as BLM restoration sites. These areas are to be determined in the TM. The identified areas are then evaluated.

Factors that will be considered when determining whether additional actions are necessary include, but are not limited to: (1) explosive hazards associated with MEC so far recovered; (2) the proximity to potential receptors; (3) the density of MEC recovered; and (4) consistency with Applicable or Relevant and Appropriate Requirements (e.g., HMP and Biological Opinions).

Based on the Final SSWP (Shaw, 2008), sensitive fuze-type munitions were not expected in Units 1, 2 and 3. Units 1 and 2 include portions of the range fan of Range 26. Unit 2 also includes portions of range fans of Ranges 24 and 25. Unit 3 includes portions of the range fan of Range 23. The completion of a technology-aided surface removal of MEC in Units 1, 2, and 3 did not result in the removal of any MEC items considered to have sensitive fuzes. During the munitions response described in this TM, no evidence was reported, including types of munitions debris, that indicates the presence of munitions associated with sensitive fuzes in the units.

During the munitions response in Unit 3, eight 4 inch Stokes mortar projectiles (4 screening smoke; 3 smoke, hexachloroethane; and 1 smoke, WP) and one Livens Projector (screening smoke) were encountered and removed. Although all nine items were subsequently confirmed to contain smoke fillers, these items also have the potential to be used for delivery of chemical gas. Since the filler of these items cannot be confirmed visually, they are generally classified as munitions with unknown fillers. Both Department of Defense and Army Corps of Engineers guidance specify that only Explosive Ordnance Disposal (EOD) or Technical Escort Unit personnel can determine the most likely filler of these munitions. In accordance with standard operating procedures, active duty EOD personnel were contacted to determine the filler of these items.

Stokes mortar projectiles and Livens Projectors were previously encountered and removed in an adjacent unit (Seaside 1). A subsurface MEC removal to the depth of instrument detection was performed on this adjacent unit. All these Stokes mortar projectiles were also determined to contain screening smoke.

Prescribed burns are required in Units 1, 2, and 3 as a mitigation for impacts to the habitat from being cut, and the potential exists for Stokes mortar projectiles and Livens Projectors to remain in the shallow subsurface in Unit 3. Any additional such items are likely to contain screening smoke fill. The USACE has identified as a concern that the potential presence of these unknown filler items in the shallow subsurface could result in an item functioning during a prescribed burn. Although the possibility of the item functioning is deemed as unlikely, an Area of Interest (AOI) with regard to the potential presence of shallow subsurface unknown filler items was delineated (Figure 7). USACE recommends removal of subsurface anomalies that could represent these unknown filler items to a depth of 12 inches. This subsurface removal will also address the uncertainty that an unknown filler item could be encountered in the future, necessitating time-consuming procedures that could impact the planned long-term reuse of the property by BLM. Based on the expected millivolt (mV) response of a 4.2 inch mortar projectile (a close proxy item for a 4 inch Stokes mortar projectile) at a maximum depth of 12 inches (250 mV), there are a total of 126 subsurface anomalies recommended for removal in the AOI shown on Figure 7.

For the above reasons, it is recommended that select subsurface anomalies within a portion of Unit 3 delineated by the locations of these unknown filler items be investigated and removed. The portion of Unit 3 recommended for subsurface anomaly investigation is shown on Figure 7. The AOI shown on is based on a footprint where the majority of unknown filler items were encountered, coincident with a relatively higher level of subsurface anomalies.

A joint Army-BLM inspection summary is provided in Appendix B. This summary describes areas such as temporary fuel breaks and administrative access areas where planned reuse by the BLM will require additional subsurface MEC removal. Figures detailing these areas are included as part of Appendix B. Figure 8 shows recommended and planned subsurface MEC removal within Units 1, 2, and 3.

7.0 Conclusions/Summary of Recommendations

Technology-aided surface MEC removal has been completed in all grids within Units 1, 2, and 3 except those grids addressed in FWV 03-019. As shown on the Figure 2 inset, surface MEC removal in some grids within Units 1, 2, and 3 were completed as part of a separate remedial actions for contaminated soil and establishment of the Impact Area MRA 100-foot buffer. With the exception of the areas inaccessible to DGM survey, DGM survey in Units 1, 2, and 3 occurred as intended within the scope of work. Areas that were not surveyed are shown on Figure 3. A summary of survey and removal methods completed by total grids for the Units 1, 2, and 3 remedial action is shown in Table 5. The following additional work is recommended as part of the remedial action for Units 1, 2, and 3:

- limited subsurface anomaly investigation/removal within Area of Interest in Unit 3, as shown on Figures 7 and 8,
- completion of field work in 24 grids addressed in FWV 03-019 and shown on Figure 8, and
- subsurface MEC removal in areas such as temporary fuel breaks and administrative access areas where planned reuse by the BLM will require additional subsurface MEC removal, as described in Appendix B and shown on Figure 8.

8.0 References

Gilbane (Gilbane), *2014, Final (revised) Remedial Action Completion Report, Site 39 Inland Ranges Habitat Reserve, Former Fort Ord, California. (AR RI-047C).*

_____, *2015, Draft Final Impact Area MRA 100-foot Buffer, MEC Remedial Action, Technical Information Paper, Former Fort Ord, California. (AR OE-0854A).*

Innovative Technical Solutions, Inc. (ITSI), *2011. Final MEC Procedures Supplement, Former Fort Ord, CA. (AR OE-0737B).*

Shaw Environmental, Inc., (Shaw), 2008, *Final Site-Specific Work Plan, Munitions and Explosives of Concern Remedial Action, MRS-BLM Units 1-5, Former Fort Ord, California. (AR OE-0626L)*

_____, 2011, *Range 26 MEC Remedial Action, Technical Memorandum, Former Fort Ord, California. (AR OE-0738)*

U.S. Army Corps of Engineers (USACE), 2009, *Final Work Plan, Remedial Design/Remedial Action, Track 3 Impact Area Munitions Response Area, Former Fort Ord, California. (AR OE-0660K)*

Tables

Table 1
MEC Items Encountered and Removed Prior to Operations Covered in TM

Date Found	Grid	Depth (in)	Qty	Unit	Item Type	Description
08/14/97	LB1-MB10-SE09	6	1	3	UXO	projectile, 3inch, stokes mortar, practice, MK I
01/14/93	LB1-MB09-SG04	0	1	3	ISD	Grenade, hand, smoke, M18 series
05/19/94	LB1-MB10-SH02	0	1	3	ISD	Fuze, projectile, PD, MKIII
12/22/09	B1C9A7	0	1	3	DMM	Grenade, hand, smoke, M18 series

MEC - Munitions and Explosives of Concern
UXO - Unexploded Ordnance
ISD - Insufficient Data
DMM - Discarded Military Munition
PD - Point Detonating

Table 2
MEC Items Encountered and Removed During Operations Covered in TM

Date Found	Item Number	Item Type	Qty	Description	Operation	Unit	Note
1/6/2015	B1B0C6-1-2	UXO	1	Projector, livens, screening smoke, FM	Surface Removal	Unit 3	
1/6/2015	B1B9I7-1-4	UXO	1	Projectile, 4inch, mortar, screening smoke, FM (stokes)	Surface Removal	Unit 3	
2/3/2015	B1B9F8-1-4	UXO	1	Projectile, 4inch, mortar, screening smoke, FM (stokes)	Surface Removal	Unit 3	
2/3/2015	B1B9F8-1-5	UXO	1	Projectile, 4inch, mortar, smoke, WP (stokes)	Surface Removal	Unit 3	
2/12/2015	B1B0I5-1-4	UXO	1	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 3	
2/12/2015	B1B0J4-1-4	UXO	1	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 3	
6/24/2014	A2F4A1-1-3	UXO	1	Grenade, hand, practice, M30	Surface Removal	Unit 1	
6/24/2014	A2F4A1-1-2	UXO	1	Grenade, hand, practice, M69	Surface Removal	Unit 1	
6/24/2014	A2F4A1-1-1	UXO	1	Grenade, hand, practice, MK II	Surface Removal	Unit 1	
6/26/2014	A2F4B2-1-1	UXO	1	Grenade, hand, practice, M69	Surface Removal	Unit 1	
6/26/2014	A2E4J1-1-5	UXO	1	Grenade, hand, practice, M69	Surface Removal	Unit 1	
6/26/2014	A2E4J1-1-4	UXO	1	Grenade, hand, practice, M69	Surface Removal	Unit 1	
6/30/2014	A2F4C3-1-1	UXO	1	Grenade, hand, practice, M69	Surface Removal	Unit 1	
6/30/2014	A2F4C4-1-1	UXO	1	Grenade, hand, practice, M69	Surface Removal	Unit 1	
7/1/2014	A2F3B3-1-3	UXO	1	Grenade, hand, practice, M69	Surface Removal	Unit 1	
7/1/2014	A2E3J6-1-4	UXO	1	Grenade, hand, practice, M69	Surface Removal	Unit 1	
7/8/2014	A2E3G0-1-4	UXO	1	Fuze, grenade, hand, practice, M228	Surface Removal	Unit 1	
7/9/2014	A2E3I6-1-4	UXO	1	Fuze, grenade, hand, practice, M205 series	Surface Removal	Unit 1	
7/9/2014	A2E3I7-1-4	UXO	1	Fuze, grenade, hand, practice, M205 series	Surface Removal	Unit 1	
7/9/2014	A2E3I6-1-5	UXO	1	Fuze, grenade, hand, practice, M228	Surface Removal	Unit 1	
7/9/2014	A2F3J1-1-3	UXO	1	Rocket, 4.5inch, barrage, high explosive, MK III	Surface Removal	Unit 1	
7/10/2014	A2F3H3-1-3	UXO	1	Projectile, 37mm, high explosive, M63	Surface Removal	Unit 1	
7/10/2014	A2E3H8-1-4	UXO	1	Fuze, grenade, hand, practice, M205 series	Surface Removal	Unit 1	
7/14/2014	A2F3A5-1-4	UXO	1	Fuze, grenade, hand, practice, M228	Surface Removal	Unit 1	
7/14/2014	A2G3F1-1-4	UXO	1	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1	
7/14/2014	A2G3H2-1-4	UXO	1	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1	
7/14/2014	A2G2I7-1-2	UXO	1	Rocket, 2.36inch, high explosive, anti-tank, M6	Surface Removal	Unit 1	
7/14/2014	A2G2I8-1-2	UXO	1	Rocket, 2.36inch, high explosive, anti-tank, M6	Surface Removal	Unit 1	
7/14/2014	A2G2I9-1-2	UXO	1	Rocket, 2.36inch, high explosive, anti-tank, M6	Surface Removal	Unit 1	
7/14/2014	A2G2I7-1-1	UXO	1	Rocket, 2.36inch, high explosive, anti-tank, M6	Surface Removal	Unit 1	
7/14/2014	A2G2I8-1-1	UXO	1	Rocket, 2.36inch, high explosive, anti-tank, M6	Surface Removal	Unit 1	
7/14/2014	A2G2I9-1-1	UXO	1	Rocket, 2.36inch, high explosive, anti-tank, M6	Surface Removal	Unit 1	
7/15/2014	A2G2H8-1-1	UXO	1	Rocket, 2.36inch, high explosive, anti-tank, M6	Surface Removal	Unit 1	
7/15/2014	A2G2H9-1-1	UXO	1	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 1	

Table 2
MEC Items Encountered and Removed During Operations Covered in TM

Date Found	Item Number	Item Type	Qty	Description	Operation	Unit	Note
7/15/2014	A2G2H8-1-2	UXO	1	Rocket, 2.36inch, high explosive, anti-tank, M6	Surface Removal	Unit 1	
7/15/2014	A2G2H9-1-2	UXO	1	Rocket, 2.36inch, high explosive, anti-tank, M6	Surface Removal	Unit 1	
7/15/2014	A2G2H8-1-3	UXO	1	Rocket, 2.36inch, high explosive, anti-tank, M6	Surface Removal	Unit 1	
7/15/2014	A2G3E2-1-3	UXO	1	Projectile, 75mm, Shrapnel, MK I	Surface Removal	Unit 1	
7/16/2014	A2G2G1-1-1	UXO	1	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 1	
7/16/2014	A2G2H1-1-1	UXO	1	Rocket, 2.36inch, high explosive, anti-tank, M6	Surface Removal	Unit 1	
7/16/2014	A2G2H2-1-1	UXO	1	Rocket, 2.36inch, high explosive, anti-tank, M6	Surface Removal	Unit 1	
7/16/2014	A2F3J6-1-4	UXO	1	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1	
7/16/2014	A2G3D5-1-3	UXO	1	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1	
7/17/2014	A2F3A6-1-4	UXO	1	Grenade, hand, practice, M69	Surface Removal	Unit 1	
7/17/2014	A2G2G8-1-4	UXO	1	Projectile, 37mm, high explosive, MK II	Surface Removal	Unit 1	
7/17/2014	A2G3D1-1-3	UXO	1	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1	
7/21/2014	A2G2F0-1-1	UXO	1	Projectile, 75mm, high explosive, MK I	Surface Removal	Unit 1	
7/21/2014	A2G2F8-1-1	UXO	1	Rocket, 2.36inch, high explosive, anti-tank, M6	Surface Removal	Unit 1	
7/21/2014	A2G2F9-1-1	UXO	1	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 1	
7/22/2014	A2F3J8-1-4	UXO	1	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1	
7/22/2014	A2F3F8-1-4	UXO	1	Grenade, hand, practice, M69	Surface Removal	Unit 1	
7/22/2014	A2F3H8-1-4	UXO	1	Projectile, 37mm, high explosive, M63	Surface Removal	Unit 1	
7/23/2014	A2F3C8-1-4	UXO	1	Grenade, hand, practice, M69	Surface Removal	Unit 1	
7/23/2014	A2F3D8-1-4	UXO	1	Grenade, hand, practice, M69	Surface Removal	Unit 1	
7/23/2014	A2G2E1-1-1	UXO	1	Projectile, 75mm, Shrapnel, MK I	Surface Removal	Unit 1	
7/23/2014	A2G2E2-1-1	UXO	1	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 1	
7/23/2014	A2G3B1-1-3	UXO	1	Projectile, 75mm, Shrapnel, MK I	Surface Removal	Unit 1	
7/23/2014	A2G2E1-1-2	UXO	1	Grenade, hand, fragmentation, M26-M26A1	Surface Removal	Unit 1	
7/24/2014	A2F3B9-1-4	UXO	1	Grenade, hand, practice, M69	Surface Removal	Unit 1	
7/25/2013	A2G3J7-1-4	UXO	1	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 1	
7/28/2014	A2G2E8-1-1	UXO	1	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 1	
7/29/2013	A2G3J4-1-1	UXO	1	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 1	
7/29/2013	A2H3B2-1-1	UXO	1	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 1	
7/29/2014	A2G1H0-1-5	UXO	1	Rocket, 2.36inch, high explosive, anti-tank, M6	Surface Removal	Unit 1	
7/29/2014	A2G1H9-1-5	UXO	1	Rocket, 2.36inch, high explosive, anti-tank, M6	Surface Removal	Unit 1	
7/29/2014	A2G1H0-1-6	UXO	1	Rocket, 2.36inch, high explosive, anti-tank, M6	Surface Removal	Unit 1	
7/29/2014	A2G1H9-1-6	UXO	1	Rocket, 2.36inch, high explosive, anti-tank, M6	Surface Removal	Unit 1	
7/29/2014	A2G1H9-1-7	UXO	1	Rocket, 2.36inch, high explosive, anti-tank, M6	Surface Removal	Unit 1	

Table 2
MEC Items Encountered and Removed During Operations Covered in TM

Date Found	Item Number	Item Type	Qty	Description	Operation	Unit	Note
7/29/2014	A2G1H9-1-8	UXO	1	Rocket, 2.36inch, high explosive, anti-tank, M6	Surface Removal	Unit 1	
7/29/2014	A2G1H0-1-4	UXO	1	Rocket, 2.36inch, high explosive, anti-tank, M6	Surface Removal	Unit 1	
7/29/2014	A2G1H9-1-4	UXO	1	Rocket, 2.36inch, high explosive, anti-tank, M6	Surface Removal	Unit 1	
7/30/2012	B2C1D3-1-1	UXO	1	Grenade, hand, smoke, hexachloroethane, AN-M8	Surface Removal	Unit 3	
7/30/2012	B1C0C0-1-1	UXO	1	Signal, illumination, ground, M125 series	Surface Removal	Unit 3	
7/30/2013	A2G3I5-1-2	UXO	1	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 1	
7/30/2013	A2G3I5-1-1	UXO	1	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 1	
7/30/2013	A2G3I9-1-1	UXO	1	Projectile, 37mm, high explosive, M54	Surface Removal	Unit 1	
7/30/2013	A2G3I5-1-3	UXO	1	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 1	
7/30/2014	A2F3C0-1-4	UXO	1	Grenade, hand, practice, M69	Surface Removal	Unit 1	
7/30/2014	A2F3B0-1-4	UXO	1	Grenade, hand, practice, M69	Surface Removal	Unit 1	
7/30/2014	A2G1E0-1-4	UXO	1	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1	
7/31/2012	B2A2I3-1-3	UXO	1	Projectile, 75mm, Shrapnel, MK I	Surface Removal	Unit 3	
7/31/2013	A2F4I4-1-4	UXO	2	Grenade, hand, fragmentation, MK II	Surface Removal	Unit 1	
7/31/2013	A2F4I4-2-4	UXO	2	Grenade, hand, practice, MK II	Surface Removal	Unit 1	
7/31/2013	A2G3G4-1-1	UXO	1	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 1	
7/31/2013	A2G1J7-1-1	UXO	1	Signal, illumination, ground, M127A1 series	Surface Removal	Unit 2	
7/31/2014	A2G2C1-1-2	UXO	1	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1	
7/31/2014	A2G2D1-1-1	UXO	1	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1	
7/31/2014	A2G2D2-1-1	UXO	1	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1	
7/31/2014	A2G2C1-1-1	UXO	1	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1	
7/31/2014	A2G2C2-1-1	UXO	1	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1	
7/31/2014	A2G2C3-1-1	UXO	1	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1	
7/31/2014	A2G1G8-1-6	UXO	1	Rocket, 2.36inch, high explosive, anti-tank, M6	Surface Removal	Unit 1	
7/31/2014	A2G1G8-1-4	UXO	1	Rocket, 2.36inch, high explosive, anti-tank, M6	Surface Removal	Unit 1	
7/31/2014	A2H3D4-1-4	UXO	1	Projectile, 37mm, high explosive, M63	Surface Removal	Unit 1	
8/1/2012	B2B1J3-1-3	UXO	1	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 3	
8/1/2013	A2F4H6-1-4	UXO	1	Grenade, hand, practice, M69	Surface Removal	Unit 1	
8/2/2012	B2B1H5-1-1	UXO	1	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 3	
8/4/2014	A2G2C8-1-1	UXO	1	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1	
8/4/2014	A2G1F9-1-5	UXO	1	Rocket, 2.36inch, high explosive, anti-tank, M6	Surface Removal	Unit 1	
8/5/2013	A2F4G2-1-3	UXO	1	Grenade, hand, practice, M69	Surface Removal	Unit 1	
8/6/2013	A2H1A7-1-1	UXO	1	Projectile, 37mm, high explosive, M63	Surface Removal	Unit 2	
8/6/2013	A2F4G6-1-4	UXO	1	Grenade, hand, practice, M69	Surface Removal	Unit 1	

Table 2
MEC Items Encountered and Removed During Operations Covered in TM

Date Found	Item Number	Item Type	Qty	Description	Operation	Unit	Note
8/6/2014	A2G2B3-1-1	UXO	1	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 1	
8/7/2013	A2F4F4-1-3	UXO	1	Grenade, hand, practice, MK II	Surface Removal	Unit 1	
8/7/2013	A2F4F5-2-4	UXO	1	Grenade, hand, practice, M30	Surface Removal	Unit 1	
8/7/2014	A2J2D2-1-3	UXO	1	Projectile, 75mm, Shrapnel, MK I	Surface Removal	Unit 2	
8/8/2012	B2B1D4-1-1	UXO	1	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 3	
8/8/2012	B2B1D5-1-1	UXO	1	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 3	
8/11/2014	A2J1C0-1-1	UXO	1	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 2	
8/12/2013	A2F4D6-1-4	UXO	1	Grenade, hand, practice, M69	Surface Removal	Unit 1	
8/12/2013	A2F4D6-1-5	UXO	1	Grenade, hand, practice, MK II	Surface Removal	Unit 1	
8/13/2012	B2B1A4-1-1	UXO	1	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 3	
8/13/2014	A2I1A5-1-1	UXO	1	Projectile, 75mm, Shrapnel, MK I	Surface Removal	Unit 2	
8/14/2013	A2G3D7-1-3	UXO	1	Projectile, 75mm, high explosive, MK I	Surface Removal	Unit 1	
8/19/2013	A2G4A3-1-1	UXO	1	Grenade, hand, practice, M30	Surface Removal	Unit 1	
9/2/2014	A1J0G7-1-4	UXO	1	Projectile, 75mm, Shrapnel, MK I	Surface Removal	Unit 2	
9/18/2014	B1A9E3-1-1	UXO	1	Projectile, 37mm, low explosive, MK II	Surface Removal	Unit 2	
9/22/2014	B1A9A4-1-1	UXO	1	Rocket, 35mm, subcaliber, practice, M73	Surface Removal	Unit 2	
9/22/2014	A1J9J4-1-1	UXO	1	Rocket, 35mm, subcaliber, practice, M73	Surface Removal	Unit 2	
9/22/2014	A1J9I4-1-1	UXO	1	Rocket, 35mm, subcaliber, practice, M73	Surface Removal	Unit 2	
9/23/2014	A1J9I5-1-1	UXO	1	Rocket, 35mm, subcaliber, practice, M73	Surface Removal	Unit 2	
9/23/2014	A1J9H5-1-1	UXO	1	Rocket, 35mm, subcaliber, practice, M73	Surface Removal	Unit 2	
9/23/2014	A1J9H5-1-2	UXO	1	Rocket, 35mm, subcaliber, practice, M73	Surface Removal	Unit 2	
9/24/2014	A1J9I7-1-1	UXO	1	Projectile, 75mm, Shrapnel, MK I	Surface Removal	Unit 2	
10/1/2014	B1C0D7-1-4	UXO	1	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 3	
10/1/2014	B1C0D8-1-4	UXO	1	Projectile, 37mm, low explosive, MK I	Surface Removal	Unit 3	
10/6/2014	B1C0B4-1-4	UXO	1	Cartridge, 40mm, practice, M781	Surface Removal	Unit 3	
10/15/2014	B1C9C9-1-4	UXO	1	Rocket, 35mm, subcaliber, practice, M73	Surface Removal	Unit 3	
10/17/2014	B1A0E0-1-1	UXO	1	Projectile, 4inch, mortar, screening smoke, FM (stokes)	Surface Removal	Unit 3	
10/20/2014	B2A1A8-1-3	UXO	1	Projectile, 75mm, Shrapnel, MK I	Surface Removal	Unit 3	
10/28/2014	A2J1J5-1-4	UXO	1	Fuze, grenade, hand, practice, M205 series	Surface Removal	Unit 2	
10/28/2014	B2A1E1-1-1	UXO	1	Projectile, 4inch, mortar, smoke, hexachloroethane (stokes)	Surface Removal	Unit 3	
11/3/2014	B1C9A5-1-4	UXO	1	Projectile, 4inch, mortar, smoke, hexachloroethane (stokes)	Surface Removal	Unit 3	
11/4/2014	B1B9I3-1-4	UXO	1	Projectile, 4inch, mortar, screening smoke, FM (stokes)	Surface Removal	Unit 3	
11/13/2014	B1B9J5-1-7	UXO	1	Projectile, 4inch, mortar, smoke, hexachloroethane (stokes)	Surface Removal	Unit 3	

Table 3
Cumulative Results

Parameter	Unit 1	Unit 2	Unit 3	Total
Surface removal acreage	125	166	142	433
Analog subsurface removal acreage				0
Digital Subsurface removal acreage				0
DGM survey acreage	125	160	142	428
MEC items	98	15	24	137
Total Estimated MD Weight (lbs)	4384	6859	6467	17710
Total Estimated RRD and CD (lbs)	52637	41139	8236	102012

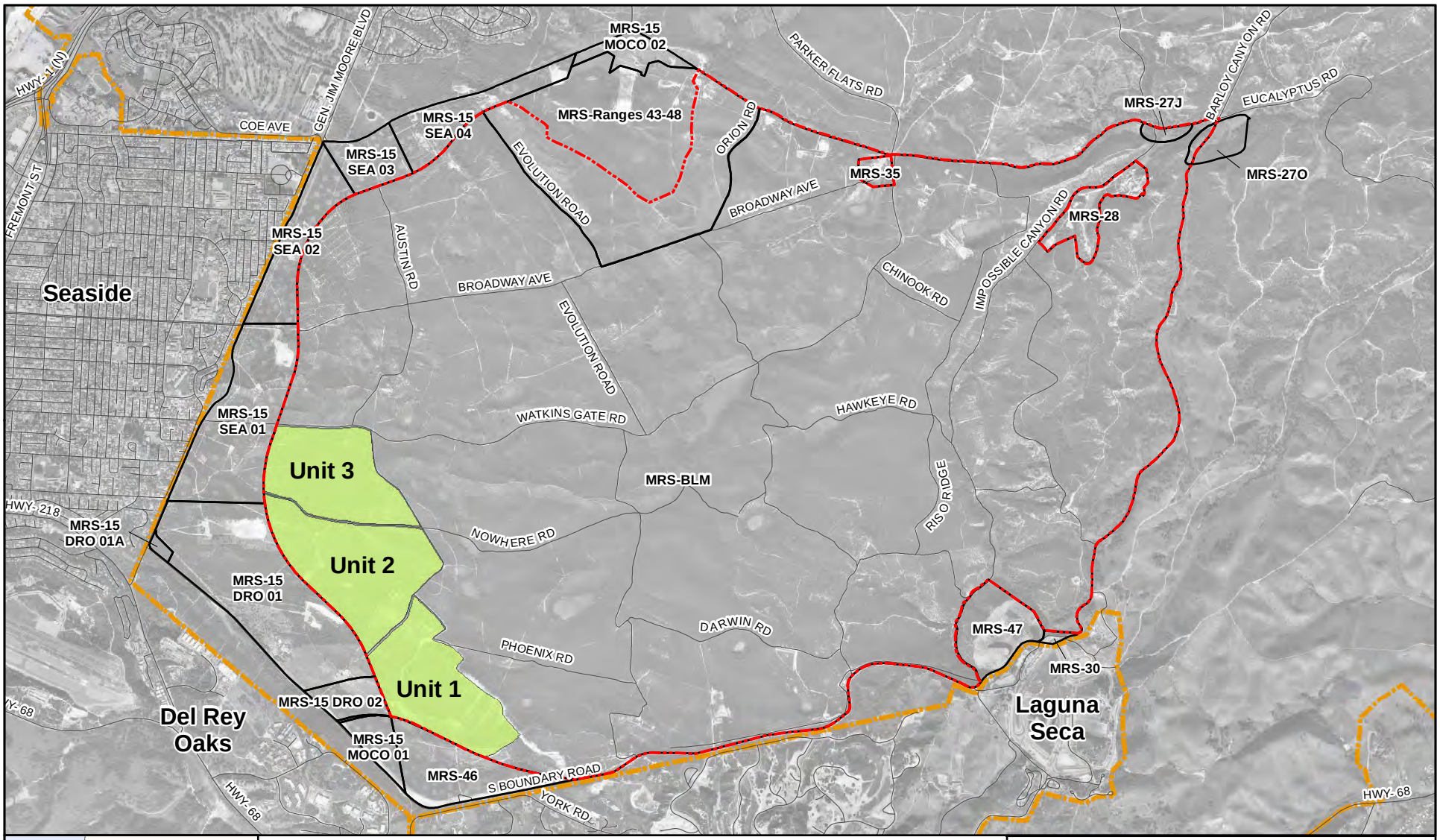
Table 4
MEC Recovery Information

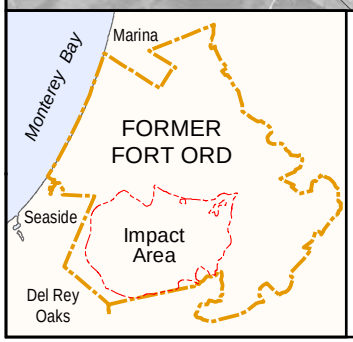
Description	Unit 1	Unit 2	Unit 3
Cartridge, 40mm, practice, M781			1
Fuze, grenade, hand, practice, M205 series	3	1	
Fuze, grenade, hand, practice, M228	3		
Grenade, hand, fragmentation, M26-M26A1	1		
Grenade, hand, fragmentation, MK II	2		
Grenade, hand, practice, M30	3		
Grenade, hand, practice, M69	19		
Grenade, hand, practice, MK II	5		
Grenade, hand, smoke, hexachloroethane, AN-M8			1
Projectile, 37mm, high explosive, M54	1		
Projectile, 37mm, high explosive, M63	3	1	
Projectile, 37mm, high explosive, MK II	1		
Projectile, 37mm, low explosive, MK I	12		9
Projectile, 37mm, low explosive, MK II	15	2	
Projectile, 4inch, mortar, screening smoke, FM (stokes)			4
Projectile, 4inch, mortar, smoke, hexachloroethane (stokes)			3
Projectile, 4inch, mortar, smoke, WP (stokes)			1
Projectile, 75mm, high explosive, MK I	2		
Projectile, 75mm, Shrapnel, MK I	3	4	2
Projector, livens, screening smoke, FM			1
Rocket, 2.36inch, high explosive, anti-tank, M6	24		
Rocket, 35mm, subcaliber, practice, M73		6	1
Rocket, 4.5inch, barrage, high explosive, MK III	1		
Signal, illumination, ground, M125 series			1
Signal, illumination, ground, M127A1 series		1	
Totals	98	15	24

Table 5
Summary of Survey and Removal Methods by Grids

Activity	Unit 1 Grids	Unit 2 Grids	Unit 3 Grids	Total Grids
Surface Removal	617	816	686	2119
Analog Subsurface Removal		0	0	0
Digital Subsurface Removal		0	0	0
DGM Survey	613	776	686	2075

Figures





Legend

- Units 1, 2, and 3
- Munitions Response Site
- Impact Area MRA
- Former Fort Ord Boundary

N

0 3,000 6,000 FEET

U.S. ARMY CORPS OF ENGINEERS
SACRAMENTO DISTRICT

FORMER FORT ORD

FIGURE NUMBER	LOCATION MAP UNITS 1, 2, AND 3
1	

DATE	PROJECT NUMBER	FILE NAME
4/13/2015	141234	SEE FOOTER

C:\GIS\Fort_Ord_GIS\U1\GIS_Documents\Project_Maps\U1_2_3_loc_TM.mxd

Unit 3

Unit 2

Unit 1

Unit 10

Unit 7

Unit 33

Unit 6

N

0 650 1,300 FEET

Legend

- Unit 1 Surface MEC Removal and DGM Survey Grid (124.97 acres)
- Unit 1 DGM Survey Grid (124.88 acres)
- Unit 2 Surface MEC Removal Grid (166.24 acres)
- Unit 2 DGM Survey Grid (160.49 acres)
- Unit 3 Surface MEC Removal and DGM Survey Grid (142.34 acres)
- Area of Previous Surface MEC Removal and/or DGM Survey Associated with Ranges 23, 26, and 27 Remediation Activities (54.58 acres)

U.S. ARMY CORPS OF ENGINEERS
SACRAMENTO DISTRICT

FORMER FORT ORD

FIGURE NUMBER	GRID LAYOUT UNITS 1, 2, AND 3
2	

DATE	PROJECT NUMBER	FILE NAME
8/21/2015	141234	SEE FOOTER

C:\GIS\Fort_Ord_GIS\U1\GIS_Documents\Project_Maps\U1_2_3_grids_TM.mxd

Unit 3

Unit 2

Unit 1

N

EM61 - MK2A
4 Channel Sum Response (mV)
0 2 4 6 8 10 12 14 16 18 20

Legend

Grids Previously Surveyed and Reported (Ranges 23, 26, and 27)

0 650 1,300 FEET

U.S. ARMY CORPS OF ENGINEERS
SACRAMENTO DISTRICT

FORMER FORT ORD

FIGURE NUMBER	GEOPHYSICAL DATA MAP UNITS 1, 2, AND 3
3	

DATE	PROJECT NUMBER	FILE NAME
4/30/2015	141234	SEE FOOTER

C:\GIS\Fort_Ord_GIS\U1\GIS_Documents\Project_Maps\U1_2_3_DGM_TM.mxd

Unit 3

Unit 2

Unit 1

Unit 10

Unit 7

Unit 33

Unit 6

N

Legend

X MEC Items Encountered/Removed

MD Weight Removed

- No MD
- 0 - 50 Lbs MD
- 50 - 100 Lbs MD
- 100 - 200 Lbs MD
- > 200 Lbs MD
- Area of Previous Surface MEC Removal Associated with Remediation Activities

0 650 1,300 FEET

U.S. ARMY CORPS OF ENGINEERS
SACRAMENTO DISTRICT

FORMER FORT ORD

FIGURE NUMBER	MUNITIONS DEBRIS WEIGHT UNITS 1, 2, AND 3
4	

Gilbane	CBI	
DATE	PROJECT NUMBER	FILE NAME
6/30/2015	141234	SEE FOOTER

C:\GIS\Fort_Ord_GIS\U1\GIS_Documents\Project_Maps\U1_2_3_MDweight_TM.mxd

Unit 3

Unit 2

Unit 1

Unit 10

Unit 7

Unit 33

Unit 6

N

Legend

- Cartridge, 40mm, practice, M781
- Fuze, grenade, hand, practice, M205 series
- Fuze, grenade, hand, practice, M228
- Grenade, hand, fragmentation, M26-M26A1
- Grenade, hand, fragmentation, MK II
- Grenade, hand, practice, M30
- Grenade, hand, practice, M69
- Grenade, hand, practice, MK II
- Grenade, hand, smoke, hexachloroethane, AN-M8
- Projectile, 37mm, high explosive, M54
- Projectile, 37mm, high explosive, M63
- Projectile, 37mm, high explosive, MK II
- Projectile, 37mm, low explosive, MK I
- Projectile, 37mm, low explosive, MK II
- Projectile, 4inch, mortar, screening smoke, FM (stokes)
- Projectile, 4inch, mortar, smoke, WP (stokes)
- Projectile, 4inch, mortar, smoke, hexachloroethane (stokes)
- Projectile, 75mm, Shrapnel, MK I
- Projectile, 75mm, high explosive, MK I
- Projector, livens, screening smoke, FM
- Rocket, 2.36inch, high explosive, anti-tank, M6
- Rocket, 35mm, subcaliber, practice, M73
- Rocket, 4.5inch, barrage, high explosive, MK III
- Signal, illumination, ground, M125 series
- Signal, illumination, ground, M127A1 series

0 650 1,300 FEET

U.S. ARMY CORPS OF ENGINEERS
SACRAMENTO DISTRICT

FORMER FORT ORD

FIGURE NUMBER	MEC FINDS DURING REMEDIAL ACTION UNITS 1, 2, AND 3
5	

DATE	PROJECT NUMBER	FILE NAME
4/30/2015	141234	SEE FOOTER

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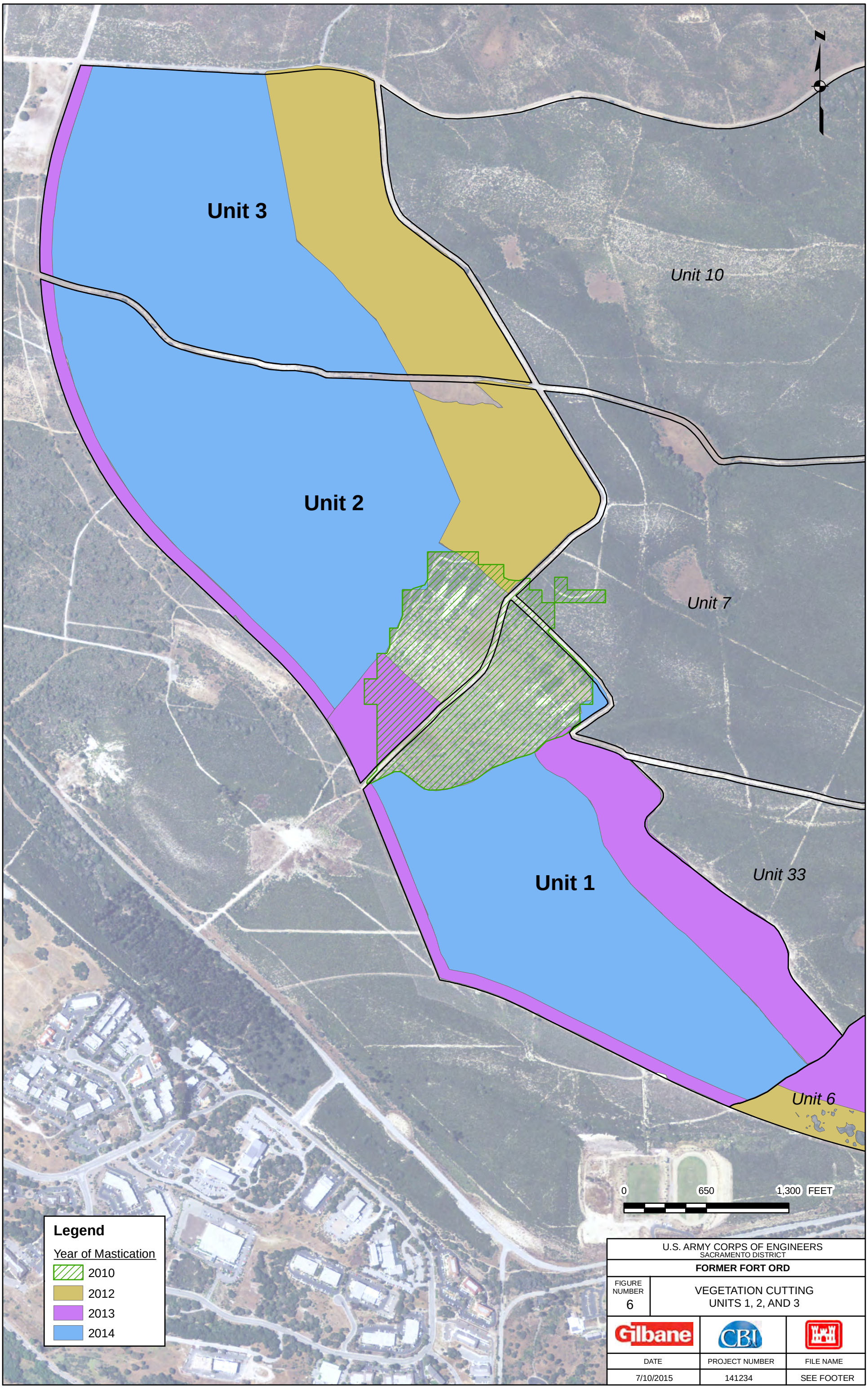

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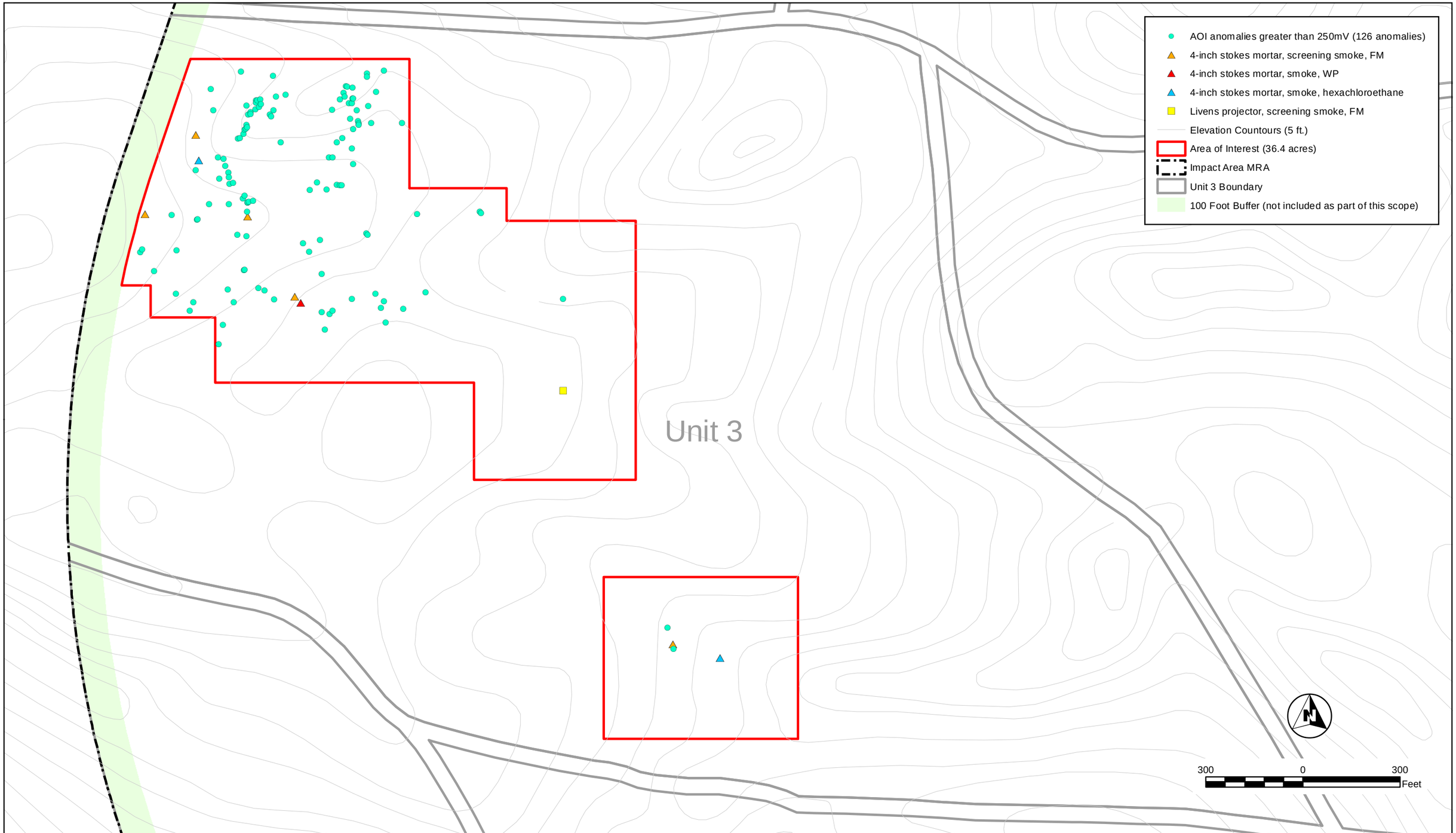

Figure 7

Unit 3 Area of Interest
Stokes Mortar and Livens Projector Anomalies (to 12 inches bgs)

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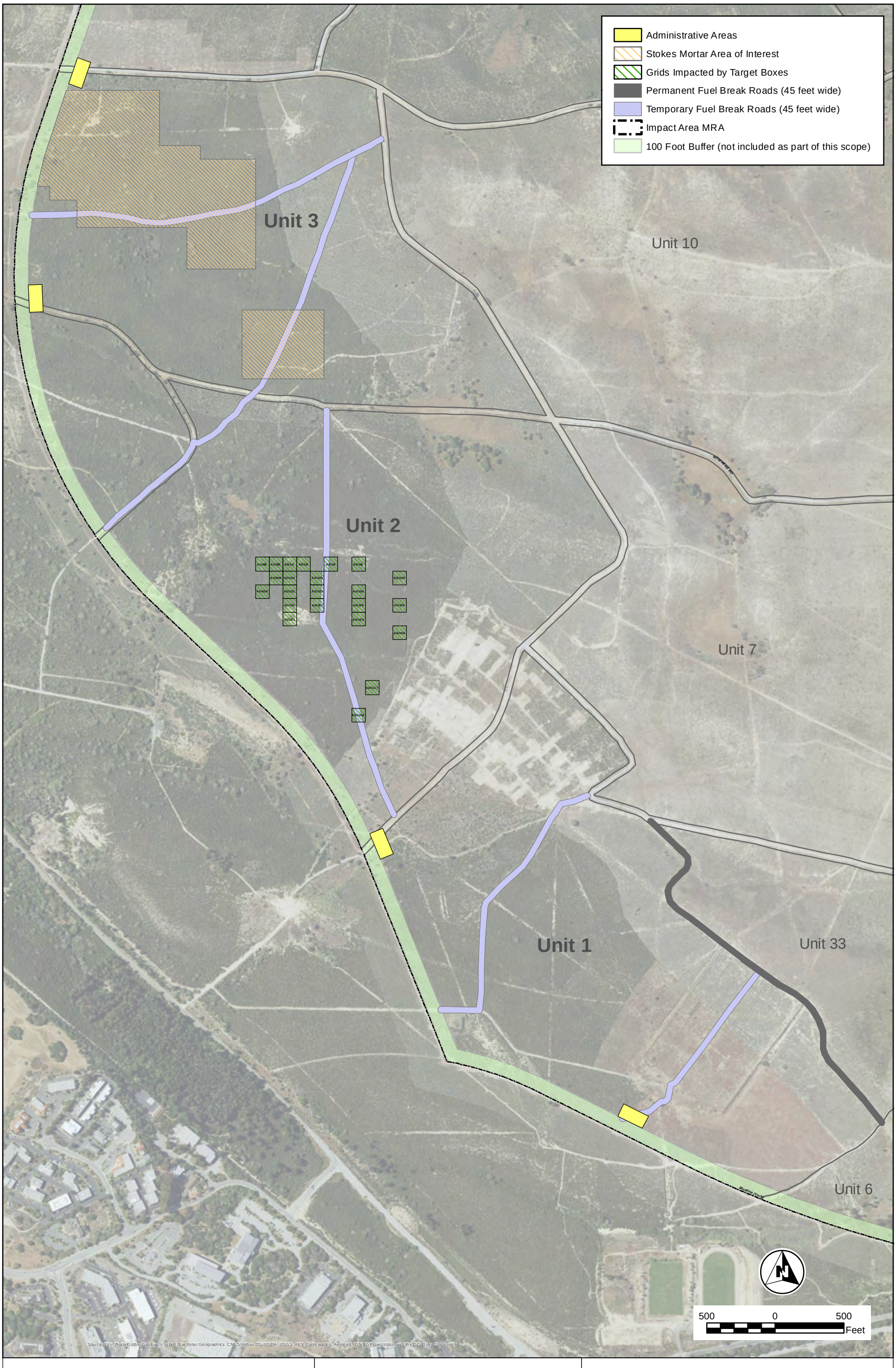

Figure 8

Units 1, 2, and 3 Subsurface MEC Removal Areas

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Appendix A

Field Work Variances

Distribution List:

Field Work Variance No. 03-018, to the *Final Work Plan, MRS-BLM Burn Units 01-05, Munitions and Explosives of Concern, Remedial Action, Former Fort Ord, California*

Email	Paper	Name	Organization	Address	City, State	Zip
1		Mr. John Jackson	Department of the Army USACE	1325 "J" Street	Sacramento, CA	95814
1		Mr. Therman Franks	Department of the Army USACE	1325 "J" Street	Sacramento, CA	95814
1		Mr. James Specht	Department of the Army USACE	1325 "J" Street	Sacramento, CA	95814
1		Mr. Shawn Meek	Department of the Army, USACE, C/O Fort Ord BRAC	4463 Gigling Road	Seaside, CA	93955
1		Mr. David Eisen	Department of the Army, USACE, C/O Fort Ord BRAC	4463 Gigling Road	Seaside, CA	93955
1		Mr. Lyle Shurtleff	Department of the Army, Fort Ord BRAC	4463 Gigling Road	Seaside, CA	93955
1		Mr. Terry Gleason	Department of the Army USACE	1325 "J" Street	Sacramento, CA	95814
1		Mr. William Collins	Department of the Army, Fort Ord BRAC	4463 Gigling Road	Seaside, CA	93955
1		Ms. Chieko Nozaki	Department of the Army, Fort Ord BRAC	4463 Gigling Road	Seaside, CA	93955
1	1+CD	Ms. Lindsay Alexander	Fort Ord Administrative Record, Fort Ord BRAC	4463 Gigling Road, Room 101	Seaside, CA	93955
1		Mr. Roman Racca	California Department of Toxic Substance Control	8800 California Center Drive	Sacramento, CA	95826
1		Mr. Lewis Mitani	U.S. Environmental Protection Agency, Region IX	75 Hawthorne Street, Mail SFD-8-3	San Francisco, CA	94105
1		Mr. Ed Walker	California Department of Toxic Substance Control	8800 California Center Drive	Sacramento, CA	95826
1		Mr. Tom Hall	Techlaw, Inc.	7 Shore Point	North Little Rock, AR	72116
1		Mr. Terry Zdon	Tech Law, Inc.	90 New Montgomery Street Suite 710	San Francisco, CA	94105
1		Mr. Eric Morgan	Bureau of Land Management, c/o Fort Ord BRAC Office	4463 Gigling Road	Seaside, CA	93955
	1+CD	Mr. Dan Amadeo	Marina In Motion	P.O. Box 1641	Marina, CA	93933
	1	Ms. LeVonne Stone	Fort Ord Environmental Justice Network	P.O. Box 361	Marina, CA	93933
	1	Mr. Mike Weaver	Fort Ord Community Advisory Group	52 Corral De Tierra Road	Salinas, CA	93908
1		Mr. Steve Crane	ITSI Gilbane	2934 Gold Pan Court, Suite 12	Rancho Cordova, CA	95670

Distribution List:

Field Work Variance No. 03-018, to the *Final Work Plan, MRS-BLM Burn Units 01-05, Munitions and Explosives of Concern, Remedial Action, Former Fort Ord, California*

Email	Paper	Name	Organization	Address	City, State	Zip
1		Mr. Brad Olson	ITSI Gilbane	PO Box 1860	Marina, CA	93933
1	1	Ms. Audrey Johnson	ITSI Gilbane	PO Box 1860	Marina, CA	93933
1		Mr. Tom Ghigliotto	PAM Environmental, Inc.	PO Box 1860	Marina, CA	93933
1		Mr. Charles Nycum	Shaw Environmental, Inc. a CB&I Federal Services Company	PO Box 1698	Marina, CA	93933

Approval:

Shawn Meek
USACE OESS

ITSI Gilbane

Field Work Variance No. 03-018

CBI

FIELD WORK VARIANCE

Project Name/Number	Fort Ord / 07202.2001	**WAD**	WAD 03
Applicable Document	*Final Work Plan, MRS-BLM Burn Units 01-05, Munitions and Explosives of Concern, Remedial Action, Former Fort Ord, California, Revision 0*	**Date**	August 8, 2014

Problem Description:

1) The *Final Work Plan, MRS-BLM Burn Units 01-05, Munitions and Explosives on Concern Removal, Former Fort Ord, California, Revision 0 (Shaw, 2008) (Units 1-5 WP)* documents the procedures for technology-assisted surface Munitions and Explosives of Concern (MEC) remediation within Units 1-5. Changes in procedures from previous work plans require the UXO Teams to search through vegetative duff layer at the site and removal of all items greater than 2" in any dimension, including Material Potentially Presenting and Explosive Hazard (MPPEH) and Munitions Debris (MD). Quality control (QC) standards outlined in the Units 1-5 WP result in a grid failure if one item greater than 2" in any dimension is encountered. A revised QC criteria was instituted during the work in Units 11 and 12 where vegetation was masticated (FWV 03-003) to achieve technology-aided surface MEC removal within acceptable production efficiency and quality, without compromising public safety. This QC criteria is appropriate to be used since vegetation in Units 1-3 was masticated, not burned as envisioned in the original work plan, leaving chipped vegetation materials on the ground surface.

2) Current QC seeding rate as outlined in the Units 1-5 WP for surface MEC removal is a minimum of **one** seed per four acres. A new QC seeding rate was instituted when work in Units 7, 10 and 33 began designed for each UXO team to encounter one QC seed per day (also described in attached FWV 03-016).

3) Additional key sections of the Units 1-5 WP require updating as outlined below.

Recommended solution:

1) Revise Technical Management and QC sections of the Units 1-5 WP which address this QC standard as described above in accordance with current field procedures. The following text will be updated and/or added to the Units 1-5 WP to address this issue:

Section 2.4.3.5 Technology-Aided Surface Removal: Following vegetation removal and completion of the grid and border survey, a technology-aided surface MEC removal will be conducted. The intent of the surface MEC removal is twofold: 1) to remove surface MEC/MPPEH, and 2) to remove metallic debris including MEC/MPPEH, MD, range-related debris (RRD), and other debris that could impact the DGM survey results.

Any MEC, suspected MEC, and MEC-like items (items that could be mistaken for MEC) will be removed from the ground surface. Single expended small arms shell casings (small arms) will not be required to be picked up, since they do not pose an explosive hazard and will not interfere with DGM. Any casing 20 mm or above will be removed. Piles of expended shell casings will be removed. With the exception of shell casings described above, metallic objects greater than 2 inches in any dimension will be picked up and removed from the site to the extent practicable. The soil surface will be considered the extent of surface removal. There will be no scuffing of soil to find metallic items detected with magnetometers. If an item is partially visible on the surface, it will be removed as part of surface removal. QC inspection of the technology-aided surface MEC removal will be conducted prior to the DGM as well as quality assurance (QA).

During surface MEC removal, UXO teams will use magnetometers to support visual identification of MEC/MPPEH/MD. UXO-qualified personnel and UXO sweep personnel will walk in parallel lines across each removal grid to provide complete visual coverage. Visual inspection will be conducted in 5-foot search lanes assisted by use of hand held magnetometers in all areas. The UXO Team will investigate all magnetometer ring-offs on the soil surface. If the soil surface is covered by vegetation, the UXO Technician will remove the overburden at the magnetometer ring-off to expose the soil surface.

Metallic debris identified on the ground surface will be removed from Units 1-5. MEC/MPPEH will be treated in accordance with the MPS (ITSI, 2011). The easting and northing location of MEC/MPPEH will be recorded with a GPS to acquire the exact geo-referenced location at which it was found. MEC/MPPEH found within areas where RTK GPS does not function properly will be referenced to the nearest known grid stake location. MD will be tracked by general item type and estimated weight on a grid-by-grid basis. The quantity of MEC/MPPEH/MD/RRD per grid will be recorded. Recovered MD will be stored in lockable containers at a designated staging area for future disposal. Details on procedures for implementation of the surface MEC removal are provided in Section 2.4.3, Surface Munitions and Explosives of Concern Removal Procedures, of the MPS (ITSI, 2011).

Surface removal personnel will be trained to recognize and document evidence of potential soil contamination. Any indication of potential soil contamination will be reported in the Technical Memorandum.

Section 10.1.1 (To Be Added) Detection Performance Goals: A QC survey will be performed by the UXOQCS following completion of surface removal grids. Location of any MEC or MEC-like items (items that could be mistaken for MEC) would constitute a grid failure. Location of any casing 20mm or above will constitute a grid failure. Location of single expended small arms shell casings on the surface will not constitute a QC failure. With the exception of MEC and MEC-like items *and metallic items deemed (on a case-by-case basis) to adversely impact DGM quality*, metallic objects greater than 2 inches will not constitute a grid failure.

Following DGM in surface areas only, certain detected anomalies will be checked in the field to ensure the items displayed as DGM anomalies are not actually surface items. This work will be conducted by both ITSI Gilbane Company and USACE and the results presented to the BCT.

A corrective action report (CAR) will be promptly developed to investigate the grid failure root cause. Corrective action will include a grid re-inspection process. Preventive actions will be based on the root cause, but may include additional procedure controls, more rigorous UXOQCS field surveillance, and additional training. Corrective measures processes are provided in Section 6.11, Corrective Measures, of the MPS (ITSI, 2011). Items greater than 2” in any dimension will continue to be removed by UXO teams to the extent possible.

2) Modify QC seeding rate in accordance with FWV 03-016 and the *Final EM 200-1-15 Performance Table 11-6* (both attached). QC seeds will be placed across Units 1-5 at a rate of one QC seed to potentially be encountered per surface MEC removal team per day.

3) Update/add to key sections of the Units 1-5 WP as outlined below in the recommended solution section of this FWV.

Section 1.1 Preface: Prescribed burns were not conducted as originally detailed in the Units 1-5 SSWP due to concerns regarding the height and density of brush and close proximity of Monterey Airport and residential areas to these units. Vegetation will be mechanically masticated and a prescribed burn will be conducted at a later date.

Section 1.2 Purpose: An Explosives Safety Submission (ESS) has been submitted and approved by the Department of Defense Explosives Safety Board (DDESB).

Section 1.9.2 Summary of MEC-Related Activities and Data Collected to Date: MEC remedial action activities in the eastern portions of Units 1, 2, and 3 have been completed as part of preparatory activities for prescribed burns within Units 7 and 10. Additionally, remedial action activities along a 100-ft buffer along the western edge of these units has been completed as part of establishment of the Impact Area MRA 100-ft buffer.

Section 2.2.2 Chemical Warfare Materiel: Further details regarding procedures to be followed in the event of the discovery of a suspect CWM item can be found in *Recovered Chemical Warfare Material Response Process*, Engineering Pamphlet (EP) 75-1-3 (USACE, 2004). In the unlikely event of encountering Chemical Agent

Identification Set kits, they will be handled in accordance with the procedures included in *Policy Guidance – Chemical Agent Identification Sets Containing Dilute Agent (Except Dilute Nerve) and Industrial Chemicals* (Army, 2008b).

Section 2.2.3 Procedures When MEC Cannot Be Disposed or MEC are Unidentified: In the event that MEC or material potentially presenting an explosive hazard (MPPEH) is encountered that cannot be disposed or readily identified, the USACE Ordnance and Explosives (OE) Safety Specialist will be notified. If the USACE OE Safety Specialist is unable to identify the MEC/MPPEH item, Vandenberg Air Force Base (AFB) Explosive Ordnance Disposal (EOD) personnel will be notified. Phone contact information for the Vandenberg AFB EOD is 805-606-9961. Further information on procedures for when MEC/MPPEH cannot be disposed of on site is provided in Section 2.4.4.5, Munitions and Explosives of Concern Identification, of the MPS (ITSI, 2011).

Section 2.3 Project Personnel, Organization, Communication and Reporting: Personnel qualifications will be documented in accordance with USACE Data Item Description (DID) WERS-012.01 and all UXO personnel will meet the qualification requirements of DDESB Technical Paper 18 (DDESB, 2004). The project team will include the following managerial and technical positions:

- PM: Stephen Crane
- Deputy PM: Erin Caruso
- Contractor QC Manager: Tom Ghigliotto
- Task Manager: Kevin Siemann
- Site Safety and Health Officer: Val Valdez
- Senior UXO Supervisor (SUXOS): Brad Olson
- UXO QC Specialist (UXOQCS): Bruce McClain
- UXO Safety Officer (UXOSO): Val Valdez
- Project Biologist: Jami Davis
- QC Geophysicist: Jeremy Flemmer
- Project Geophysicist: Andy Gauscho
- Site Geophysicist: Chuck Nycum
- UXO Technicians
- Geophysical Technicians
- Geographic Information System (GIS) Database Manager: Chris Russo
- GIS Site Support: Eric Schmidt.

Section 2.4.6.4 MEC Discovery, Notification and Reporting: MEC-related activities will be performed in accordance with the MPS (ITSI, 2011) and this SSWP. Recovered MEC will be treated by detonation. Detonation procedures are provided in Section 2.4.4.7, Detonation Operations, of the MPS (ITSI, 2011). All MEC will be blown-in-place unless prior authorization is received from the USACE OE Safety Specialist. As necessary, UXO teams will use engineering controls to reduce the fragmentation distance during intentional detonations. The maximum fragment range–horizontal will be used for all unmitigated intentional detonations.

Procedures for the disposition of MPPEH are provided in Section; 2.4.5, Disposition of Material Potentially Presenting an Explosive Hazard (MPPEH), of the MPS (ITSI, 2011). Guidance detailed in DoD 6055.09-M (DoD, 2010) will also be applied for handling MPPEH. Operational data (including recovery information, such as date excavated, grid location, item type/classification, observed depth, estimated weight, and detailed description) will be recorded for each excavated MEC item. Requirements for MD and scrap management are provided in Section 2.4.5.5, Certification/ Verification/Disposition of Munitions Debris, of the MPS (ITSI, 2011).

Section 5.0 (to be added) Geophysical System Verification: ITSI Gilbane Company uses the Geophysical System Verification (GSV) process to ensure the integrity of the geophysical mapping equipment. The collected

data also helps to quantify site-specific geophysical characteristics that determine the detectability of items of interest. A detailed description of the GSV approach is given the ESTCP report "Geophysical System Verification (GSV): A Physics-Based Alternative to Geophysical Prove-Outs for Munitions Response" published in July, 2009.

MEC detection instrumentation, including both analog and digital equipment, will be tested prior to field use and throughout the project duration. The equipment will be operated over a test strip (the IVS – Instrument Verification Strip) seeded with Industry Standard Objects (ISOs, see Table 5-1). IVS's are currently established. The IVS's, also include two inert items of the types that are expected to be found in the work area, buried at depths that are dependent upon the items selected. The ISOs are schedule 40 pipe nipples, threaded on both ends, made from black welded steel. Table 5-1 summarizes the items and their positioning.

Table 5-1
Positioning of IVS Seeds

Item	Type	Orientation	Depth (inches)
1	Small ISO	Vertical	9
2	Small ISO	Horizontal	4
3	40mm	Vertical	11
4	40mm	Horizontal	5

The responses measured over the ISOs will be compared to the known responses of these items, as provided by the Naval Research Laboratory (NRL). Similar results are indicative that the EM61–MK2A and the positioning instrumentation are working properly. Inert munitions items in the IVS, with an SNR of 10x or greater, will return a Channel 2 response that is greater than (or equal to) 75% of the average Channel 2 response, based on the first week of tests. The response from each item will be compared to both historical readings from previous EM61 surveys at Fort Ord and physics-based models. Measurements of dynamic noise will not exceed +/- 2.5mv for all EM61 data channels (standard deviation). The final metric for this parameter will be defined during the initial IVS testing.

The MEC Procedures Supplement (MPS) (ITSI, 2011) will be implemented for this work. The 2011 Final MEC Procedures Supplement (MPS) was developed to facilitate and streamline Munitions Response (MR) activities at the former Fort Ord. This MPS provides standard procedures, protocols, and methodologies that are to be followed during execution of field work at all former Ford Ord Munitions Response Sites (MRS). The MPS is generic in nature and designed to streamline SSWP development, review, and approval. It is to be used in conjunction with each SSWP to support MR activities and objectives. The 2011 MPS has been amended by the following FWVs:

- FWV 03-004 (OE-0737B.2): The field geophysicist will capture field note data digitally during DGM operations and remove the required preparation of paper forms.
- FWV 03-005 (OE-0737B.3): Removed the incidental data gap fill the requirement for Category B areas.
- FWV 03-006 (OE-0737B.4): The contractor is required to deliver the raw and processed files in one delivery, within 5 days of data collection. This delivered product will merge all data from the raw and processed xyz files into one file.
- FWV 03-007 (OE-0737B.5): The contractor will complement the Final Data Delivery Report with an Excel spreadsheet that documents QC test results (through time).
- FWV 01-001 (OE-0737B.6): Replaced original forms with revised forms, assigned a technical GIS analyst, and revised QC geophysicist responsibilities.

The following references have been updated since the submittal of the Units 1-5 SSWP:
HNC-ED-CS-S-96-8 Revision 1, 1997, USACE, Huntsville, *Guide for Selection and Siting of Barricades for Selected UXO*, September.
HNC-ED-CS-S-98-7 Amendment 1, 2011, USACE, Huntsville, *Use of Sandbags for Mitigation of Fragmentation and Blast Due to Intentional Detonation of Munitions*, February.
HNC-ED-CS-S-98-8 Revision 1, 2010, USACE, Huntsville, *MOFB,* March.
U.S. Army Corps of Engineers (USACE), 2006, ER 1110-1-12, *Engineering and Design - Quality Management, Washington, DC.*
USACE, 2012, *ER 415-1-10: Contractor Submittal Procedures.*
USACE, 2000, *EP 1110-1-18, OE Response.*
USACE, 2004, *EP 385-1-95, Basic Safety Concepts and Considerations for (MEC) Response Actions.* August.

Impact on present and completed work:

Allows for timely completion of the surface MEC remediation in Units 1-5 in order to reduce the potential explosive hazard within the units.

Recommended solution/disposition:

Incorporate this FWV as an appendix to the existing Final Work Plan.

Clarification ☒ Minor Change ☐ Major Change ☒

Affects Budget Yes ☒ No ☐
Affects Schedule Yes ☒ No ☐

Signature _____ Date 7/28/14
Task Manager

ITSI Gilbane

CBI

Field Work Variance No. 03-018

Signature [signature] Date 7/28/14
SUXOS

Signature [signature] Date 7/28/14
CQCSM

Signature [signature] Date 7/28/14
UXOQCS

Signature Erin Caruso Digitally signed by Erin Caruso DN: cn=Erin Caruso, o=Gilbane Federal, ou=Environmental, email=ecaruso@gilbaneco.com, c=US Date: 2014.07.28 12:34:25 -07'00' Date
Project Manager

Signature Erin Caruso Digitally signed by Erin Caruso DN: cn=Erin Caruso, o=Gilbane Federal, ou=Environmental, email=ecaruso@gilbaneco.com, c=US Date: 2014.07.28 12:34:46 -07'00' Date
Deputy Project Manager

USACE Approval: If Major Change:

Signature [signature] Date 7/28/14
OE Safety Specialist

Signature JACKSON.JOHN.MICHAEL.1396427903 Digitally signed by JACKSON.JOHN.MICHAEL.1396427903 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=JACKSON.JOHN.MICHAEL.1396427903 Date: 2014.08.12 15:53:08 -07'00' Date
USACE Project Geophysicist

Signature EISEN.DAVID.E.1231985146 Digitally signed by EISEN.DAVID.E.1231985146 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=EISEN.DAVID.E.1231985146 Date: 2014.08.12 -07'00' Date
USACE COR or TM

Attachments

Gilbane

TRANSMITTAL MEMORANDUM

To: Distribution Date: January 16, 2014

Subject: Field Work Variance No. 03-016, to the *Final, Site Specific Work Plan, Munitions and Explosives of Concern, Remedial Action, MRS-BLM Units 6, 7, and 10, Former Fort Ord, California*

DCN: 07202.2001.181

Attached please find Field Work Variance No. 03-016 which amends the *Final, Site Specific Work Plan, Munitions and Explosives of Concern, Remedial Action, MRS-BLM Units 6, 7, and 10, Former Fort Ord, California*

Should you have any questions, please contact the U.S. Army, Fort Ord BRAC Community Relations Office, at (831) 393-1284 or by e-mail at melissa.m.broadston.ctr@mail.mil.

4522 Joe Lloyd Way, Monterey, CA 93944
PO Box 1860, Marina, CA 93933

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Distribution List:

FWV 03-016 to the Final, Site Specific Work Plan, Munitions and Explosives of Concern, Remediation Action, MRS-BLM Units 6, 7, and 10, Former Fort Ord, California

E-Mail	CD/Paper	Name	Organization	Address	City, State	Zip
1		Ms. Angela Hermanson c/o Ms. Sabrina Cinder	Department of the Army, USACE, CECT-SPK	1325 J Street	Sacramento, CA	95814
1		Mr. James Specht	Department of the Army, USACE	1325 J Street	Sacramento, CA	95814
1		Mr. David Eisen	Department of the Army, USACE	4463 Gigling Road	Seaside, CA	93955
1		Mr. Shawn Meek	Department of the Army, USACE, Fort Ord BRAC	4463 Gigling Road	Seaside, CA	93955
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1		Mr. Lyle Shurtleff	Department of the Army, Fort Ord BRAC	4463 Gigling Road	Seaside, CA	93955
1		Ms. Chieko Nozaki	Chenega Corporation	4463 Gigling Road	Seaside, CA	93955
1		Mr. Eric Morgan	Bureau of Land Management, c/o Fort Ord BRAC Office	4463 Gigling Road	Seaside, CA	93955
1		Mr. Lewis Mitani	U.S. Environmental Protection Agency, Region IX	75 Hawthorne Street, Mail SFD-8-3	San Francisco, CA	94105
1		Mr. Tom Hall	Tech Law, Inc.	7 Shore Point	North Little Rock, AR	72116
1		Mr. Roman Racca	California Department of Toxic Substances Control	8800 California Center Drive	Sacramento, CA	95826
1		Mr. Ed Walker	California Department of Toxic Substances Control	8800 California Center Drive	Sacramento, CA	95826
1		Mr. Mike Weaver	Fort Ord Community Advisory Group (FOCAG)	52 Corral De Tierra Road	Salinas, CA	93908
1		Mr. Dan Amadeo	Marina In Motion	P.O. Box 1641	Marina, CA	93933
1		Ms. LeVonne Stone	Fort Ord Environmental Justice Network (FOEJN)	P.O. Box 361	Marina, CA	93933
1	1	Admin Record	Fort Ord BRAC	4463 Gigling Road	Seaside, CA	93955

Distribution List:

FWV 03-016 to the Final, Site Specific Work Plan, Munitions and Explosives of Concern, Remediation Action, MRS-BLM Units 6, 7, and 10, Former Fort Ord, California

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1		Mr. Kevin Siemann	ITSI Gilbane Company	4522 Joe Lloyd Way	Monterey, CA	93944
1	1	Ms. Audrey Johnson	ITSI Gilbane Company	4522 Joe Lloyd Way	Monterey, CA	93944
1		Mr. Tom Ghigliotto	PAM Environmental Services	4522 Joe Lloyd Way	Monterey, CA	93944

Approval: EISEN.DAVID.E.1231985146 Digitally signed by EISEN.DAVID.E.1231985146 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=EISEN.DAVID.E.1231985146 Date: 2014.01.15 14:51:50 -08'00'

David Eisen
USACE Project Manager

ITSI Gilbane

Shaw Shaw Environmental, Inc.

Field Work Variance No. 03-016

Page 1 of 5

FIELD WORK VARIANCE

Project Name/Number	Fort Ord / 07202.2001	**WAD**	WAD 03
Applicable Document	Final, Site Specific Work Plan, Munitions and Explosives of Concern Remedial Action, MRS-BLM Units 6, 7, and 10, Fort Ord, California (Final SSWP), July, 2012, ITSI Gilbane	**Date**	December 16, 2013

Problem Description:

1) During the prescribed burn of Unit 7 conducted on October 15, 2013, a portion of Unit 33 (approximately 94 acres) burned as a result of unintended spot fires. The burn removed vegetation and exposed the ground surface in the majority of Unit 33. As a result of this burn occurring, the entire unit (approximately 124 acres) will undergo MEC remediation. Unit 33 was not included in the SSWP which addressed the other units (Units 7 and 10) scheduled for prescribed burning in 2013.

2) Current QC Seeding rate as outlined in Final SSWP for surface MEC removal is a **minimum** of one QC seed per 4 acres. Modify QC seeding rate in accordance with *Final EM 200-1-15 Performance Table 11-6* (attached).

Recommended solution:

Add Unit 33 to the Final SSWP. Remedial action procedures addressed in the Final SSWP for Units 6, 7, and 10 shall be followed for Unit 33. Figure 1-1 (attached) shows the Unit 33 location and Figure 1-2 (attached) shows the historical ranges associated with, previous MEC finds within 100 feet of, and remedial actions planned for the unit. Below is additional text specific to Unit 33 and corresponding to original sections in the Final SSWP:

1.2 Site Location – Unit 33 is located in the central southern section of the Impact Area MRA and falls within the MRS-BLM. Unit 33 is bounded to the west, north, south, and east, respectively, by Foul Bore and Phoenix Roads, Sidewinder Road, and Evolution Road.

1.2.1 Military History – Ranges at least partially contained within Unit 33 not discussed in the Final SSWP include the following:

Table 1-1
Ranges Associated with Unit 33 not discussed in Final SSWP

Range	Military History and Training Activities	Unit
Range 64 - Rifle Night Firing	Range is shown on the 1956 training map, but is not shown on the 1958 and 1961 training maps, and is not evident on the 1965 air photo mosaic.	33
Range 65 – Carbine X	Range is shown on the 1956 range construction priority map, but is not shown on the 1958 and 1961 training maps, and is not evident on the 1965 air photo mosaic. It is not known if this range was ever constructed.	33
Range 66 – Carbine XI	Range is shown on the 1956 range construction priority map, but is not shown on the 1958 and 1961 training maps, and is not evident on the 1965 air photo mosaic. It is not known if this range was ever constructed.	33

1.3 Previous Investigations – Previous MEC finds within 100 feet of Unit 33 are shown on Figure 1-2 (attached).

2.5.4 Vegetation Clearance – During the Unit 7 prescribed burn, approximately 94 acres of Unit 33 were

burned. This acreage, in addition to the approximate 30 acres of Unit 33 that did not burn, vegetation will be cut using primarily mechanical means in accordance with procedures established in the Final SSWP and MEC Procedures Supplement.

2.6 Munitions with Greatest Fragmentation Distance - For Quantity-Distance (Q-D) purposes, a Munition with Greatest Fragmentation Distance (MGFD) was established for Unit 33 based on the historical range and sampling data. The MGFD selected for Unit 33 is the projectile, 75mm, HE, MK 1.

2.7 Project Personnel, Organization, Communication, and Reporting – Project Geophysicist: Chuck Nycum (acting).

6.1.3 Site Conditions – Site conditions associated with Units 6, 7, and 10 and detailed in the Final SSWP are essentially identical to the site conditions associated with Unit 33.

10.1.5 QC Seeding Program – QC items will be seeded across the Units 7, 10 and 33 project areas. The current QC Seeding rate as outlined in Final SSWP for surface MEC removal is a **minimum** of one QC seed per 4 acres. QC seeding rate will be modified in accordance with *Final EM 200-1-15* performance requirements identified in *Table 11-6*(attached). QC seeds will be placed at Units 7, 10, and 33 at a rate of one QC seed to be potentially encountered per surface MEC removal team per day. Anticipated team field production rates will be used to establish seeding frequency at the start of the project in order to allow achievement of target rate. Actual team field production rates will be used to establish seeding frequency after the initial stages of the project (2-3 field days) in order to allow achievement of target rate.

Impact on present and completed work:

The additional work extends the schedule of remediation.

Recommended solution/disposition:

Attach this FWV to the Final SSWP and implement as recommended.

Clarification ☐ Minor Change ☐ Major Change ☒

Affects Budget Yes ☒ No ☐
Affects Schedule Yes ☒ No ☐

Signature Kevin Siemann Digitally signed by Kevin Siemann DN: cn=Kevin Siemann, o=Gilbane, ou=Northern Fed Proj CA, email=ksiemann@gilbanecom, c=US Date: 2013.12.19 10:00:30 -08'00' Date 19 Dec 13
Task Manager

Signature Bruce McClain Digitally signed by Bruce McClain DN: cn=Bruce McClain, o=ITSI Gilbane, ou=UXOQCS, email=bmcclain@itsi.com, c=US Date: 2013.12.19 10:33:33 -08'00' Date 19 Dec 13
SUXOS

Signature Tom Ghigliotto Digitally signed by Tom Ghigliotto DN: cn=Tom Ghigliotto, o=ITSI Gilbane, ou=CQCSM, email=tghigliotto@itsi.com, c=US Date: 2013.12.19 10:36:24 -08'00' Date 19 Dec 13
CQCSM

Signature Bruce McClain Digitally signed by Bruce McClain DN: cn=Bruce McClain, o=ITSI Gilbane, ou=UXOQCS, email=bmcclain@itsi.com, c=US Date: 2013.12.19 10:54:03 -08'00' Date 19 Dec 13
UXOQCS

Signature Steve Crane Date 20 Dec 13
Project Manager

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Deputy Project Manager

USACE Approval: If Major Change:

Signature MEEK.SHAWN.MICHAEL.1115801739 Date _____ Signature EISEN.DAVID.E.1231985146 Date _____

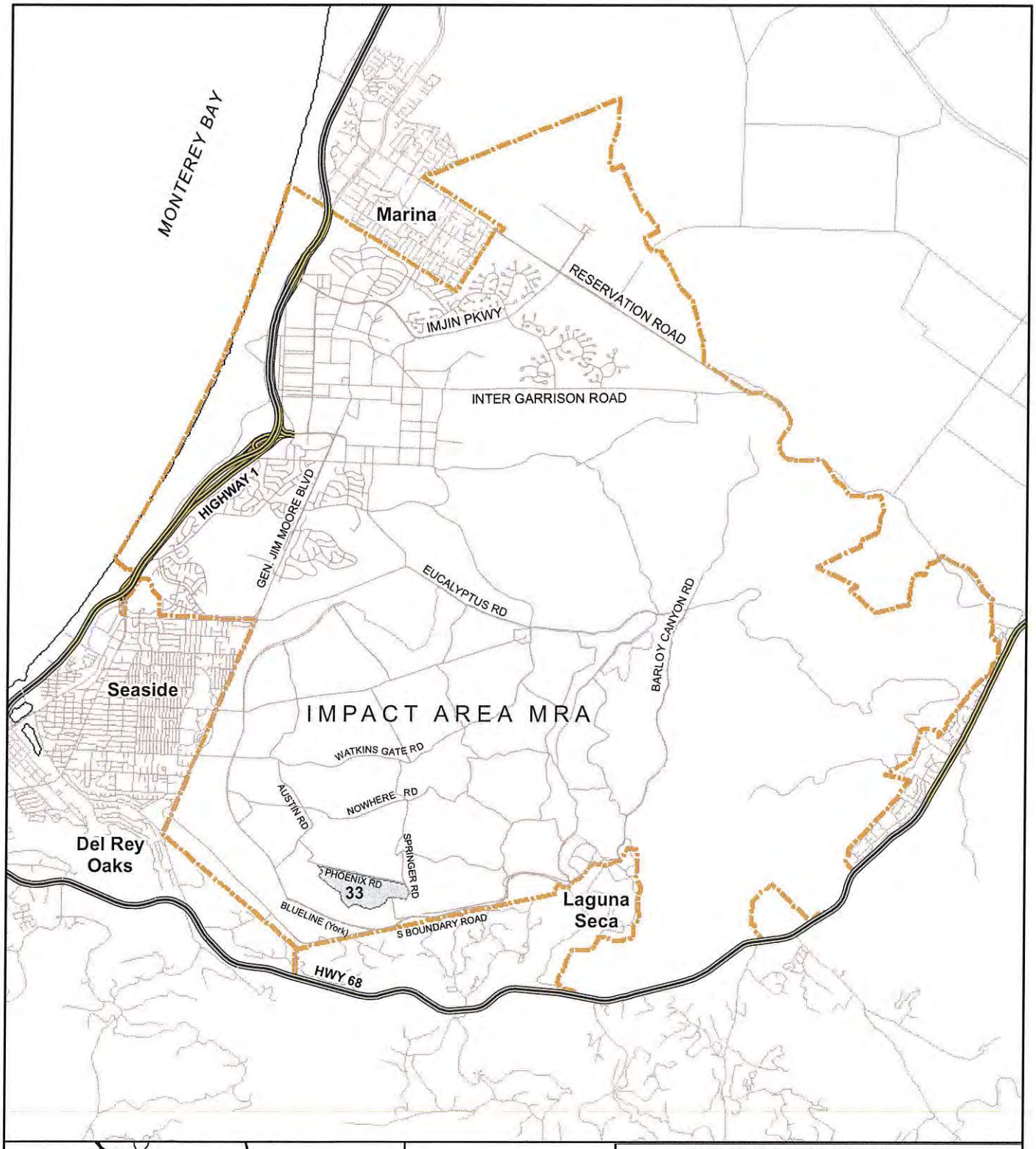
OE Safety Specialist

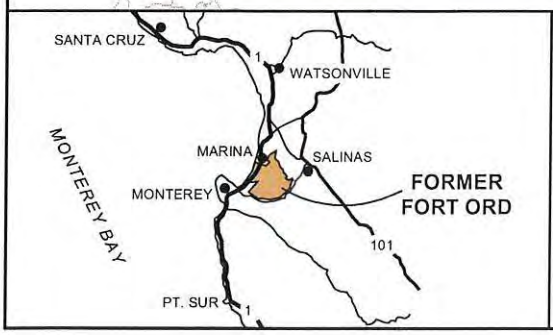
USACE COR or TM

Signature _____ Date

USACE Project Geophysicist

FIGURES





U.S. ARMY CORPS OF ENGINEERS
SACRAMENTO DISTRICT

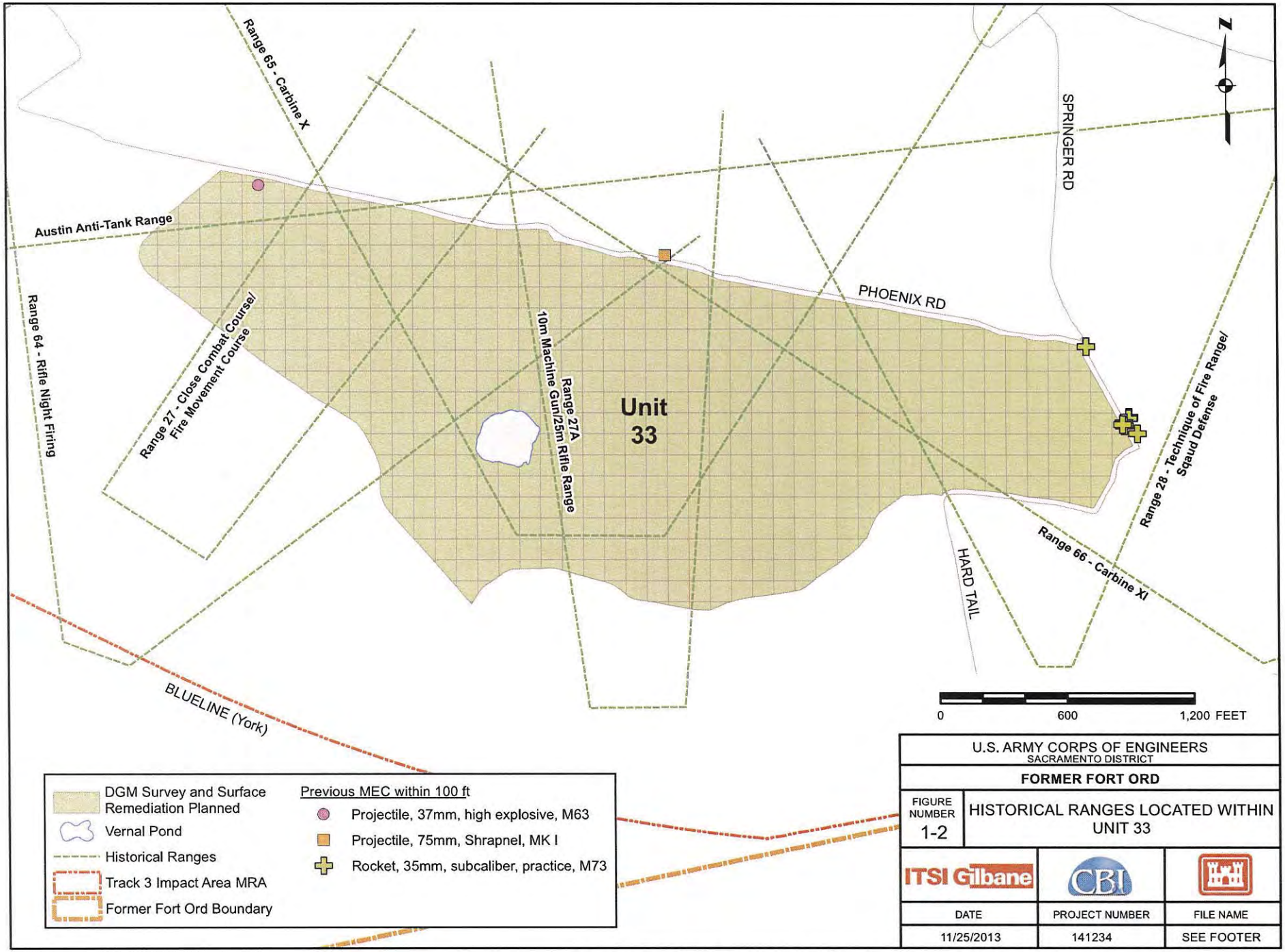
FORMER FORT ORD

FIGURE NUMBER	
1-1	UNIT 33 LOCATION MAP

ITSI Gilbane | CBI

DATE	PROJECT NUMBER	FILE NAME
11/25/2013	141234	SEE FOOTER

File Path:C:\GIS\Fort_Ord_GIS\BurnUnit6_33\GIS_Documents\Burn33_loc.mxd



File Path:C:\GIS\Fort_Ord_GIS\BurnUnit6_33\GIS_Documents\Burn33_ranges.mxd

ATTACHMENT
Final EM 200-1-15 Performance Table 11-6

Table 11-6: Performance Requirements for RA Using Analog Methods[a]

Requirement	Limited Applicability (Specific to Collection Method/Use)	Performance Standard	Frequency	Consequence of Failure[b]
Repeatability (instrument functionality)	All	All items in test strip detected (trains ear daily to items of interest)[c]	Min 1 daily[d]	Remedial training and additional remedial measures as described in the approved UFP-QAPP if due to operator error, or replacement of faulty equipment.[e]
Coverage, detection and recovery *	All	All blind coverage seeds and blind detection seeds recovered[f]	Per operator per lot[g]: variable 1-2 large/deep and 1-3 small/shallow[h]	Redo lot.
Anomaly resolution *[i]	Verification checking of excavated locations (analog or digital instrument)[j]	2nd party checks open holes to determine: 90% confidence < 1%[k] unresolved anomalies.[l] Accept on zero.	Rate varies depending on lot size[g]. See Table 6-6: Acceptance Sampling Table for Anomaly Resolution.[m]	Redo lot.
	Verification checking by DGM remapping[n]	90% confidence < 1%[k] unresolved anomalies.[l] Accept on zero.	Rate varies depending on lot size[g]. See Table 6-6: Acceptance Sampling Table for Anomaly Resolution[m].	Redo lot.
Geodetic equipment functionality *	All	Position offset of known/temporary control point within expected range as described in the approved UFP-QAPP.[o]	Daily	Redo affected work.

Requirement	Limited Applicability (Specific to Collection Method/Use)	Performance Standard	Frequency	Consequence of Failure[b]
Geodetic accuracy	Points used for RTK or RTS base stations	Project network must be tied to HARN, CORS, OPUS or other recognized network[p]. Project control points that are used more than once must be repeatable to within 5 cm	For points used more than once, repeat occupation[q] of each point used, either monthly (for frequently used points) or before re-use (if used infrequently[r]).	Reset points not located at original locations or resurvey point following approved UFP-QAPP.

Note: Performance metrics marked with an * are default values that may be changed by the PDT to suit project needs, potentially as a result of TPP decisions.

[a] These are the critical requirements for RA analog methods. Contractors shall use additional methods/frequencies that they deem beneficial and as required in their SOPs.

[b] All failures also require a root-cause analysis.

[c] The requirement is that each operator demonstrates positive detection on a daily basis of the smallest and largest expected MEC of interest when it is placed at both its best and worst orientations and buried between 95% and 100% of their respective maximum consistent detection depth. Maximum consistent detection depth is defined as producing any above background response on a minimum of the first three time gates of the EM61-MK2 optimized for site conditions and having a 0.9 m2 size or more as calculated using the Geosoft Oasis Montaj UCEAnalyseTarget.gx or equivalent routine.

[d] Random blind reconfiguration of test strip is also required (i.e., moving/adding items) at a frequency determined by the contractor and approved in the UFP-QAPP, to address the potential for simply memorizing seed locations.

[e] Some examples of additional remedial measures are removal of operator from mapping for one day, retesting on new blind strip meeting the same requirements for seed items (could move location of items in same area), and 100% QC reinspection of initial lanes by that operator.

[f] Coverage seeds are small pieces of metal that will produce relatively large amplitude anomalies over small areas, such as small nails or ball bearings. Known location accuracy of placement is not critical. See endnote #g for description of blind detection seeds.

[g] Contractor shall propose the lot size and criteria for designation (i.e., woods vs. open).

[h] Detection and recovery must be demonstrated consistently for the hard to detect items; therefore, seed items (e.g., ISOs) that are representative of the largest expected MEC and the smallest expected MEC shall be placed between 95% and 100% of their respective maximum consistent detection depth.

[i] Resolved is defined as 1) there is no geophysical signal remaining at the flagged/selected location, or 2) a signal remains but it is too low or too small to be associated with TOI, or 3) a signal remains but is associated with surface material which when moved results in low, or no signal at the interpreted location, or 4) a signal remains and a complete rationale for its presence exists.

[j] This requires leaving flags at excavated locations until QC is complete. If UXO technicians need to return to a flag during QC, then the failure has already occurred—it is not important that something large or small comes out of the hole. Assumption here is mapping coverage is addressed through other means. It is up to the contractor to indicate which holes knowingly have metal left in them where the PDT has agreed such is acceptable. It is the contractor's responsibility to not put hot material back in the hole before QC is complete.

[k] This is a statistical test number. These values have been used successfully on previous projects. The PDT may choose to modify the statistical confidence level or the number of unresolved anomalies that are allowable on a site-specific basis. The statistical test number does not imply there are 1% bad units. It tests there are fewer than 1% bad units, including zero bad units. Values for confidence levels will be determined by the PDT and are dependent on the information needed. Stopping rules will take precedence over this standard (i.e., for high MEC density, decision could be made to stop because the team has enough data for characterization).

[l] Unresolved anomaly means a significant signal remains without a complete rationale for its presence.

[m] For example, if lot size is 500, to achieve a 90% confidence that there are less than 5% unresolved anomalies, 43 anomalies must be rechecked. If any one of the 43 is unresolved, then the confidence level has not been met, the lot submittal fails, and all anomalies in that lot must be rechecked (i.e., accept on zero). The contractor shall propose the lot size for government concurrence (i.e., The contractor determines the amount of risk they are willing to take. The larger the lot, the less sampling needs to be done, but the larger the risk of increased costs/rework if failure occurs.). For anomaly resolution, in order to use statistics/confidence levels, it is based on number of anomalies not grids.

[n] Mapping shall cover the required number of anomaly locations. This is used in lieu of checking individual anomalies for those instances where it is quicker to remap sections of land rather than return to individual anomalies. Only the data at the anomaly locations are reviewed for resolution.

[o] Most high-accuracy systems should demonstrate repeatability between 5 cm and 10 cm. Typical accuracies achievable for some high-accuracy systems are 2 cm to sub-centimeter for RTK DGPS and RTS units depending on manufacturer and site conditions. Less accurate systems should demonstrate repeatability within manufacturer published ranges. Typical accuracies for less accurate systems are 5 m to submeter for WAAS or satellite correction service DGPS units depending on manufacturer, correction service and site conditions, and 30 m to 1 m for U.S. Coast Guard beacon corrected units depending on manufacturer.

[p] The plan for tying the project network to a common reference network must be described in the approved UFP-QAPP. If monumentation is part of the plan, specific monumentation procedures and DQOs also need to be specified and installation of monumentation or network control points shall follow all guidance and accuracies specified in EC 1110-1-73 "Standards and Specifications for Surveys, Maps, Engineering Drawings, and Related Spatial Data Products."

[q] Repeat occupation means demonstrate the control points being used can be recovered and reoccupied and that they have not moved more than the requirement specification. This can be accomplished using the same methodology used to initially tie the local network to a HARN, CORS, OPUS, or other recognized network, or it can be accomplished by other means that achieve this requirement.

[r] An example of frequently used control points would be points used as RTK DGPS base stations. Infrequently used points could be those used during RTS operations where the control point was used during mapping and then again at some later time for reacquisition and QC statistical sampling. Infrequently used points could also include grid corners they are used for line and fiducial positioning and then subsequently reused for reacquisition or QC statistical sampling.

ITSI Gilbane

Shaw Shaw Environmental, Inc.

Field Work Variance No. 03-019

Page 1 of 3

FIELD WORK VARIANCE

Project Name/Number	Fort Ord / 07202.2001	**WAD**	WAD 03
Applicable Documents	Final, Site-Specific Work Plan, Munitions and Explosives of Concern Remedial Action, MRS-BLM Units 1-5, Former Fort Ord, California (Units 1-5 SSWP) AR# OE-0626L	**Date**	December 3, 2014

Problem Description:

Following the vegetation removal in Unit 2 a significant number of range structures were identified, which included target boxes, soil backstops, and/or former military targets that have affected 24 grids (see Attachment 1). Many of the target boxes consisted of large and up to 10 ft deep non–engineered excavations which limit the ability of UXO staff to conduct removals, due to safety issues. Soil backfill is not readily available and on site soils cannot be utilized until chemical testing is conducted and determined to be not contaminated.

Recommended solution:

Surface MEC removal and digital geophysical mapping (DGM) survey in all grids within MRS-BLM Unit 2 will be completed in accordance with the Units 1-5 SSWP, with the exception of the 24 grids shown on the attached Figure 1. Contractor will place snow fence around excavations to mark excavations. Complete surface MEC removal and DGM survey to the extent possible in these remaining 24 grids. After target boxes are filled in and targets are removed, complete remaining surface MEC removal in these areas.

Include this Field Work Variance as an attachment to the Final Units 1-5 SSWP

Impact on present and completed work:

Will allow for timely completion of Unit 2 field work and documentation and will have minimal effect on project schedule and budget.

Recommended solution/disposition:

Implement as recommended.

Clarification ☐ Minor Change ☒ Major Change ☐

Affects Budget Yes ☒ No ☐

Affects Schedule Yes ☒ No ☐

Signature _____ Date 12/3/14
Task Manager

Signature _____ Date 12/3/14
SUXOS

Signature _____ Date 12/3/14
CQCSM

Signature _____ Date 12/3/14
UXOQCS

Signature Steve Crane Digitally signed by Steve Crane DN: cn=Steve Crane, o=Gilbane, ou, email=SCrane@gilbaneco.com, c=US Date: 2014.12.03 13:33:57 -08'00' Date _____
Project Manager

Signature Erin Caruso Digitally signed by Erin Caruso DN: cn=Erin Caruso, o=Gilbane Federal, ou=Environmental, email=ecaruso@gilbaneco.com, c=US Date: 2014.12.03 11:21:47 -08'00' Date _____
Deputy Project Manager

ITSI Gilbane

Shaw Shaw Environmental, Inc.

Field Work Variance No. 03-019

USACE Approval: If Major Change:

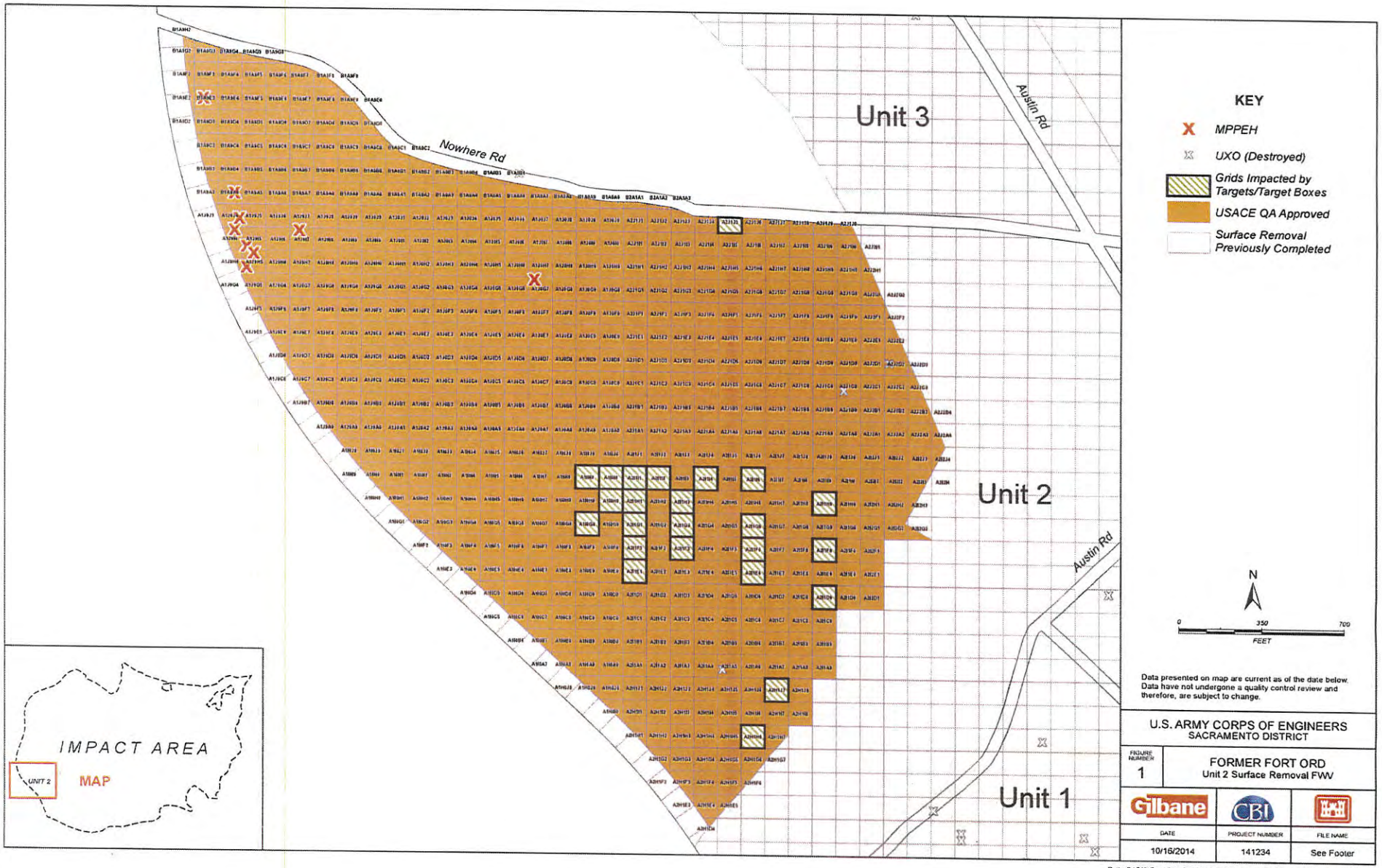
Signature _____ Date 12/4/14 Signature _____ Date _____

OE Safety Specialist

USACE COR or TM

Signature _____ Date _____

USACE Project Geophysicist



Data presented on map are current as of the date below. Data have not undergone a quality control review and therefore, are subject to change.

U.S. ARMY CORPS OF ENGINEERS
SACRAMENTO DISTRICT

FIGURE NUMBER	FORMER FORT ORD Unit 2 Surface Removal FWV
1	

DATE	PROJECT NUMBER	FILE NAME
10/16/2014	141234	See Footer

Path: C:\GIS\Fort_Ord_GIS\U2_3\Field_Documents\Projects\U02_surface_FWV.mxd

Distribution List:

FWV 003-020, Final, Site-Specific Work Plan, Munitions and Explosives of Concern, Remedial Action, MRS-BLM Units 1-5, Former Fort Ord, California

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	1	Mr. Tom Hall	Tech Law, Inc.	7 Shore Point	North Little Rock, AR	72116
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	1	Mr. Mike Weaver	Fort Ord Community Advisory Group (FOCAG)	52 Corral De Tierra Road	Salinas, CA	93908
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	1	Ms. LeVonne Stone	Fort Ord Environmental Justice Network (FOEJN)	P.O. Box 361	Marina, CA	93933
1	1	Admin Record	Fort Ord BRAC	4463 Gigling Road	Seaside, CA	93955

Approved: EISEN.DAVID.E.1231985146 Digitally signed by EISEN.DAVID.E.1231985146 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=EISEN.DAVID.E.1231985146 Date: 2015.02.11 09:58:21 -08'00'

David Eisen
USACE Project Manager

Field Work Variance No. 003-020

FIELD WORK VARIANCE

Project Name/Number	Fort Ord / 07202.2001	**WAD**	WAD 03
Applicable Documents	Final, Site-Specific Work Plan, Munitions and Explosives of Concern Remedial Action, MRS-BLM Units 1-5, Former Fort Ord, California (Units 1-5 SSWP) AR# OE-0626M	**Date**	February 9, 2015

Problem Description:

Current MEC field work protocols require stoppage of MEC removal activities when an item with an unknown filler is encountered by MEC removal teams. As of 2/9/15, surface MEC removal teams working in MRS-BLM Unit 3 have encountered eight 4-inch Stokes Mortars and one Livens Projector, all of which have resulted in stoppage of all field work in and around Unit 3. Following each encounter, a team was dispatched from Chemical, Biological, Radiological, Nuclear, Explosives (CBRNE) Command to make a determination as to the type of filler within the item. Delays resulting from CBRNE team mobilization times have had a significant cost and schedule impact on the project. All items to date were determined to contain screening smoke following further evaluation.

Recommended solution:

Modify current MEC field work protocols to allow MEC removal activities to continue if additional 4-inch Stokes Mortars or Livens Projectors are encountered in Unit 3. The former Fort Ord MEC project team has determined that continuing work following an encounter of an additional item poses negligent risk to field personnel. In the event additional items are discovered, the item will be marked using a GPS, covered with plastic, and surrounded with sandbags. Security for these items will be in place when MEC teams are not working within Unit 3. Plywood will be placed over the item. de

Impact on present and completed work:

Modification of current MEC field work protocols to allow MEC removal activities to continue if additional 4-inch Stokes Mortars or Livens Projectors are encountered in Unit 3 will allow work to be completed in a timely manner without cost or schedule impacts.

Recommended solution/disposition:

Implement as recommended.

Clarification ☐ Minor Change ☐ Major Change ☒

Affects Budget Yes ☒ No ☐

Affects Schedule Yes ☒ No ☐

Signature _____ Date 2/10/15

Task Manager

Signature Bradley J. Ols Date 2/10/15

SUXOS

Signature Erin Caruso Date 2/10/15

Project Manager

Gilbane

CBI

Field Work Variance No. 003-020

Signature _____ Date 2/10/15
CQCSM

Signature _____ Date 2/10/15
UXOQCS

Signature Steve Crane Digitally signed by Steve Crane DN: cn=Steve Crane, o=GILBANE, ou, email=steve.crane@gilbane.com, c=US Date: 2015.02.10 20:27:11 -05'00' Date 2/10/15
Deputy Project Manager

USACE Approval: If Major Change:

Signature _____ Date 2/10/15
OE Safety Specialist

Signature _____ Date 2/11/15
USACE COR or TM

Appendix B

Army-BLM Joint Inspection Summary

Joint Post-Remediation Inspection Summary

Subject: Joint Post-Remediation Inspection of Areas of Comment by the Bureau of Land Management to Munitions Response Site (MRS) – Bureau of Land Management (BLM), Units 1-3.

Area of Inspection: MRS-BLM Units 1-3

Date: May 11 and 19, 2015

Attendees: Eric Morgan, BLM; Bart Kowalski, Habitat Manager, Chenega, supporting Fort Ord Base Realignment and Closure (BRAC) (May 19); Lyle Shurtleff, United States Army, Fort Ord BRAC; Shawn Meek, Project Ordnance and Explosives Safety Specialist, United States Army Corps of Engineers (USACE); Dave Eisen Project Manager, USACE.

References:

1. BLM comments to Draft *Site Specific Work Plan (SSWP), Units 01-05,* October 10, 2007, Administrative Record (AR# OE-0626c).
2. *Draft Final Work Plan MRS-BLM Units 01-05 Munitions and Explosives of Concern Removal Former Fort Ord, California,* October 2007, Administrative Record (AR # OE-0626e), Appendix S, Response to Comments.

Background: In accordance with the Track 3 Record of Decision (ROD) the Army will conduct a general surface and limited subsurface MEC removal action and Digital Geophysical Mapping (DGM) of the area within the designated Impact Area. A subsequent inspection of the Munitions and Explosives of Concern (MEC) removal action by the future property recipient and land manager, BLM, is conducted at the completion of the action to determine if the results are supportive of the planned reuse.

It is an Army responsibility to provide MEC removal and/or construction support for subsurface activities jointly agreed upon prior to property transfer. It is anticipated that the BLM will receive the subject property with the completion of MEC remediation of all adjoining lands designated as MRS-BLM (anticipated 2021). With the transfer of the property, responsibility for construction support of subsurface activities thereafter will be in accordance with the *Record of Decision Impact Area Munitions Response Area Track 3 Munitions Response Site Former Fort Ord, California,* April, 2008 (Track 3 ROD) (AR # OE-0647).

Bureau of Land Management comments to *Site Specific Work Plan (SSWP), Units 01-05,* were addressed by the Army in Appendix S of *Draft Final Work Plan MRS-BLM Units 01-05 Munitions and Explosives of Concern Removal Former Fort Ord, California,* October 2007. However, the Army deferred a final response to some of the BLM comments in the same document pending completion of the Track 3 ROD and completion of the MEC removal in the locations subject to comment. The Track 3 ROD was signed in 2008. *Final Work Plan, Remedial Design (RD)/Remedial Action (RA), Track 3 Impact Area Munitions Response Area (MRA) Munitions and Explosives of Concern (MEC) Removal , Former Fort Ord, California,* August 2009 (AR# OE-0660K), outlines the overall program for the multi-year implementation of the selected remedy.

The Army has completed the actions described in the SSWP for Units 1-3 and 4. No further MEC removal action is planned for those areas (*Technical Memorandum Units 1-3* [AR # Pending]; *Final Remedial Action Report Units 4, 11, and 12* [AR # OE-0799B]). MEC removal actions in Unit 5 and 5a have been deferred pending scheduling of required vegetation removal.

Objective: This joint inspection provided an on-site assessment of the locations described in the BLM comments pertaining to Units 1-3. Areas that may require additional action or construction support are noted in this summary. Those requirements will be assessed and any appropriate actions will be described in the Remedial Action Report for the Units 1-3.

The inspection of the comment locations included:

- a visual assessment of the current status of vegetation cover and evidence of the MEC removal operations, and;
- topographic and habitat features, and;
- consideration of the BLM intended activities within the area and the possible construction activities likely necessary to achieve the desired conditions, and;
- a description of a likely schedule for those activities (pre or post-transfer).

The Army provided an on-site, preliminary assessment of the MEC safety requirements where appropriate for support of subsurface activities proposed by the BLM.

The inspection was intended to result in a mutually acceptable description of a preferred pre-transfer course of action to achieve a suitable MEC safety status for the subject areas and each comment location. The Army will evaluate completed MEC removal work, DGM, and surface monitoring data for all comment locations to determine an appropriate level of MEC construction support required for the BLM activities described in the associated comments. An interim determination will be included in the Remedial Action Report for the subject area and a final determination will be included in the Track 3 Remedial Action Completion Report.

Comments by Bureau of Land Management Pertaining to Units 1-3:

Comment 1:
"This letter is in response to the Draft Work Plan MRS- BLM Units 01-05, Munitions and Explosives of Concern Removal, Former Fort Ord, California (Draft Work Plan) that was released for review on September 10, 2007. The Bureau of Land Management (BLM) appreciates the efforts of the Army in cleaning up munitions and explosives of concern (MEC) at the former Fort Ord, and the partnership that our agencies have forged over the last 12 years in this regard. We look forward to the day when these lands can be cleanup up and transferred to support a successful reuse of the former military installation.

These are the first 5 units being considered for action under the Track 3 Impact Area Munitions Response Remedial Investigation/Feasibility Study Former Fort Ord California (Track 3 RI/FS). At this time the Record of Decision for the Track 3 RI/FS has not been completed and the BLM is unaware of how our comments on that document have been responded to. As such, it is difficult to frame our comments on the Draft Work Plan without knowing how the greater issues have been resolved (or not) in regards to our Track 3 RI/FS comments."

Response to Comment 1: In the 2007 draft final work plan, the Army responded: "Comments on the final Track 3 RI/FS and Proposed Plan are currently being evaluated as part of the Army's consultation with the regulatory agencies. There will be an additional opportunity to comment on this WP prior to implementation."

The 2008 Track 3 ROD included the Army's responses to BLM comments on the Track 3 RI/FS and Proposed Plan. In those comments, BLM identified "minimum requirements," without which the implementation of habitat management commitments cannot be realistically achieved by any landowner. The Army responded that the proposed cleanup alternative identified in the Proposed Plan addressed

many of the requirements, and several items were added to the selected remedy to accommodate the "minimum requirements" where it was determined to be within the scope of the CERCLA remedy.

Results of Inspection: BLM and other comments to the Track 3 RI/FS and Proposed Plan were evaluated by the Army. A mutually acceptable plan was then codified in the Track 3 ROD. The inspection did not provide additional information regarding this comment.

Comment 2:
"One concern we have with this Work Plan is that it appears to only cover an immediate removal action with no follow up inspections or evaluations. Under the Track 3 RI/FS following MEC surface removals, annual MEC inspections were proposed until the vegetation grows back. The intent of these additional inspections was to ensure that MEC does not become exposed from erosion following the surface removals. The BLM submitted comments on that evaluation and explained that we felt that surface cleared areas needed to be evaluated annually for at least 5 years from the cleanup and any subsequent burn. As you know, we believe that several areas that were surface cleared only in Range 43-48 munitions response site have new MEC that has been exposed to the surface due to rain and wind erosion. The Work Plan must disclose this long-term MEC site protection program."

Response to Comment 2: In the 2007 draft final work plan, the Army responded: "This Work Plan is intended to address the MEC removal immediately following prescribed burning. Annual evaluations of surface cleared areas will be addressed under the Remedial Design/Remedial Action Work Plan for the Track 3 areas."

The 2008 Track 3 ROD included "annual inspections following surface MEC removal to identify and address erosion-prone areas, until vegetation growth is sufficient to minimize erosion at the site" (page 40). The 2009 Track 3 RD/RA WP provided general procedures for these inspections (page 18).

Results of Inspection Reference Comment 2: The joint inspection of Units 1-3, included a discussion of the future prescribed burning and surface monitoring on the units. It was agreed that the current Track 3 Surface Monitoring Program (AR# OE-0660K) will address the concerns expressed by the BLM in regards to monitoring for surface MEC and long-term MEC site protection of Units 1-3. Surface monitoring annual reports including the area of Units 1-3 will be available in the administrative record beginning 2016.

Comment 3 Work Plan Section 1.5 Reuse:
"The land that includes MRS-BLM Units 01-05 is designated for habitat reserve under the *Installation-Wide Multispecies Habitat Management Plan* (HMP) *for former Fort Ord* (USACE 1997a), which describes special land restrictions and habitat management requirements within reserve areas. Habitat reserve areas support special status plant and animal species that require implementation of mitigation measures during Army cleanup activities identified in the HMP to ensure compliance with the Endangered Species Act (ESA) and to minimize potential adverse impacts to listed species.

Attached you will find several maps that delineate our reuse scenarios covering Units 01-05. While our management is mindful of our habitat management commitments under the *Installation-Wide Multispecies Habitat Management Plan* (HMP) *for former Fort Ord* (USACE 1997a), it has always been the BLM's intention to provide compatible recreation opportunities on this land. On the reuse maps, we have identified existing fuel break roads and new fuel break roads that we feel must receive a subsurface MEC removal to depth. These fuel break roads generally have a 15-foot wide travel lane, and 15-feet of vegetation clearance on both sides of the road edges. These routes would also serve as public access trails where non-motorized visitors would be allowed day-time access. We currently restrict visitors on our

existing 7,200 acres to our designated trail system (i.e. signed open and shown on our trail maps) and we get pretty good compliance with these restrictions.

Also on the reuse maps we have delineated old Army roads and/or associated gullies that require subsurface disturbance with machinery in order to restore. Some of the old Army roads require minimal work to restore; this work may include occasional water bars that are cut across the roadside beams to prevent channelized water flow down the former roads. Other roads have compaction and require cross ripping with heavy machinery. We request a subsurface MEC removal in these areas to support this restoration work.

The reuse maps also show former range sites that have substantial disturbance (some are lead remediation sites) and we believe that restoration would require substantial subsurface disturbance with machinery in order to restore and stabilize. These areas also require subsurface MEC removal in order to support these operations.

Finally, the reuse maps show public access parking opportunity sites. These sites are along the boundaries of the property where fuelbreak roads (public access trails) extend beyond the property onto the development parcels. Not all of these sites would be developed into parking areas should the development parcels include public access parking opportunities into their reuse plans. However, should the adjoining development lands not support these public access corridors (and fuelbreaks roads) into their reuse plans, then the fuelbreaks or trails would become dead end roads/trails that terminate at the parcel boundary. Should this unfortunate situation occur, the routes would not be designated as recreational trails, however, ample space would need to be provided at the end of these fuelbreaks to enable fire-fighters and equipment to reverse their direction and exit. These turn around areas may also need to serve as fire safety zones where machinery and equipment could take refuge at the property boundary on a site of adequate vegetation clearance. Under both scenarios (i.e. public access parking or safety zones/turn around areas) MEC subsurface clearance needs to be conducted to support the future use of the site.

The reuse information provide in the attached maps is based upon minimal reconnaissance of the area and the BLM expects that following the burn operations, better route alignments can be delineated as staff would not be hampered by brush. We propose that these future fuelbreak/public access routes be layed out in the field following the burn operations"

Response to Comment 3: In the 2007 draft final work plan, the Army responded: "Existing and new fuel break roads are scheduled to receive subsurface removal to a width of 45'. Old Army roads and/or associated gullies that involve subsurface disturbance in order to restore are not included in the planned subsurface removal area under this Work Plan. These restoration activities can be supported by UXO construction support as detailed in the Track 3 RI/FS. With regard to the former range sites that have substantial disturbance, remedial actions to address MEC in these areas will be coordinated with the proposed lead contaminated soil remediation activities under the Site 39 program. Therefore, these areas were not included in the subsurface removal areas under this Work Plan. The potential sites for future public access parking and equipment staging are not included in the planned subsurface removal areas under this Work Plan. The Army will consider subsurface removal areas once their locations and uses are confirmed. The system of interior roads and fuel breaks that will be cleared of MEC, and the ingress/aggress locations, have been coordinated with the Presidio of Monterey Fire Department and no fire truck turn-around location have been identified as necessary."

The Army will ensure that any MEC removal actions or construction support considered necessary for MEC remediation or habitat management prior to transfer are recorded for future use by the BLM. With

the transfer of the property, responsibility for MEC removal actions and construction support for improvements to the property involving subsurface activities will be in accordance with the Track 3 ROD.

The current permanent fuel break roads, potential public parking and access areas, and possible restoration areas identified in the BLM comments were visited during joint inspections.

Results of Inspection Reference Comment 3, Maps 1-3 (attachment 1): Due to the multiple maps involved in comment 3 this summary addresses the related comments by issue as referenced below:

> **Issue 1, Reclamation and/or Stabilization of Discontinued Roads.** "Some of the old Army roads require minimal work to restore; this work may include occasional water bars that are cut across the roadside beams to prevent channelized water flow down the former roads. Other roads have compaction and require cross ripping with heavy machinery. We request a subsurface MEC removal in these areas to support this restoration work."
>
> **Inspection Results Reference Issue 1.** The inspection of Units 1-3 resulted in agreement that several of the roads that were designated as temporary fuel break roads (see map) and/or possibly requiring ripping for restoration or stabilization (see map) in 2007 are being reclaimed by the adjacent habitat without further intervention and/or are not currently anticipated as required prescribed burn temporary fuel breaks. This agreement significantly reduces the need for subsurface MEC removal described in the BLM comments.
>
> Some roads observed during the inspection are currently stable however, impacts from recent Army actions may result in future erosion requiring restoration or stabilization (see map). It was agreed that the current Surface Monitoring Program (AR# OE-0660K) in conjunction with observations during conduct of the Army's weed abatement program will be sufficient to identify future erosion events. The Army may provide construction support for actions by the BLM to stabilize and or rehabilitate those areas in accordance with the Track 3 ROD. The Army will continue to coordinate with the BLM in regards to future actions in the area of Units 1-3.
>
> Within Unit 1, the BLM anticipated the need to have a long-term fuelbreak using Austin Road, Phoenix Road (segment) and Foul Bore Road exiting near the York School soccer and football fields. At the end of Austin Road and Foul Bore Road, the BLM proposed a large area that could potentially be developed into trailheads, staging areas, or turn-around sites. In designating these fuelbreaks in Unit 1, the BLM anticipated the need to disturb the sub-surface for maintenance and mowing. As such, the BLM requested a sub-surface MEC remediation for a 45' wide prism along these fuelbreak roads. Furthermore, the BLM delineated a few roads between Foul Bore Road and the Blue Line Road that could be used to support future prescribed burn operations. The BLM has no intention of maintaining these roads as permanent fuelbreaks, but plans to reestablish these roads if and when needed for future operations. The BLM requests a sub-surface MEC remediation for a 45' wide prism along these fuelbreak roads as well.
>
> For Unit 1, the Army has performed a 45' wide prism of subsurface MEC cleanup along Austin Road and Phoenix Road, but only a 15' wide prism of subsurface MEC cleanup along Foul Bore Road. The BLM requests the Army to provide the full 45' width of subsurface MEC cleanup to support subsurface disturbance along Foul Bore Road. The BLM requests the Army to provide a 200' by 200' wide subsurface MEC cleanup to support of proposed reuse at the intersection of Austin Road and Foul Bore Road with the Blue Line Road. The BLM is concerned that the future fuelbreak roads did not receive any subsurface MEC cleanup, and requests that the 45'

wide prism of subsurface MEC cleanup either occur now, or the Army must ensure that this work will occur if and when proposed for future use, even if this use is post-transfer.

Within Unit 2, the BLM anticipated the need to have a long-term fuelbreak using Austin Road and Nowhere Road. At the end of Austin Road and Nowhere Road, the BLM proposed a large area that could potentially be developed into trailheads, staging areas, or turn-around sites. In designating these fuelbreaks in Unit 2, the BLM anticipated the need to disturb the sub-surface for maintenance and mowing. As such, the BLM requested a sub-surface MEC remediation for a 45' wide prism along these fuelbreak roads. Furthermore, the BLM delineated a few roads between Austin/Nowhere Road and the Blue Line Road that could be used to support future prescribed burn operations. The BLM has no intention of maintaining these roads as permanent fuelbreaks, but plans to reestablish these roads if and when needed for future operations. The BLM requests a sub-surface MEC remediation for a 45' wide prism along these fuelbreak roads as well.

For Unit 2, the Army has performed a 45' wide prism of subsurface MEC cleanup along Nowhere Road, but only a 15' wide prism of subsurface MEC cleanup along Foul Bore Road. The BLM requests the Army to provide the full 45' width of subsurface MEC cleanup to support subsurface disturbance along Foul Bore Road. The BLM requests the Army to provide a 200' by 200' wide subsurface MEC cleanup to support of proposed reuse at the intersection of Austin Road and Nowhere Road with the Blue Line Road. The Army did conduct a 15' wide subsurface removal over some of the temporary fuelbreaks that BLM identified. The BLM is concerned that the future fuelbreak roads did not receive any subsurface MEC cleanup, and requests that the 45' wide prism of subsurface MEC cleanup either occur now, or the Army must ensure that this work will occur if and when proposed for future use, even if this use is post-transfer.

Within Unit 3, the BLM anticipated the need to have a long-term fuelbreak using Austin Road, Nowhere Road and Watkins Gate Road. At the end of Nowhere Road and Watkins Gate Road the BLM proposed a large area that could potentially be developed into trailheads, staging areas, or turn-around sites. In designating these fuelbreaks in Unit 3, the BLM anticipated the need to disturb the sub-surface for maintenance and mowing. As such, the BLM requested a sub-surface MEC remediation for a 45' wide prism along these fuelbreak roads. Furthermore, the BLM delineated a few roads between Austin/Nowhere Road and the Blue Line Road that could be used to support future prescribed burn operations. The BLM has no intention of maintaining these roads as permanent fuelbreaks, but plans to reestablish these roads if and when needed for future operations. The BLM requests a sub-surface MEC remediation for a 45' wide prism along these fuelbreak roads as well.

For Unit 3, the Army has performed a 45' wide prism of subsurface MEC cleanup along Watkins Gate Road, Austin Road, and Nowhere Road. The BLM requests the Army to provide a 200' by 200' wide subsurface MEC cleanup to support of proposed reuse at the intersection of Watkins Gate Road and Nowhere Road with the Blue Line Road. The Army did conduct a 15' wide subsurface removal over some of the temporary fuelbreaks that BLM identified. The BLM is concerned that all of the future fuelbreak roads did not receive complete subsurface MEC cleanup, and requests that the 45' wide prism of subsurface MEC cleanup either occur now, or the Army must ensure that this work will occur if and when proposed for future use, even if this use is post-transfer.

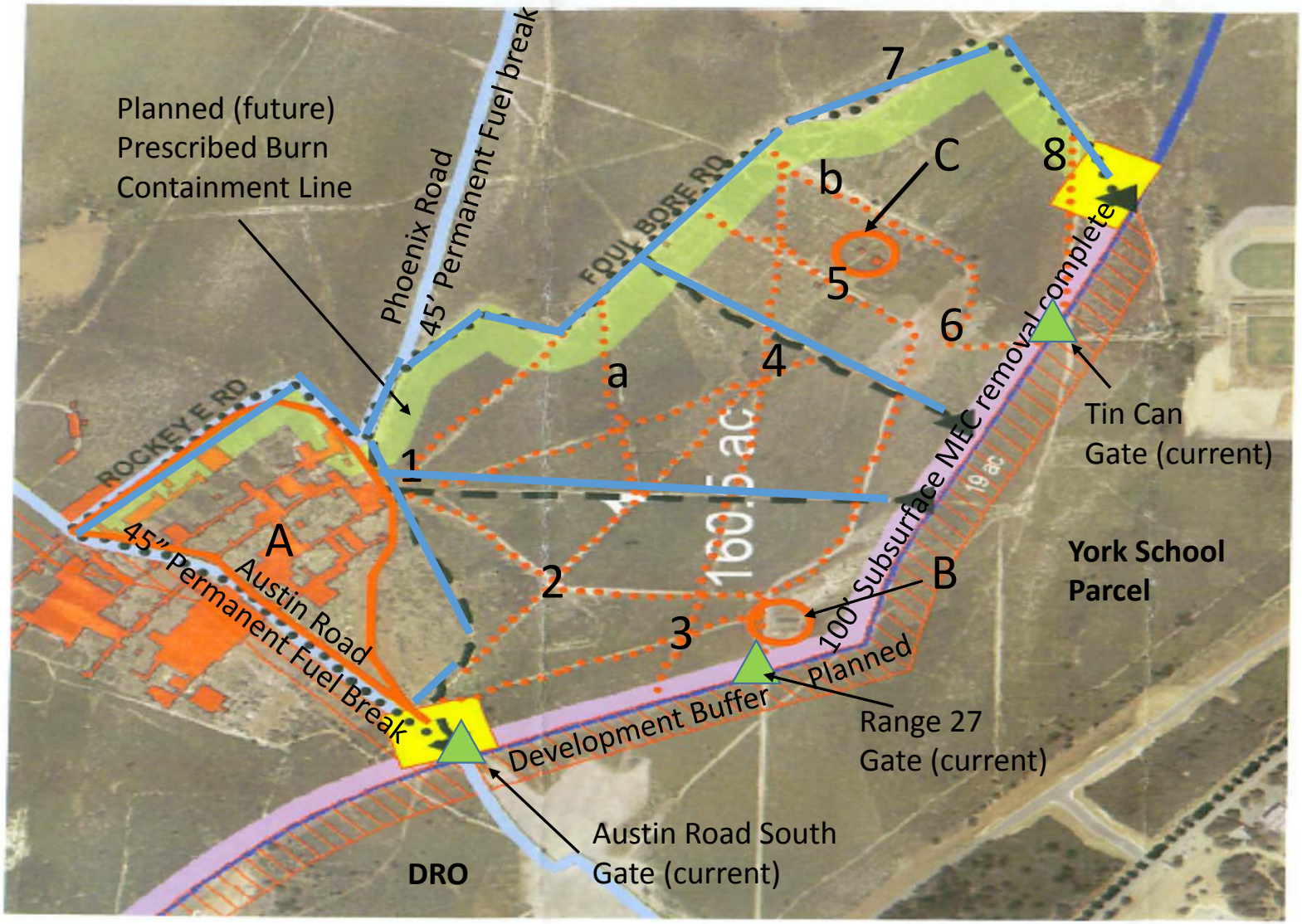
The Army will perform additional subsurface removal actions on areas described in the BLM comments to the SSWP so as to provide 45' subsurface on those fuelbreaks.

Issue 2, Future Public Parking and Access Areas. "Finally, the reuse maps show public access parking opportunity sites. These sites are along the boundaries of the property where fuel break roads (public access trails) extend beyond the property onto the development parcels. Not all of these sites would be developed into parking areas should the development parcels include public access parking opportunities into their reuse plans. However, should the adjoining development lands not support these public access corridors (and fuel break roads) into their reuse plans, then the fuel breaks or trails would become dead end roads/trails that terminate at the parcel boundary. Should this unfortunate situation occur, the routes would not be designated as recreational trails, however, ample space would need to be provided at the end of these fuel breaks to enable fire-fighters and equipment to reverse their direction and exit. These turn around areas may also need to serve as fire safety zones where machinery and equipment could take refuge at the property boundary on a site of adequate vegetation clearance. Under both scenarios (i.e. public access parking or safety zones/turn around areas) MEC subsurface clearance needs to be conducted to support the future use of the site. The reuse information provided in the attached maps is based upon minimal reconnaissance of the area and the BLM expects that following the burn operations, better route alignments can be delineated as staff would not be hampered by brush. We propose that these future fuel break/public access routes be laid out in the field following the burn operations."

Inspection Results Reference Issue 2: The possible public access parking areas indicated in the BLM comments were inspected. The development described by the BLM of these areas is anticipated. The Army will assess the characteristics of the development areas adjacent current 100' buffer and take the appropriate action to establish the development area described. The Army may specify construction support for development described by the BLM in accordance with the Track 3 ROD in these areas.

Issue 3, Restoration/Stabilization of Lead Remediation Sites. "The reuse maps also show former range sites that have substantial disturbance (some are lead remediation sites) and we believe that restoration would require substantial subsurface disturbance with machinery in order to restore and stabilize. These areas also require subsurface MEC removal in order to support these operations."

Inspection Results Reference Issue 3. The Army provided that current and planned lead remediation sites where habitat restoration is anticipated will have a MEC removal action completed that is supportive of those actions and subsequent management. In areas where previous use results in habitat impact due to erosion (roadways or range features), the Army may provide construction support for actions by the BLM to stabilize and or rehabilitate those areas in accordance with the Track 3 ROD. The Army will continue to coordinate with the BLM in regards to future actions in the area or Units 1-3.



Unit 1

Joint Inspection Results

A-C Soil Remediation Sites Subject to Recovery or Restoration

1-8 Roadways to be Observed for Recovery/ Erosion

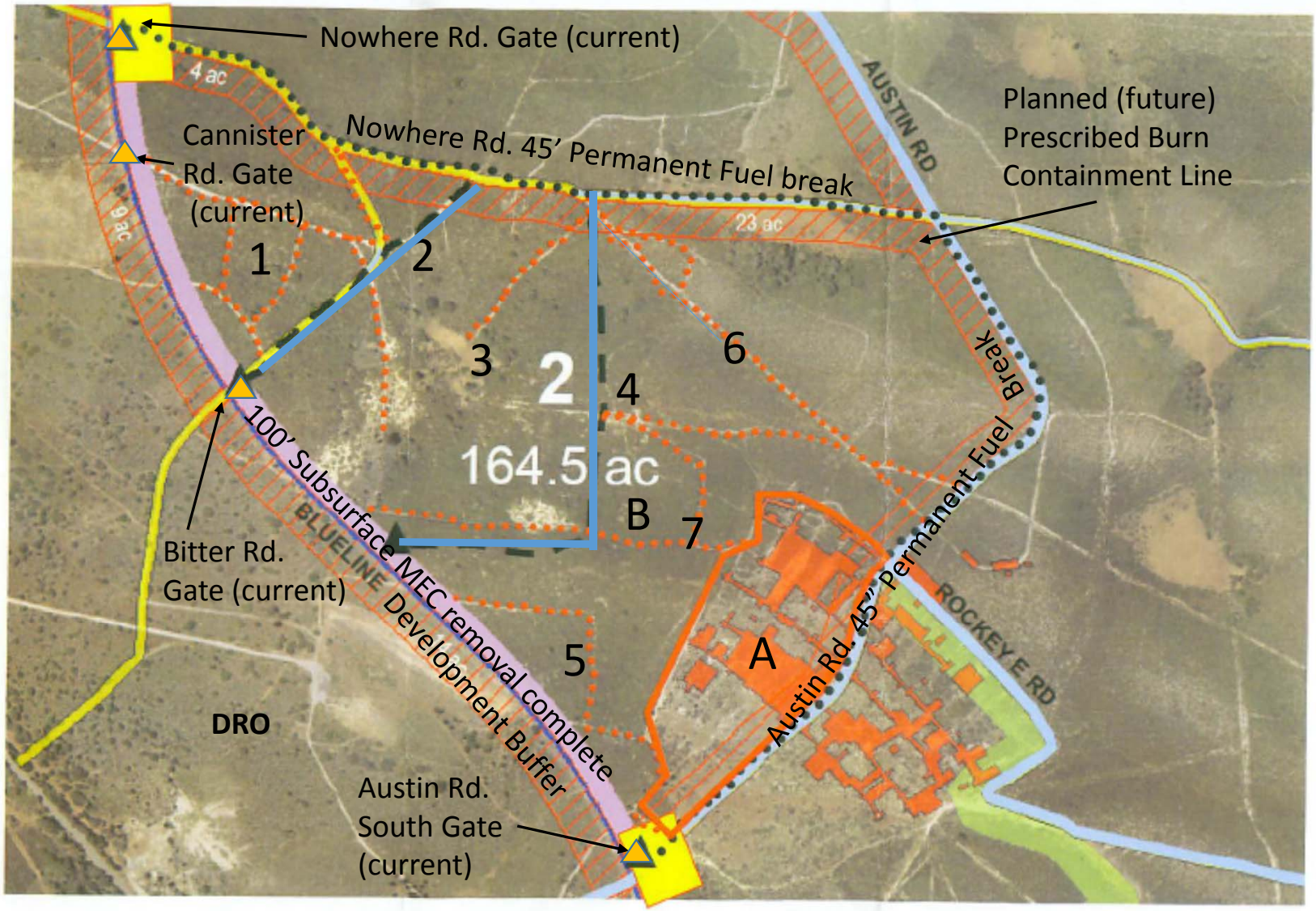
a-b Erosion to be Monitored

Temporary Fuel breaks. Army to complete subsurface MEC Removal to 45' Width

Future 200x200' Parking Area. 100x100' Subsurface Removal complete. Remainder Pending Assessment by Army

July 2015

Atch 1, Map 1



Unit 2

Joint Inspection Results

A-B Soil Remediation Sites Subject to Recovery or Restoration

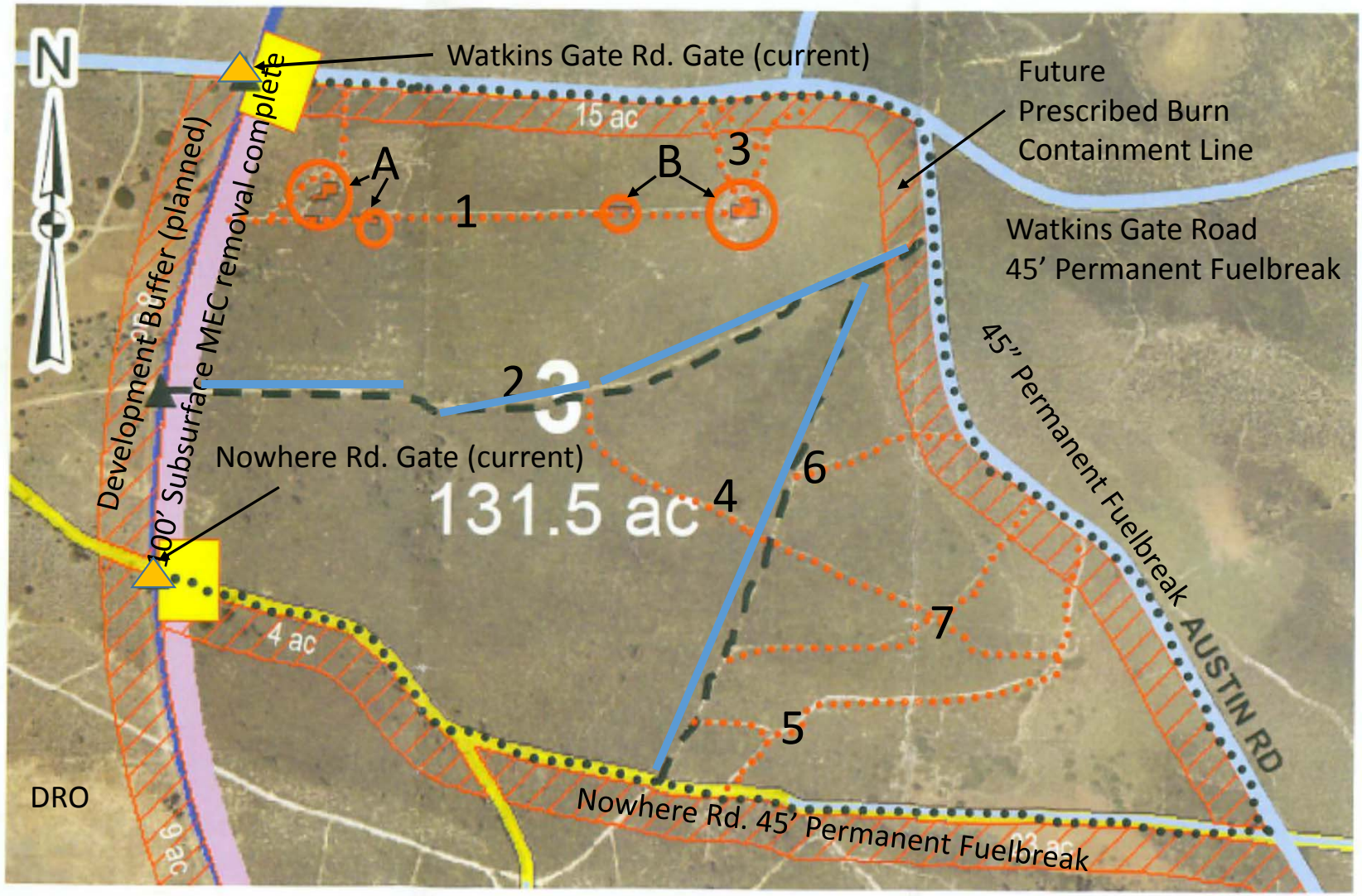
1-7 Roadways to be Observed for Recovery/ Erosion

Temporary Fuel breaks. Army to complete subsurface MEC Removal to 45' Width

Future 200x200' Parking Area. 100x100' Subsurface Removal complete. Remainder Pending Assessment by Army

July 2015

Atch 1, Map 2



Unit 3

Joint Inspection Results

A-B Soil Remediation Sites Subject to Recovery or Restoration

1-7 Roadways to be Observed for Recovery/Erosion

Temporary Fuelbreaks. Army to complete subsurface MEC Removal to 45' Width

Future 200x200' Parking Area. 100x100' Subsurface Removal complete. Remainder Pending Assessment by Army

July 2015 Atch 1, Map 3

Appendix C

DGM QA Approval and Discussion

FORMER FORT ORD, CALIFORNIA
UNITS 1, 2, & 3
FINAL QUALITY ASSURANCE REPORT:
DIGITAL GEOPHYSICAL OPPERATIONS

PREPARED BY
GEOLOGY SECTION
SACRAMENTO DISTRICT
U.S. ARMY CORPS OF ENGINEERS

PREPARED FOR
FORT ORD BASE REALIGNMENT AND CLOSURE (BRAC) OFFICE

DECEMBER 2015

1.0 INTRODUCTION

This report covers the Quality Assurance (QA) processes conducted by the U.S. Army Corps of Engineers (USACE) with respect to the collection, processing, and evaluation of digital geophysical data collected by ITSI Gilbane Company (ITSI Gilbane, formerly Innovative Technical Solutions, Inc.; hereafter referred to as GILBANE). The field work was performed in Units 1, 2 and 3. Work was performed under WERS Contract No. W912DY-10-D-0024, Task Order No. CM 01, Site-Specific Work Plan MRS-BLM Units 1-5, and associated Field Work Variances (FWV). The field protocols, database management, and QA reviews were based on the methods previously in other units and described in the MEC Procedures Supplement, along with additional procedures necessary for ensuring compliance with the WERS MMRP contract. USACE QA verified that GILBANE had an adequate QC program in place and that data collected in Units 1, 2, and 3 were in accordance with the project Data Quality Objectives (DQOs) and Measurement Quality Objectives (MQOs). Units 1, 2, and 3 did not include any areas recommended for subsurface removal and were collected in their entirety to meet Category B data; however, as discussed later, a limited subsurface removal has been recommended to address the 4-inch Stokes Mortar. The following report provides a summary of the QA activities to support the above conclusion.

1.1 Site details

Units 1, 2, and 3 are on the western edge of the Impact Area Munitions Response Area that is planned to be transferred to BLM, as depicted in Figure 1. The area is bounded by fuel breaks on all sides, encompassing a total of approximately 435 acres. Actual data production in these units includes the 100-foot buffer bounded by the perimeter; however, that area was addressed in a separate QA report.

Prior to this field effort only 4 UXO had been found, but during the surface clearance, over 100 individual UXO items were located and destroyed. Items included the 4-inch Stokes Mortar (with an unknown filler), which resulted in several calls to CBERNE to assess the mortars for liquid filler indicative of a chemical round. All were determined to be smoke filled. Future work will be addressed by the Fort Ord BRAC office in a Technical Memorandum.

According to the Installation-Wide Multispecies Habitat Management Plan (HMP) for Fort Ord (USACE 1997), the site will be transferred to BLM to be used as an undeveloped habitat reserve. The area is mostly covered by maritime chaparral and grassland habitats. Its terrain is dominated by rolling hills with elevations ranging from 420–450 ft above sea level (ASL). These hills are composed of sand associated with Pleistocene aged sand dunes that may be as thick as 250 ft.

Clean-up operations pertinent to DGM activities were initiated with a vegetation clearance followed by an instrument aided surface removal. All three units were collected as part of the Category B data collection, as no subsurface removal is planned for these units.

2.0 QA ACTIVITES

2.1 Data collection methods

Production geophysical data were collected using Geonics EM-61MKII electromagnetic sensors in a multi-coil configuration (towed array). The EM-61MKII is a time-domain electromagnetic sensor that generates an electromagnetic pulse, inducing eddy currents within the subsurface. During the off period of the EM pulse, the eddy current decay produces secondary electromagnetic fields within both ferrous and non-ferrous metallic objects. These secondary electromagnetic fields are received and recorded over four averaged time gates per data collection interval (10Hz).

Data were collected either as individual grids or in grid blocks of variable size consisting of multiple grids. All data collected met the Category B line spacing requirements, with 98% not to exceed a lane spacing of 3.5 ft. As stated in the MEC Procedures Supplement, the purpose and objective for the Category B DGM surveys is to obtain high quality DGM data in order to characterize the site for overall anomaly distribution and density. Obstacles and issues with terrain precluded 100% coverage and all data gaps were appropriately documented in the obstacle file. Figure 2 of this QA report depicts the full DGM dataset for Units 1, 2, and 3.

2.2 Field oversight

Field oversight was performed intermittently throughout the project by both the USACE Project Geophysicist and OESS. Appropriate field procedures were reviewed and found to be in compliance. As there were no Category A areas, no USACE QA data were collected.

2.3 Geophysical System Verification

Under the WERS contract, USACE and GILBANE moved to further incorporate the physics based Geophysical System Verification (GSV) approach as described in the July 2009 ESTCP report and supported by DID WERS-004.01. GSV includes two methods for providing QA/QC- blind seeding and the instrument verification strip. All data measurement quality objectives were achieved. Instrument response was demonstrated to be repeatable and above the minimum expected response as depicted in Charts 1 & 2. An exception in horizontal ISOs at 4” was documented in the IVS Memorandum with site specific response metrics utilized instead of NRL expected values. This can be seen in Chart 2 by the red ‘x’ symbols below the 25% dashed line.

Chart 1

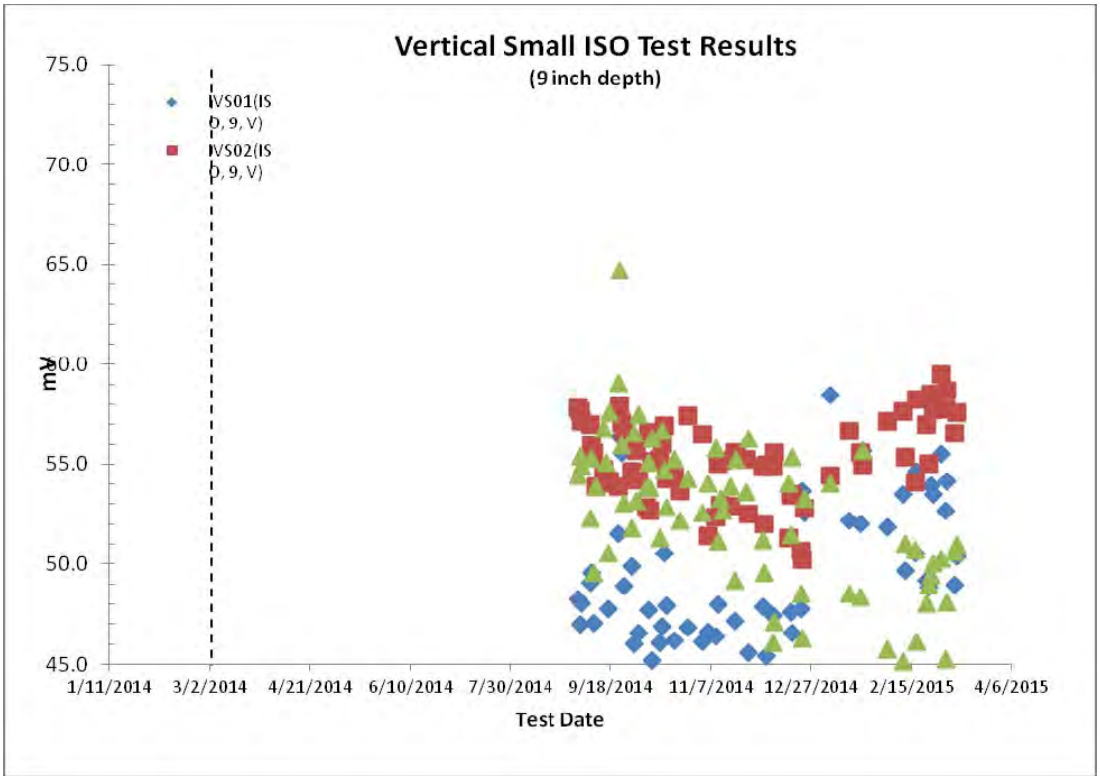
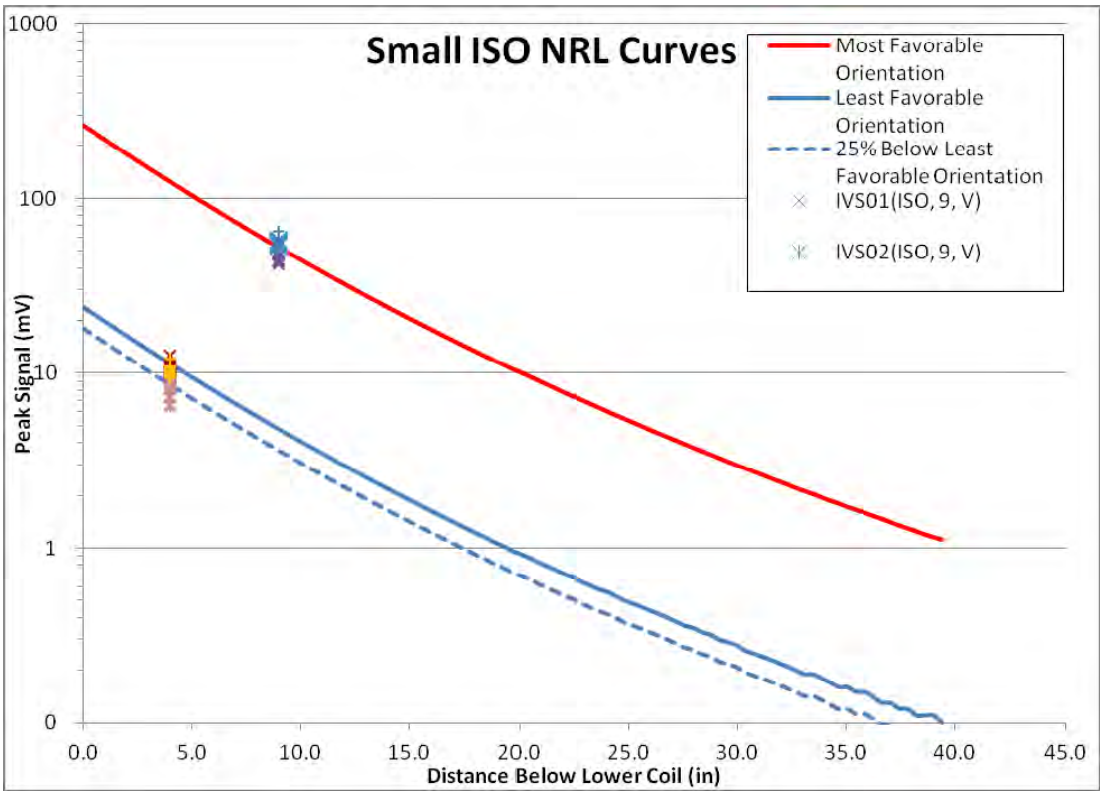
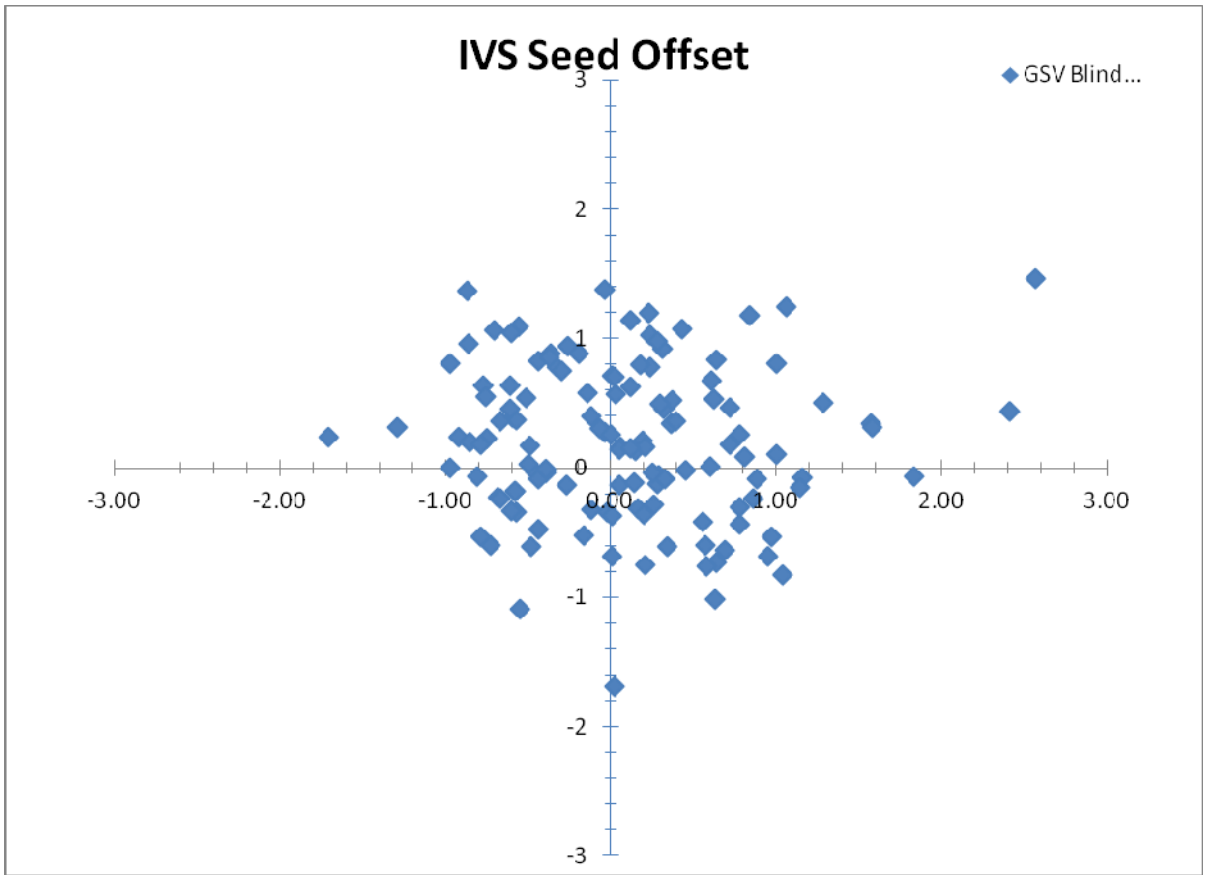


Chart 2



In addition to the twice daily instrument verification strip checks, blind seeds were placed throughout the survey area. Due to the high anomaly densities and rough terrain throughout the site, there are no measurement quality objectives related to anomaly amplitude. However, some of the lower than expected values were spot checked and issues such as terrain were to blame. One exception was verified by QC and QA to be a seed that was buried 1.5 inches too deep. These issues are further addressed in the Units 7, 10, and 33 QA report. Positioning MQOs were tracked and all met 95% less than 2.5ft as depicted in Chart 3.

Chart 3



2.5 Digital data review

A review of digital geophysics data by the USACE was performed to monitor the effectiveness of data processing and consistency of data delivery. Issues that were reviewed in these data included:

1) Missing survey lines within a grid (interline gaps)
2) Data "gaps" along survey lines
3) Bowing out of survey lines beyond 50% of survey line spacing
4) Unreasonable data "spikes"
5) Data incongruity across survey grids (data levels in one grid are not reasonably compatible with data levels in neighboring grids)
6) Inadequate data density along survey traverse
7) Lack of accurate, precise locations; survey line orientation
8) Inadequate/incomplete site survey coverage
9) Missing, incomplete, or noncompliant instrument standardization checks
10) Completeness of file header information and supporting documentation
11) Consistent IVS and GSV results supporting the data quality objectives

To accomplish this, all raw and processed data files were checked by the USACE to ensure that GILBANE followed an appropriate and informative naming convention reflecting the

grids surveyed as outlined in the DID WERS-004.01. The USACE checked that GILBANE managed the field and processed data in a professional manner, including organization, daily maintenance, and complete documentation. The transfer and delivery of data were achieved via an ftp site where raw (pre-processed) and final processed data was delivered in 5 business days after collection. The USACE performed 100% verification of the accompanying documentation for completeness and accuracy. This focused on a review of header files on the pre-processed data (data that has merged into a single file and synchronized with the GPS data) and processed data to verify that dates were consistent, systems and system sampling parameters were identified, project name and contractor was listed, and all column headers were included and defined. GILBANE also delivered supporting summary sheets that further documented field parameters and processing. All of the summary sheets were reviewed for completeness, verification of calibration data and consistency to the electronic data file headers.

The procedure for reprocessing and projecting the pseudo-color maps of the DGM Category B data included starting with a 100% review of the data in Geosoft Oasis Montaj to include releveling and regridding. These digital data were imported into Geosoft for the generation of psuedo-color maps that were then exported as a georeferenced geotif.

Overall, the general QA digital data review consisted at a minimum of:

1) creating a processed database
2) importing XYZ data
3) calculation of sum channel
4) generating a grid (0.25 cell size and blanking distance of 2-ft) of sum channel
5) plotting the sum channel
6) plotting a symbol cover for the track lines (view coverage)
7) exporting the plots to geotifs
8) importing the geotifs into a GIS

2.7 Corrective Action Request

There were no CARs issued associated with geophysical data collection.

3.0 CONCLUSIONS

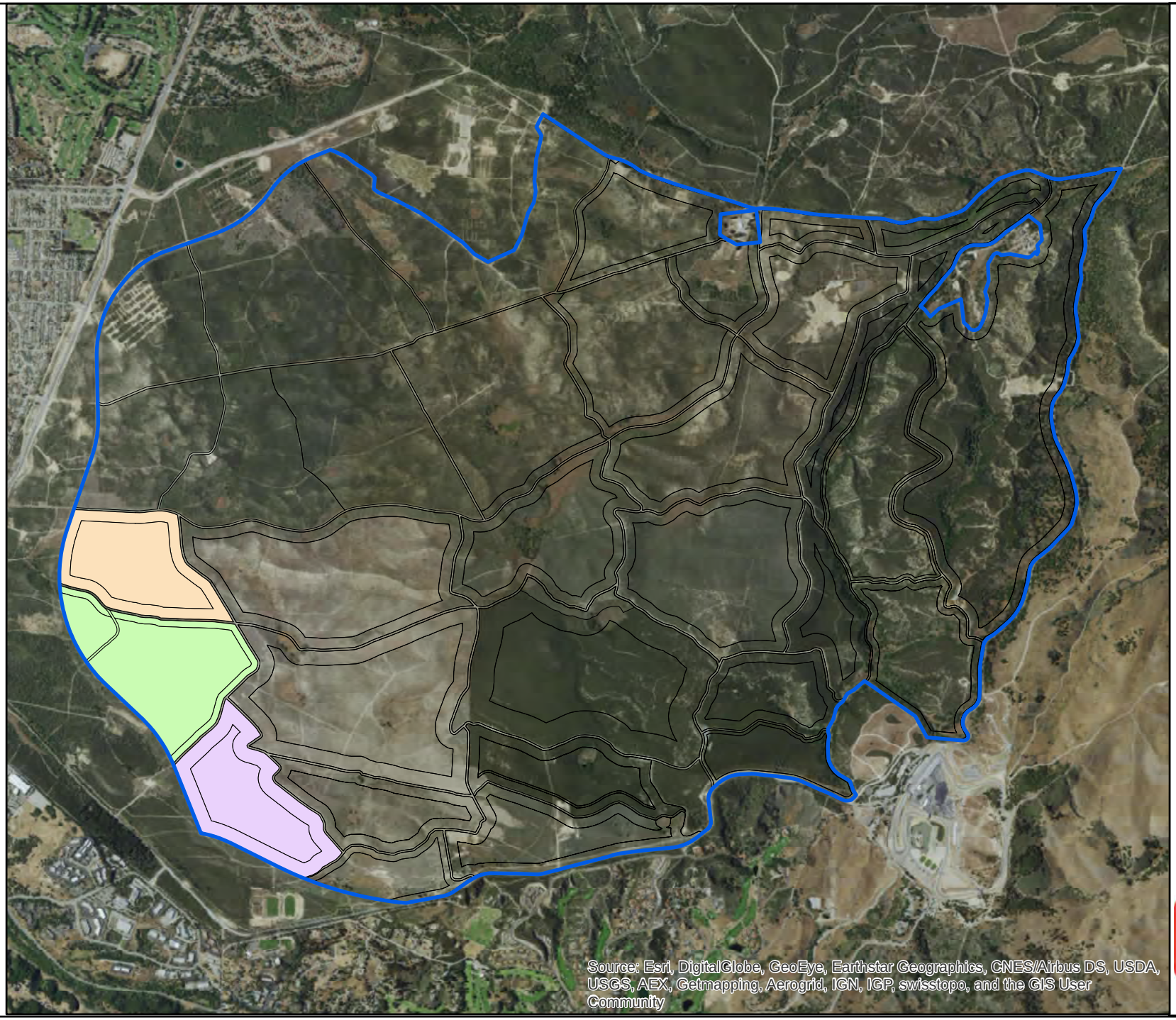
QA activities by the Government verified GILBANE had an adequate QC program in place and that data collected within Units 1, 2, and 3 are sufficient and in accordance with the project DQOs. Furthermore, the data exceeds the minimum quality necessary (Category A) to select targets associated with 4-inch Stokes mortars in the event of a limited subsurface removal.

4.0 LESSONS LEARNED

A list of issues observed or suggestions for future projects is presented below:

a. Issues with zip file corruption affected various data files during QA review. It is recommended that USACE/BRAC maintain multiple copies of the data in the event of data corruption. To address this recommendation, BRAC will maintain one complete digital record on their server and USACE-SPK will maintain one complete digital record on a hard drive in Sacramento.

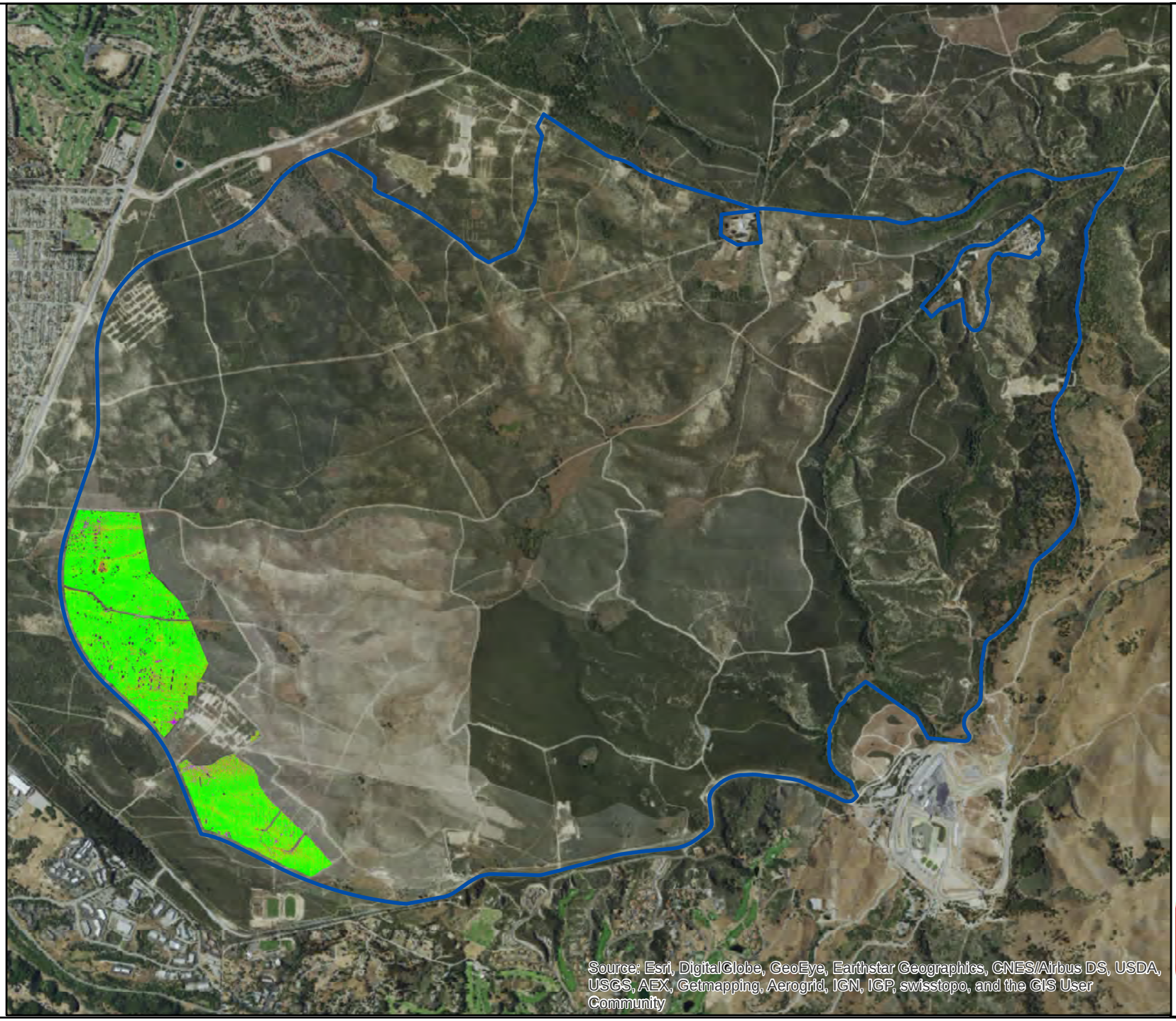
5.0 FIGURES



Units 1, 2, & 3

MRS-BLM Units 1, 2, &3
Fort Ord, CA

Final **Figure 1**



Legend

Impact Area Boundary (Track 3)

12
12
11
10
10
9
8
8
7
6
6
5
4
4
3
2
2
1
0
mV

N

Feet

0 2,100 4,200

DGM- EM61 Data

MRS-BLM Units 1, 2, &3
Fort Ord, CA

Final **Figure 2**

Appendix D

Responses to Comments

RESPONSES TO COMMENTS

Document:	Draft MRS-BLM 1, 2, 3 Munitions and Explosives of Concern (MEC) Remedial Action Technical Information Memorandum, Former Fort Ord, California, August 2015.
Commenting Organization:	U.S. Environmental Protection Agency (EPA)
Name:	Lewis Mitani
Date of Comments:	October 1, 2015

General Comment 1:

The Draft MRS-BLM 1, 2, and 3 Munitions and Explosives of Concern (MEC) Remedial Action Technical Information Memorandum, dated June 2015 (hereinafter referred to as the "Draft MRS-BLM 1, 2, 3 MEC RA TIM"), contains inconsistent information concerning the 4-inch Stokes mortars that were recovered during the remedial action. The inconsistency is related to the descriptive terms used in the various portions of the document. For example, Section 6.0 states that, "During the munitions response in Unit 3, seven 4 inch Stokes mortars (screening smoke) and one Livens Projector (screening smoke) were encountered and removed." This would seem to indicate that seven of the Stokes mortars had the nomenclature of "screening smoke." However, Tables 2 and 4 lists these items as 4 "screening smoke," 3 "smoke, hexachloroethane," and 1 "smoke, WP" 4-inch Stokes mortars. Both the nomenclature and the total number of 4-inch Stokes mortars found which contain smoke producing materials do not match. Please review the entire document and revise it as necessary to ensure that the number and types of 4-inch Stokes mortars recovered are consistent.

Response to General Comment 1:

The text in Section 6.0 has been revised as follows: "During the munitions response in Unit 3, eight 4 inch Stokes mortars (4 screening smoke, 3 smoke, hexachloroethane, and 1 smoke, WP) and one Livens Projector (screening smoke) were encountered and removed. Although all nine items were subsequently confirmed to contain smoke fillers, these items also have the potential to be used for delivery of chemical gas."

Specific Comment 1:

Section 1.0, Introduction, Page 1: This section notes that, "This TM [Technical Memorandum] summarizes the work applicable to Units 1, 2, and 3 that was conducted in accordance with the *Final Site-Specific Work Plan, Munitions and Explosives of Concern Remedial Action, MRS-BLM Units* 1-5, *Former Fort Ord, California* (Final SSWP; Shaw, 2008) and Field Work Variance (FWV) 03-018 which is described further in Section 3.0." However, a review of Section 3.0, Approved Changes During Field Work, noted that there are two additional FWVs listed (03-019

and 03-020), and these affect the fieldwork accomplished or the processes to be employed. Please revise the cited statement from Section 1.0 to include these two FWVs or provide an explanation as to why they should not be included there.

Response to Specific Comment 1:

A reference to FWVs 03-019 and 03-020 has been added to Section 1.0.

Specific Comment 2:

Table 1, MEC Items Encountered and Removed Prior to Operations Covered in TM, Page 1 of 8: The table employs a number of acronyms that are not defined in a footnote thereto. These include "UXO," "DMM," and "ISD." In addition, the Depth column lists the depth of one munitions item as "NULL" with no explanation as to what this indicates. Please provide a footnote to the table that defines each of the acronyms/terms noted.

Response to Specific Comment 2:

A revised Table 1 has been included with the revised version of the TM. Definitions of the acronyms listed in Table 1 have been added as footnotes. The recovery depth for the item found on 12/22/09 has been updated to zero (inch). In addition, the description and grid identification of the item found on 5/19/94 have been corrected.

Specific Comment 3:

Appendix C, DGM [Digital Geophysical Mapping] QA [Quality Assurance] Approval and Discussion, Section 1.0, Introduction, Page 3: This section notes that, "The field protocols, database management, and QA reviews were based on the methods previously in other units and described in the MEC Procedures Supplement, along with additional procedures necessary for ensuring compliance with the WERS MMRP contract." It is unclear as to the complete identity of the listed MEC Procedures Supplement, as none is identified by organization and date in Section 8.0, References, in the body of the memo. Please include the identity of the referenced document in the noted References section.

Response to Specific Comment 3:

The 2011 version of the MEC Procedures Supplement was in effect when this work was performed. A reference to the MEC Procedures Supplement (ITSI, 2011) has been added to Section 8.0 of the TM.

Specific Comment 4:

Appendix C, DGM QA Approval and Discussion, Section 2.1, Data collection methods, Page 4: The last sentence in the second paragraph of this section notes that, "Figures 2 depicts the full DGM dataset for Units 1, 2, and 3." It is unclear what exactly is intended by the "Figures 2" statement. Please revise the cited sentence to better present the intended information.

Response to Specific Comment 4:

The sentence has been revised as follows: "Figure 2 of this QA report depicts the full DGM dataset for Units 1, 2, and 3."

Specific Comment 5:

Appendix C, DGM QA Approval and Discussion, Section 3.0, CONCLUSIONS, Page 8: The last sentence in the section states, "Furthermore, the data exceeds the quality necessary (Category A) to select targets associated with 4.2-inch mortars in the event of a limited subsurface removal." While the 4.2-inch mortar is being used as a proxy item to represent the geophysical signature of a 4-inch Stokes mortar, it is the Stokes mortar that is the subject of the geophysical mapping, and not the 4.2-inch mortar. Please revise the cited sentence to replace the term "4.2-inch mortar" with the term "4-inch Stokes mortar."

Response to Specific Comment 5:

The sentence has been revised as follows: "Furthermore, the data exceeds the minimum quality necessary (Category A) to select targets associated with 4-inch Stokes mortars in the event of a limited subsurface removal."

Specific Comment 6:

Appendix C, DGM QA Approval and Discussion, Figures 1 and 2: These figures appear to confuse the lines representing the left and right range limit lines with the firing lines from which the weapons are fired. In addition, it is unclear as to what is indicated by the lines marked as "HA," and the reasons for the two different colors for the lines that appear to represent the left and right limits for the depicted ranges. Please review the noted figures and identify the firing lines by a specific color, the left and right limits by a different color, and define what is intended by "HA" in the legend.

Response to Specific Comment 6:

References to firing lines and Historical Areas (HAs) were errantly included and have been removed.

RESPONSES TO COMMENTS

Document:	Draft MRS-BLM 1, 2, 3 Munitions and Explosives of Concern (MEC) Remedial Action Technical Information Memorandum, Former Fort Ord, California, August 2015.
Commenting Organization:	Department of Toxic Substances Control
Name:	Ed Walker
Date of Comments:	October 13, 2015

Specific Comment 1:

Figure 3 presents a false color map of geophysical data based on a four channel sum response. It is not clear from this figure or in the TM which discrete anomalies are a close proxy for a 4 inch Stokes mortar at a maximum depth of 12 inches representing a (277 mV) response. The TM indicates there are a total of 109 subsurface anomalies recommended for removal in the AOI shown on Figure 7. It is unclear if there are only 109 anomalies exceeding a 277 mV threshold or if only a selection of anomalies based on unspecified criteria have been selected. DTSC recommends that all anomalies exceeding the 277 mV response be presented in a figure along with the locations of munitions listed in Figure 7. Please provide further rational for the selection of only the 109 anomalies discussed.

Please provide further detail on how the area of interest (AOI) identified in Figure 7 was selected. In the context of this document, DTSC is assuming the munitions listed in Figure 7 are munitions associated with a potential pattern of use of munitions that could contain unknown fillers. The TM identifies that the potential exists for Stokes mortars and Livens Projectors to remain in the shallow subsurface in this AOI. While the majority of the munitions in Figure 7 are within the identified AOI, there is a distribution of similar munitions outside of the identified AOI. Based on Figure 7, it appears that the AOI should be expanded.

DTSC recommends that a buffer area around all munitions that may be indicative of use of munitions of unknown fillers be used to establish an AOI. All anomalies within this buffer that could represent munitions of unknown fillers to a maximum depth of 12 inches should be evaluated for subsurface removal.

Response to Specific Comment 1:

As a result of the comment, the Area of Interest (AOI) within Unit 3 has been revised (expanded) to include a two grid (200 foot) buffer around grids where live 4” Stokes mortar projectiles and Livens Projector were encountered and removed during surface removal. Additionally, the millivolt threshold has been reduced from 277 mV to 250 mV to be more conservative. There are now 126 anomalies exceeding the 250 mV threshold in the AOI as

shown on the revised Figure 7. All of the 126 anomalies will be intrusively investigated to depths of up to 12 inches. The revised Figure 7 includes both anomalies exceeding the 250 mV threshold along with the locations of live 4" Stokes mortar projectiles and Livens Projector encountered and removed from Unit 3.

The AOI has been expanded to include the two items in the southern portion of Unit 3. The initial AOI has also been expanded to include a two grid (200 foot) buffer around grids where live Stokes mortar projectiles and Livens Projector were encountered and removed. The AOI does not extend into the footprint of the 100-ft buffer where subsurface MEC removal was previously completed.

The Naval Research Laboratory (NRL) EM61 response curves do not include an entry for a 4" Stokes mortar projectile or Livens Projector, therefore, the values for a 4.2" mortar projectile was used as a reasonable surrogate for anomaly selection. Based on the NRL response values, a 4.2" mortar projectile at 12 inches below ground surface will have a minimum EM61 channel 2 response of 277mV. This value was initially used to identify anomalies within the AOI that could represent 4" Stokes mortar and Livens Projector items. To be more conservative, the millivolt threshold has been reduced from 277 mV to 250 mV. This increased the number of anomalies meeting the threshold within the expanded AOI to 126. All of the 126 anomalies will be intrusively investigated.

Specific Comment 2:

Section 7.0, sentence five is unclear. It states that remedial action objectives except completion of prescribed burning have been met, but then identifies some other follow up activities. Please provide more specific recommendations in section 7.0 on activities needed to complete the remedial action objectives, particularly for the activities associated with FWV 03-019. It is preferred that figures be added to the main body of the report which identify all areas where further work is needed to complete the remedial action objectives. This would include areas where:

- target boxes, soil backstops and military targets precluded 100% completion of surface MEC removal and DGM survey as identified in Field Work Variance From 03-019,
- planned reuse by the Bureau of Land Management will require additional subsurface MEC removal,
- anomalies exceeding the 277 mV response are a close proxy item for a munition with an unknown filler at a maximum depth of 12 inches

Response to Specific Comment 2:

Section 7.0, the referenced sentence has been revised as follows: The following additional work is recommended as part of the remedial action for Units 1, 2, and 3:

- limited subsurface anomaly investigation/removal within Area of Interest in Unit 3, as shown on Figures 7 and 8,
- completion of field work in 24 grids addressed in FWV 03-019 and shown on Figure 8, and
- subsurface MEC removal in areas such as temporary fuel breaks and administrative access areas where planned reuse by the BLM will require additional subsurface MEC removal, as described in Appendix B and shown on Figure 8.

An additional figure (Figure 8) to identify the additional recommended work has been added to the TM.

RESPONSES TO COMMENTS

Document:	Draft MRS-BLM 1, 2, 3 Munitions and Explosives of Concern (MEC) Remedial Action Technical Information Memorandum, Former Fort Ord, California, August 2015.
Commenting Organization:	Fort Ord Community Advisory Group (FOCAG)
Name:	Mike Weaver
Date of Comments:	October 06, 2015

General Comment 1:

Page 9 of this document informs us that Stokes mortars and Livens Projector have the potential to be used for the delivery of chemical gas. It states, "Since the filler of these items cannot be confirmed visually, they are generally classified as munitions with unknown fillers."

Chemical weapons' training on former Fort Ord has long been a concern of the FOCAG. On page 10 it states, "The USACE recommends removal of subsurface anomalies that could represent these unknown filler items to a depth of 12 inches." The FOCAG asks what if some of these unknown filler items do contain chemicals and they go off in an Army Prescription Burn? Will the people in the downwind areas of Toro likely get this smoke?

Response to General Comment 1:

As stated in Section 6.0, since the filler of these items cannot be confirmed visually, they are generally classified as munitions with unknown fillers. Surface MEC removal has been completed in Units 1/2/3 and those nine items that were initially classified as munitions with unknown fillers were subsequently confirmed to contain smoke fill. Similar items that were previously encountered at the former Fort Ord have all been confirmed to have contained smoke fill. Any additional such items are likely to contain smoke fill. USACE recommended removal of subsurface anomalies that could represent these unknown filler items to a depth of 12 inches to address the extremely unlikely scenario that one of these items contains chemical gas and detonates during a prescribed burn. This recommended subsurface removal will also address the uncertainty that an unknown filler item could be encountered in the future, necessitating time-consuming procedures that could impact the planned long-term reuse of the property by BLM.

General Comment 2:

We note that Units 1, 2, and 3 are immediately adjacent to the cities of Seaside and Del Rey Oaks. These immediately adjacent areas are currently planned for development. The FOCAG remains concerned about burial pits that are far deeper than 12 inches.

Burial pits were a common way to dispose of both spent and leftover munitions. The proximity of Units 1, 2 and 3 to areas FORA plans for development is very troubling.

Former Fort Ord is, and remains, a dangerous place.

Response to General Comment 2:

This comment is noted. The Track 3 ROD remedy includes subsurface removal in a buffer area along the habitat-development border. This buffer work along the western boundary of Units 1/2/3 has been completed and documented in the Draft Final Impact Area MRA 100-foot Buffer MEC Remedial Action Technical Information Paper, Fort Ord, CA (Administrative Record number: OE-0854A).

Appendix G
Draft Final Impact Area MRA 100-foot Buffer, MEC Remedial Action Technical Information Paper

TRANSMITTAL MEMORANDUM

To:	Distribution	**Date:**	9/30/15
Subject:	Draft Final Impact Area MRA 100-foot Buffer, MEC Remedial Action, Technical Information Paper, Former Fort Ord, California		
DCN:	07202.2001.296		

Enclosed for your review and comment is the *Draft Final Impact Area MRA 100-foot Buffer, MEC Remedial Action, Technical Information Paper, Former Fort Ord, California.* This document describes technology-aided surface and subsurface munitions and explosives of concern (MEC) remediation and Digital Geophysical Mapping conducted within the Impact Area MRA 100-foot Buffer in accordance with the *Final, Site-Specific Work Plan, Munitions and Explosives of Concern Remedial Action, Non-Burn Areas, Former Fort Ord, California* (Administrative Record Number OE-0685D).

Comments are requested by November 4, 2015 and should be sent to:

William K. Collins
BRAC Environmental Coordinator
U.S. Army Fort Ord BRAC Field Office
P.O. Box 5008
Monterey, CA 93944-5008
Fax: 831-393-9188

Comments may be submitted in electronic format or by fax; however, they must be followed up with a hard copy sent through the U.S. Postal Service or hand delivered to the Fort Ord Administrative Record. All hardcopy comments must be received by close of business on the designated comment period deadline. The Army will accept comments after this deadline, but cannot guarantee that they will be incorporated in the document.

Should you have any questions, please contact Community Relations, U.S. Army, Fort Ord BRAC Field Office at (831) 393-1284 or by e-mail at melissa.m.broadston.ctr@mail.mil.

Distribution List: Draft Final, Impact Area MRA 100-Foot Buffer, Munitions and Explosives of Concern Remedial Action, Technical Information Paper, Former Fort Ord, California

CD	Paper	Name	Organization	Address	City, State	Zip
1	1	Mr. James Specht	Department of the Army USACE	1325 "J" Street	Sacramento, CA	95814
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1		Mr. David Eisen	Department of the Army USACE, Fort Ord BRAC	4463 Gigling Road	Monterey, CA	93944
1		Mr. Lyle Shurtleff	Department of the Army, Fort Ord BRAC	4463 Gigling Road	Monterey, CA	93944
1		Mr. William Collins	Department of the Army, Fort Ord BRAC	4463 Gigling Road	Monterey, CA	93944
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1	1	Mr. Ed Walker	DTSC	8800 Cal Center Drive	Sacramento, CA	95826-3200
1		Mr. Steve Crane	KEMRON Environmental Services	2934 Gold Pan Court, Suite 12	Rancho Cordova, CA	95670
1		Mr. Tom Hall	TechLaw, Inc.	7 Shore Point Road	North Little Rock, AR	72116
1	1	Mr. Lewis Mitani	U.S. Environmental Protection Agency (EPA), Region IX	75 Hawthorne Street (Mail Code SFD-8-3)	San Francisco, CA	94105
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Impact Area MRA 100-Foot Buffer
Munitions and Explosives of Concern
Remedial Action
Technical Information Paper
Draft Final

Former Fort Ord, California

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September 2015

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September 2015

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Acronyms and Abbreviations

ARAR	Applicable or Relevant and Appropriate Requirement
Army	U.S. Department of the Army
BLL	Black Legless Lizard
BLM	Bureau of Land Management
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CQCSM	Contractor Quality Control Systems Manager
CTS	California Tiger Salamander
DGM	Digital Geophysical Mapping
DTSC	Department of Toxic Substances Control
EPA	U.S. Environmental Protection Agency
FFA	Federal Facility Agreement
FS	Feasibility Study
FWV	Field Work Variance
GPS	Global Positioning System
HMP	Habitat Management Plan
MD	Munitions Debris
MDAS	Material Documented as Safe
MEC	Munitions and Explosives of Concern
MMRP	Military Munitions Response Program
MPPEH	Material Potentially Presenting an Explosive Hazard
MRA	Munitions Response Area
MRS	Munitions Response Site
mV	Millivolt
OE	Ordnance and Explosives
OMC	Ord Military Community
PDA	Personal Digital Assistant
QA	Quality Assurance
QC	Quality Control
RA	Remedial Action

Acronyms and Abbreviations (continued)

RAO	Remedial Action Objectives
RD/RA	Remedial Design/Remedial Action
RI	Remedial Investigation
ROD	Record of Decision
RRD	Range-Related Debris
RTK	Real-Time Kinematic
Shaw	Shaw Environmental
SSWP	Site-Specific Work Plan
TIP	Technical Information Paper
SUXOS	Senior Unexploded Ordnance Supervisor
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
UXO	Unexploded Ordnance
UXOQCS	Unexploded Ordnance Quality Control Specialist
WERS	Worldwide Environmental Remediation Services

Definitions[1]

Discarded Military Munitions (DMM) [2] – Generally, military munitions that have been abandoned without proper disposal or removed from storage in a military magazine or other storage area for the purpose of disposal. The term does not include unexploded ordnance, military munitions that are being held for future use or planned disposal, or military munitions that have been properly disposed of consistent with applicable environmental laws and regulations. (10 U.S.C. 2710(e)(2)).

Military Munitions – Military munitions means all ammunition products and components produced for or used by the armed forces for national defense and security, including ammunition products or components under the control of the Department of Defense, the Coast Guard, the Department of Energy, and the National Guard. The term includes confined gaseous, liquid, and solid propellants, explosives, pyrotechnics, chemical and riot control agents, smokes, and incendiaries, including bulk explosives and chemical warfare agents, chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunition, small arms ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, demolition charges, and devices and components thereof.

The term does not include wholly inert items, improvised explosive devices, and nuclear weapons, nuclear devices, and nuclear components, except that the term does include non-nuclear components of nuclear devices that are managed under the nuclear weapons program of the Department of Energy after all required sanitization operations under the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.) have been completed. (10 U.S.C 101(e)(4)(A))

Munitions Constituents (MC) – Generally, any materials originating from unexploded ordnance (UXO), discarded military munitions (DMM), or other military munitions, including explosive and non-explosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions. (10 U.S.C. 2710 (e)(3))

Munitions Debris – Remnants of munitions (e.g., fragments, penetrators, projectiles, shell casings, links, fins) remaining after munitions use, demilitarization or disposal.

1 Official definitions provided in Department of Defense Manual 6055.09-M, DoD Ammunition and Explosives Safety Standards, February 29, 2008, administratively reissued August 4, 2010. Vol. 8 of 6055.09-M is Change 1.

Munitions and Explosives of Concern (MEC)[2]– This term, which distinguishes specific categories of military munitions that may pose unique explosives safety risks, means:

(A) Unexploded Ordnance (UXO), as defined in 10 U.S.C. 101 (e) (5);

(B) Discarded military munitions (DMM), as defined in 10 U.S.C. 2710 (e) (2); or

(C) Munitions constituents (e.g., TNT, RDX) as defined in U.S.C. 2710 (e)(3), present in high enough concentrations to pose an explosive hazard

Munitions Response – Response actions, including investigation, removal and remedial actions to address the explosives safety, human health, or environmental risks presented by unexploded ordnance (UXO), discarded military munitions (DMM), or by munitions constituents (MC) or to support a determination that no removal or remedial action is required

Material Potentially Presenting an Explosive Hazard (MPPEH) – Material that, prior to determination of its explosive status, potentially contains explosives or munitions (e.g., munitions containers and packaging material; munitions debris remaining after munitions use, demilitarization, or disposal; and range-related debris); or material potentially containing a high enough concentration of explosives such that the material presents an explosive hazard (e.g., equipment, drainage systems, holding tanks, piping, or ventilation ducts that were associated with munitions production, demilitarization or disposal operations). Excluded from MPPEH are munitions within DoD's established munitions management system and other hazardous items that may present explosion hazards (e.g., gasoline cans, compressed gas cylinders) that are not munitions and are not intended for use as munitions.

Munitions Response Area (MRA) – Any area on a defense site that is known or suspected to contain UXO, DMM, or MC. Examples include former ranges and munitions burial areas. A munitions response area is comprised of one or more munitions response sites.

Munitions Response Site (MRS) – A discrete location within an MRA that is known to require a munitions response.

Range-Related Debris – Debris, other than munitions debris, collected from operational ranges or from former ranges (e.g. target debris, military munitions packaging and crating material).

2 For the purposes of the Basewide Military Munitions Response Program (MMRP) being conducted for the former Fort Ord, MEC [DMM, UXO] does not include small arms ammunitions .50 caliber and below.

Unexploded Ordnance (UXO)[2]– Military munitions that: (A) have been primed, fuzed, armed, or otherwise prepared for action; (B) have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material; and (C) remain unexploded either by malfunction, design, or any other cause (10 U.S.C. 101 (e) (5) (A) through (C)).

UXO Technicians – Personnel who are qualified for and filling Department of Labor, Service Contract Act, Directory of Occupations, contractor positions of UXO Technician I, UXO Technician II, and UXO Technician III.

UXO-Qualified Personnel – Personnel who have performed successfully in military explosive ordnance disposal positions, or are qualified to perform in the following Department of Labor, Service Contract Act, Directory of Occupations, contractor positions: UXO Technician II, UXO Technician III, UXO Safety Officer, UXO Quality Control Specialist, or Senior UXO Supervisor.

1.0 Introduction

This Technical Information Paper (TIP) describes the work elements and results of the munitions and explosives of concern (MEC) remedial action (RA) conducted within the Impact Area munitions response area (MRA) 100-foot buffer. The areas addressed in this TIP are the 100-foot buffer along both the Blueline Road and South Boundary Road. This TIP does not address the 100-foot buffer associated with the MOUT Site or the BLM Headquarters. The Impact Area MRA 100-foot buffer is shown on Figure 1 in its entirety. Surface and subsurface MEC removal and digital geophysical mapping (DGM) within the Impact Area MRA 100-foot buffer was performed by Gilbane Company with support from its subcontractor, Shaw Environmental (Shaw), for the U.S. Army Corps of Engineers (USACE), Huntsville Division under contract number W912DY-10-D-0024. This work was performed under the direction of USACE, Sacramento District and has been completed in accordance with the USACE Statement of Work (Appendix A); the *Final Site-Specific Work Plan, Munitions and Explosives of Concern Remedial Action, Non-Burn Areas, Former Fort Ord, California* (Final SSWP; Shaw, 2010); the *Final Work Plan, Remedial Design/Remedial Action, Track 3 Impact Area Munitions Response Area, Former Fort Ord, California* (Final RD/RA Work Plan; USACE, 2009); and the *Final Track 3 Record of Decision, Impact Area Munitions Response Area, Track 3 Munitions Response Site, Former Fort Ord, California* (Track 3 ROD; Army, 2008).

1.1 Purpose and Scope

This document describes the RA conducted by Gilbane in the Impact Area MRA 100-foot buffer. The general scope of the RA, as defined in the Track 3 ROD, is to manage "the potential risk to future land users from MEC at the Impact Area MRA." Subsurface MEC remediation within the Impact Area MRA 100-foot buffer is intended to act as both an additional safety zone for subsurface activity and to enhance the ability of firefighters to fight wildfires from the border-buffer area that might occur within the Impact Area.

Track 3 sites are areas at the former Fort Ord where MEC is known or suspected to be present, but MEC investigations have not yet been completed. The Track 3 site, also known as the Impact Area MRA, consists of the 6,560-acre portion of the 8,000-acre historical impact area that is entirely within the natural resources management area described in the *Installation-Wide Multispecies Habitat Management Plan for Former Fort Ord, California* (HMP; USACE, 1997), and is currently identified for transfer to the Bureau of Land Management (the BLM). The

Impact Area MRA is designated as a habitat reserve in the Fort Ord Reuse Authority Base Reuse Plan.

The scope of this project, as defined in the Final SSWP and approved field work variances, includes DGM survey and removing surface and subsurface MEC in the Impact Area MRA 100-foot buffer. Site 39 soil remediation areas and 45-foot fuelbreak sections were not included in the scope for the 100-ft buffer work because subsurface MEC removal was previously conducted under separate work plans. The Impact Area MRA 100-foot buffer is shown in its entirety in Figure 1. Figures 2A through 2C show the Impact Area MRA 100-foot buffer areas, in which the work described in this TIP occurred, in closer detail.

This TIP details the work completed as part of the Impact Area MRA 100-foot buffer MEC RA and discusses the following tasks:

- Surface MEC removal across the entirety of the Impact Area MRA 100-foot buffer.
- DGM survey in areas where collecting DGM data was not precluded due to obstacles or terrain features.
- Digital geophysical mapping (DGM)-based subsurface MEC removal where DGM data allowed for selecting individual anomalies for removal.
- Analog-based subsurface MEC removal where DGM data did not allow for selecting individual anomalies for removal, or in areas where collecting DGM data was precluded due to obstacles or terrain features.

1.2 Approval Documents

The work was conducted in accordance with the Final RD/RA Work Plan (USACE, 2009) governing the Track 3 Impact Area MRA and Explosive Safety Submissions associated with individual MRS-BLM Units. The Final SSWP (Shaw, 2010) detailed the scope and site-specific procedures for the MEC RA within the Impact Area MRA 100-foot buffer as modified by approved field work variances (FWVs). FWVs are included in Appendix B. The variances are described below.

- FWV WERS 03-013 (AR OE-0685D.5) Extended Impact Area MRA 100-foot buffer along South Boundary Road and allowed for temporary removal of perimeter fence as needed to complete subsurface MEC removal.

- FWV WERS 03-017 (AR OE-0685D.7) Detailed two sections of blue line fence that would be temporarily removed to allow for subsurface MEC removal to occur very near and immediately along the fence line. Following completion of subsurface MEC removal, the blue line fence sections were replaced. These areas are shown on Figure 4B. Additionally detailed blue line fence sections that did not require fence removal or subsurface MEC work.

1.3 Project Personnel and Subcontractors

MEC removal work was performed with qualified unexploded ordnance (UXO) technicians who met or exceeded the requirements of Worldwide Environmental Remediation Services (WERS) data item description 012.01 (USACE, 2010). The following served as key personnel for Gilbane:

- Senior Unexploded Ordnance Supervisor (SUXOS): Brad Olson
- UXO Quality Control Specialist (UXOQCS): Bruce McClain
- UXO Safety Officer: Val Valdez
- Contractor Quality Control Systems Manager (CQCSM): Tom Ghigliotto (PAM Environmental)
- Quality Control (QC) Geophysicist: Jeremy Flemmer (Shaw)
- Project Manager: Steve Crane
- Deputy Project Manager: Erin Caruso
- Task Manager: Kevin Siemann
- Project Geophysicist: Andy Gascho

Gilbane performed the work detailed in this report with UXO-qualified individuals.

The field personnel used for this work were employees of Gilbane and Shaw, including all UXO technicians. The following tasks were subcontracted:

- Vegetation mastication (Woolery Timber Management, Inc.)
- Recycling of munitions debris (MD; FACT International)

1.4 Health and Safety

Work performed was completed in accordance with the Accident Prevention Plan, Munitions and Explosives of Concern Removal and Soil Remediation Project, Former Fort Ord, California, (ITSI, 2013).

1.5 Report Organization

This TIP was prepared as outlined below. The TIP incorporates elements of U.S. Environmental Protection Agency (EPA) guidance for a Remedial Action Report and is organized as follows.

Section 1: Introduction

Section 2: Site Background

Section 3: Overview of RA

Section 4: Site Preparation

Section 5: Technology-Aided Surface MEC Removal

Section 6: Analog Subsurface MEC Removal

Section 7: DGM Survey and DGM Based Subsurface MEC Removal

Section 8: QA/QC

Section 9: MEC and MD Removal

Section 10: Environmental Protection

Section 11: Protectiveness Assessment

Section 12: References

Appendix A Task Order Statement of Work

Appendix B Field Work Variances

Appendix C USACE Form 948s

Appendix D Target List

Appendix E Former Fort Ord, CA 100-Foot Buffer, Quality Assurance Report, Digital Geophysical Operations

Appendix F Munitions Debris 1348 and Chain of Custody

Appendix G Response to Comments

1.6 Applicable or Relevant and Appropriate Requirements

Applicable or relevant and appropriate requirements (ARARs) were outlined in the Track 3 ROD (Army, 2008), and the RA was performed in compliance with these ARARs.

2.0 Site Background

2.1 Site Location

The Impact Area MRA is located in the Historical Impact Area in the southwestern portion of the former Fort Ord. The Historical Impact Area is bounded by Eucalyptus Road to the north, Barloy Canyon Road to the east, South Boundary Road to the south, and General Jim Moore Boulevard to the west. Figure 1 shows the location of the Impact Area MRA 100-foot buffer. The Impact Area MRA consists of the 6,560-acre portion of the 8,000-acre historical impact area that is entirely within the natural resources management area described in the *Installation-Wide Multispecies Habitat Management Plan for Former Fort Ord, California* (HMP; USACE, 1997), and is currently identified for transfer to the BLM. The Impact Area MRA is designated as a habitat reserve in the Fort Ord Reuse Authority Base Reuse Plan.

The Impact Area MRA 100-foot buffer is located along the western, northern, and southern extent of the Impact Area MRA as shown on Figure 1. The 100-foot buffer was to be provided along the border with designated development areas. Subsurface MEC removals in other buffers adjacent to development areas (the MOUT Site and the BLM Headquarters), have previously been completed and the work was documented in separate reports. Further detail regarding the Impact Area MRA 100-foot buffer where the work described in this TIP occurred is shown on Figures 2A through 2C.

2.1.1 Population, Proximity, and Access

The Impact Area MRA is fenced, warning signs are posted, and access is controlled by the US Department of the Army (Army). The perimeter of the Impact Area MRA is patrolled to detect and prevent trespassing. The BLM land outside the Impact Area MRA is generally open to the public for hiking, biking, jogging, and horseback riding. Property contiguous to the Impact Area MRA 100-foot buffer planned for eventual development has been transferred to property recipients and is not currently open to the public.

2.1.2 Reuse

The Impact Area MRA, including the Impact Area MRA 100-foot buffer, is intended to be transferred to the BLM and will be managed as a habitat reserve under the HMP (USACE, 1997), which describes special land restrictions and habitat management requirements within habitat reserve areas. Habitat reserve areas support plant and animal species protected under the Endangered Species Act that require implementing mitigation measures identified in

the HMP to minimize potential adverse impacts to listed species. Based on information provided by the BLM, reusing the area as a habitat reserve is anticipated to include a variety of activities including:

- Road and trail management and maintenance;
- Fuel break construction and management;
- Habitat monitoring and educational programs;
- Species-specific monitoring and habitat enhancement; and
- Recreational access on established routes.

2.1.3 Vegetation and Habitat Type

The habitat types occurring within the Impact Area MRA are primarily central maritime chaparral, with some areas of grasslands, coastal scrub, and small scattered areas of coast live oak woodland. Central maritime chaparral is a dominant habitat type at former Fort Ord and is identified as a protected plant community in the HMP (USACE, 1997). Approximately 50% to 85% of the total distribution of several rare, threatened, and endangered plants in central maritime chaparral habitat occur at the former Fort Ord, and these species are designated as protected under the HMP.

Chapter 3 of the HMP (USACE, 1997) describes mitigation measures that must be implemented during MEC investigation and remediation. In addition, there are four biological opinions and one amendment that contain terms and conditions and reasonable and prudent measures that need to be implemented during MEC activities to minimize and reduce impacts to listed species (U.S. Fish and Wildlife Service [USFWS], 1999; USFWS, 2002; USFWS, 2005; USFWS, 2007 (amendment); and USFWS, 2011). Habitat-management activities related to the munitions remedial actions that are required by the HMP have been conducted for the Impact Area MRA 100-foot buffer. Vegetation masticated within the Impact Area MRA 100-ft buffer to facilitate remedial activities will be allowed to recover.

2.2 Regulatory Status

After it was established in 1917, Fort Ord primarily served as a training and staging facility for infantry troops. From 1947 to 1974, Fort Ord was a basic training center. From 1974 until closure, the 7th Infantry Division was based at Fort Ord. Fort Ord was selected for closure in

1991. The majority of the soldiers were reassigned to other Army posts in 1993. There is no longer an active Army division stationed at the former Fort Ord.

Fort Ord was placed on the National Priorities List of Superfund sites by EPA on February 21, 1990, due to evidence of contaminated soil and groundwater. A Federal Facility Agreement (FFA) was signed by the Army, EPA, Department of Toxic Substances Control (DTSC), and Regional Water Quality Control Board, a part of the California Environmental Protection Agency. The FFA established procedures and schedules for conducting remedial investigations (RIs) and feasibility studies (FSs) and requires RAs be completed as expeditiously as possible. The former Fort Ord was selected in 1991 for base realignment and closure (BRAC), and the base was officially closed in September 1994. The Army began investigating and removing MEC at the former Fort Ord after the BRAC listing, and a munitions response RI/FS began in 1998. In April 2000, an agreement was signed between the Army, EPA, and DTSC to evaluate MEC at the former Fort Ord subject to the provisions of the FFA. The April 2000 agreement also formalized the regulatory agencies' roles in the Military Munitions Response Program (MMRP) at Fort Ord.

Following completion of the *Final Track 3 Impact Area MRA Munitions Response Remedial Investigation/Feasibility Study, Former Fort Ord, California* (Mactec, 2007), the Army prepared the Track 3 ROD, which is the decision document presenting the selected RA for MEC in the Impact Area MRA. The remedy was selected following a 60-day public comment period that ended on August 27, 2007, for the *Superfund Proposed Plan Remedial Action is Proposed for Impact Area Munitions Response Area, Track 3 Munitions Response RI/FS, Former Fort Ord, California* (Army, 2007). The remedy was selected in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendment and Reauthorization Act, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan.

The decision documented in the Track 3 ROD is undertaken pursuant to the President's authority under CERCLA Section 104, as delegated to the Army in accordance with Executive Order 12580, and in compliance with the process set out in CERCLA Section 120. The selection of the remedy is authorized pursuant to CERCLA Section 104, and the selected remedy is being carried out in accordance with CERCLA Section 121. The Army and EPA have jointly selected the remedy. The California Environmental Protection Agency as represented by DTSC had an opportunity to review and comment on the ROD.

2.3 Site Features and History of Military Munitions Use

Since 1917, portions of former Fort Ord were used by cavalry, field artillery, and infantry units for maneuvers, target ranges, and other purposes. From 1947 to 1974, Fort Ord was a basic training center. From 1974 until closure, the 7th Infantry Division occupied Fort Ord. Military munitions were fired and used on the facility, including artillery and mortar projectiles, rockets and guided missiles, rifle and hand grenades, practice land mines, pyrotechnics, bombs, and demolition materials.

Fort Ord was selected in 1991 for decommissioning, but troop reallocation was not completed until 1993, and the installation was not officially closed until September 1994. The property remaining in the Army's possession was designated as the Presidio of Monterey Annex on October 1, 1994, and subsequently renamed the Ord Military Community (OMC). Although Army personnel still operate parts of the installation, no active Army division is stationed at the former Fort Ord. Since the installation was selected in 1991 for BRAC, site visits, historical and archival investigations, military munitions sampling, and removal actions have been performed and documented in preparation for transfer and reuse of the former Fort Ord property. The Army will continue to retain the OMC and the U.S. Army Reserve Center located at the former Fort Ord. The remainder of Fort Ord was identified for transfer to federal, state, local government agencies, and other organizations, and since installation closure in September 1994, has been subjected to the reuse process.

The Impact Area MRA is a complex of numerous former military ranges with a variety of historical uses, designs, and characteristics. Over the years, various types of munitions have been used during training activities within the Impact Area MRA, including hand grenades, mortars, rockets, practice land mines, artillery, and small arms. Select ranges were used for small arms training activities only, while other ranges are characterized as multi-use. In general, the firing points of the ranges were located near the perimeter of the MRA, and firing was directed toward the interior portion of the range complex. Training activities at the Impact Area MRA ceased after the closure of Fort Ord in 1994. The former ranges within the MRA contain a concentration of similar expended munitions and MEC. The Impact Area MRA is fenced, warning signs are posted, and access is controlled by the Army. The perimeter of the historical Impact Area is patrolled to detect and prevent trespassing. The Impact Area MRA 100-foot buffer is shown on Figure 1.

2.4 Summary of MEC-Related Activities and Data Collected Prior to the Remedial Action

MEC investigations occurred within and around the Impact Area MRA 100-foot buffer by other contractors as part of separate investigative actions. This work resulted in the recovery of one MEC item within the Impact Area MRA 100-foot buffer. Table 1 lists the MEC item recovered during previous investigations within the Impact Area MRA 100-foot buffer. Figure 3 depicts the location of the previously recovered MEC item within the Impact Area MRA 100-foot buffer footprint.

3.0 Overview of Remedial Action

3.1 Remedial Action Objectives

The RA objective (RAO) for the Track 3 remedy is to protect human health and the environment in a manner that complies with the ARARs. The selected remedy is Technology-aided Surface MEC Remediation, With Subsurface MEC Remediation in Selected Areas and Land Use Controls. The selected remedy is designed to achieve both substantial risk reduction through MEC remediation and risk management through implementation of land use controls. The selected remedy best balances the risk reduction and associated environmental impacts in supporting the anticipated future use of the site as a habitat reserve. The presence of MEC in the Impact Area MRA was not identified as a concern in terms of explosive safety risks to ecological receptors.

Further statements regarding the RAOs are provided in the Final RD/RA Work Plan (USACE, 2009):

- "The selected remedy addresses current or potential explosives safety risks to human health and the environment from MEC within the Impact Area MRA."
- "The most significant short term objective is to remove surface MEC and prevent public access until MEC removal is completed."
- "The long-term objective is to make the property safe for required habitat management activities by supplementing the RA with appropriate institutional controls … that will effectively manage risk from any potentially residual MEC after the RA is completed."

The Impact Area MRA 100-foot buffer within the Impact Area MRA has been selected for subsurface MEC remediation. Subsurface MEC remediation within the Impact Area MRA 100-foot buffer is intended to act as both an additional safety zone for subsurface activity and to enhance the ability of firefighters to fight wildfires from the border-buffer area that might occur within the Impact Area.

3.2 MEC Remedial Action

3.2.1 Remedial Action Chronology

As outlined in the Final RD/RA Work Plan (USACE, 2009) and Final SSWP (Shaw, 2010), the following field activities were conducted to implement the MEC RA within the Impact Area MRA 100-foot buffer:

- Impact Area MRA 100-foot buffer (along Blueline Road) boundary survey, including the extension of the 100-foot buffer along South Boundary Road;
- Vegetation removal (mastication);
- Technology-aided surface MEC removal;
- DGM survey;
- Reacquisition and excavation of digital anomalies;
- Analog subsurface MEC removal;
- MEC detonation; and
- MD recycling/disposal.

3.2.2 Variations from the Site-Specific Work Plan

Variances to the planned methods and areas described in the Final RD/RA Work Plan and Final SSWP occurred in response to unanticipated conditions or to improve the efficiency of MEC remedial activities. FWVs are included in Appendix B and described in Section 1.2.

3.2.3 Summary of Remedial Action Methods

The scope of work for the Impact Area MRA 100-foot buffer was modified as outlined previously by two FWVs. Technology-Aided Surface MEC removal was performed across the entirety of the Impact Area MRA 100-foot buffer and is described further in Section 5 of this report. Analog subsurface MEC removal was performed within the Impact Area MRA 100-foot buffer where individual anomalies were unable to be selected from DGM data, or where terrain or obstacles precluded collection of DGM data. Analog subsurface MEC removal is described further in Section 6 of this report. Subsurface MEC removal based on the DGM survey results was performed throughout the remainder of the Impact Area MRA 100-foot buffer and is described further in Section 7 of this report. Subsurface removal in the section of the Impact Area MRA 100-ft buffer within Unit 4 was conducted under the *MRS-BLM Units 4, 5a, 9 11 and 12 MEC Remedial Action Site Specific Work Plan* (Gilbane,2011), and was previously reported

in the *MRS-BLM Units 4, 11 and 12 MEC Remedial Action Report* (ITSI Gilbane, 2013). This information is also provided in this TIP so as to be comprehensive.

Table 3 summarizes the various subsurface MEC remedial activities conducted within the Impact Area MRA 100-foot buffer. Figures 4A through 4C show the subsurface MEC remedial operations conducted within the Impact Area MRA 100-foot buffer.

4.0 Site Preparation

Temporary fence removal and subsurface MEC remediation was performed in two sections of the Impact Area MRA 100-foot buffer. These areas are shown on Figure 4B. Impact Area MRA security was maintained throughout the buffer work.

4.1 Vegetation Clearance

Vegetation clearance occurred throughout the entirety of the Impact Area MRA 100-foot buffer along the Blueline Road and South Boundary Road. Vegetation clearance teams, with escort support from UXO-qualified personnel, removed vegetation from the units to a height of six inches or less. Mechanical equipment was used to cut the vegetation. In areas with dense vegetation that obscured visual inspection of the ground surface, a first cut was made to a height between 18 and 24 inches above the ground. After visual inspection for MEC by the UXO-qualified personnel, a second cut was made to a height of six inches or less above ground. In areas with medium-to-light vegetation where the ground surface could be observed before cutting, the vegetation was cut in one stage to a height of no more than six inches above ground. Manual tools (e.g., chain saws and trimmers) were used in areas where the mechanical cutter could not gain access and to trim tree branches.

Manually cut vegetation was either removed or masticated on site. Mechanically cut vegetation was left on site but was chipped to the maximum extent possible to minimize visual impairment of the surface of the site.

UXO-qualified personnel provided UXO escort support during vegetation clearance, conducting a visual survey of the ground surface with the aid of Schonstedt magnetometers. When MD or suspected MEC was encountered, vegetation clearance personnel would stop operations until UXO-qualified personnel could determine if any hazard was associated with the item and remove the item if necessary.

4.2 Debris and Target Removal

During and after vegetation clearance activities, targets, remaining metal, and other range-related debris (RRD) was removed from the project area. Quantity of recovered RRD was recorded on a per grid basis. Metal debris was recycled at a local recycler, and other debris was disposed of at a local municipal landfill.

4.3 Grid and Border Survey

UXO personnel, performing anomaly avoidance, established a grid system that corresponded to the Impact Area MRA 100-foot buffer. The grid nodes were marked with wooden stakes, each labeled with a unique identifier written on the southwestern corner stake.

5.0 Technology-Aided Surface MEC Removal

Technology-aided surface MEC removal methods were used for surface MEC remediation across the entirety of the Impact Area MRA 100-foot buffer. Surface MEC removal was performed intermittently due to the fact that the Impact Area MRA 100-foot buffer crosses multiple units. Scheduling of initial vegetation removal within these multiple units was the determining factor as to when areas were available for surface MEC removal activities.

5.1 Technology-Aided Surface MEC Removal

Following the grid and border survey, a technology-aided surface MEC removal was conducted across all grids within the Impact Area MRA 100-foot buffer. The objective of the surface MEC removal was twofold: 1) to remove surface MEC to meet the selected remedial alternative of the Track 3 ROD (Army, 2008), and 2) to remove metallic debris including MEC, MD, and other debris which could impact the DGM survey results.

During technology-aided surface MEC removal, UXO teams utilized Schonstedt magnetometers in addition to visual survey for MEC. UXO-qualified personnel walked in 5-foot wide parallel lanes across the removal grid to achieve complete Schonstedt and visual coverage. In general, metallic debris greater than 2 inches in any diameter identified on the ground surface was removed from the project area. Material Potentially Presenting an Explosive Hazard (MPPEH) and MEC were treated in accordance with the MEC Procedures Supplement (ITSI, 2011). The location of MEC was recorded with a global positioning system (GPS) to acquire the exact geo-referenced location at which it was found. MD was tracked by weight on a grid-by-grid basis.

MEC items removed as part of this operation are summarized in Table 2.

A total of three MEC items were found during surface MEC removal within the Impact Area MRA 100-foot buffer. Figures 7A through 7C shows locations of all MEC items found during MEC remediation activities within the Impact Area MRA 100-foot buffer.

6.0 Analog Subsurface MEC Removal

Analog MEC removal methods were used for subsurface MEC remediation within the Impact Area MRA 100-foot buffer as shown on Figures 4A through 4C. Subsurface MEC removal was performed intermittently between April 2013 and August 2014.

6.1 Analog Subsurface MEC Removal

Analog ("mag and dig") subsurface MEC removal was conducted in Impact Area MRA 100-foot buffer grids where obstructions, such as fencing, precluded collection of DGM survey data. These areas were surveyed using a global positioning system (GPS) and are included as shape files in the Fort Ord MMRP database. All obstructions were removed with the exception of fence sections left in place that are shown on Figure 4B.

The following basic techniques were used to excavate anomalies during "mag and dig" operations.

- The UXO technician located anomalies with a handheld magnetometer and excavated anomalies following location.
- Until each anomaly was identified, it was assumed that the anomaly was MEC. Excavation was initiated adjacent to the anomaly. The excavation was continued until the excavated area had reached a depth below the top of the anomaly as determined by frequent inspection with a magnetometer.
- Using progressively smaller and more delicate tools to carefully remove the soil, the excavation team expanded the sidewall to expose the metallic item in the wall of the excavation for inspection and identification without moving or disturbing the item.
- Once the item was exposed for inspection, the excavation team determined whether it was suspected MEC. If the item was not suspected MEC, it was removed and the area was rechecked with the magnetometer to ensure that a hazardous item was not hidden beneath it.

During the analog subsurface MEC removal, five MEC items were found. MEC items removed as part of this operation are summarized in Table 2. Figures 7A through 7C show locations of all MEC items found during MEC remediation activities within the Impact Area MRA 100-foot

buffer. Approximately 21 acres of analog-based subsurface MEC removal were completed as part of the RA within the Impact Area MRA 100-foot buffer.

Two sections of blue line fence were temporarily removed to allow for subsurface MEC removal to occur very near and immediately along the fence line. The determination to conduct subsurface MEC removal in these two areas was based on previous MEC finds in close proximity to these areas. Following completion of subsurface MEC removal, the blue line fence sections were replaced. These areas are shown on Figure 4B. The blue line fence north of Watkins Gate Road was offset into the designated development parcels to the west and north, respectively. This offset allowed for complete subsurface MEC removal to be performed with no necessity to remove blue line fencing.

7.0 DGM Survey and DGM-Based Subsurface MEC Removal

DGM survey was performed within the Impact Area MRA 100-foot buffer from December 2012 to July 2014. The surveys were conducted with a vehicle-towed array, consisting of three Geonics EM61-MK2A sensors, as well as single hand-pulled Geonics EM61-MK2A units. Both the array and hand-pulled units used real-time kinematic (RTK) GPSs to position for the geophysical sensor measurements. DGM surveys were conducted in accordance with the Final SSWP (Shaw, 2010). Approximately 72 acres of the Impact Area MRA 100-foot buffer received DGM survey.

Geophysical data were collected over all accessible areas within the Impact Area MRA 100-foot buffer. Some areas were deemed inaccessible to DGM survey equipment. Reasons for inaccessibility include terrain and permanent obstacles such as trees.

Approximately 56 acres of the Impact Area MRA 100-foot buffer received DGM-based subsurface MEC removal. All planned DGM-based subsurface MEC removal has been completed for the Impact Area MRA 100-foot buffer.

7.1 Geophysical System Verification

The Geophysical System Verification (GSV) process was utilized for the project area. The GSV consisted of a combination of Instrument Verification Strip (IVS) surveys and blind seeding.

DGM surveys in the project area utilized two IVS locations, one in Unit 2 and one in Unit 9, in order to minimize the amount of travel time between the IVS and the survey area. Each IVS consisted of one horizontal small industry standard object (ISO) (4 inches depth), one vertical small ISO (9 inches depth), one horizontal 40 millimeter (mm) grenade (5 inches depth), and one vertical 40mm grenade (11 inches depth). The IVS was surveyed on a daily basis, and the results were monitored for consistency. Both IVS locations remain in place.

Blind seeds were placed in the project area so that the survey team encountered one seed per day. Blind seeds were of the same type and burial depth and consisted of small ISOs buried vertically at six inches depth. Seed item responses and positioning were monitored by the QC Geophysicist in order to verify data quality. Seeds were placed and removed from the project area on a daily basis.

7.2 DGM Surveys

DGM surveys were used as the primary method to record the presence of subsurface anomalies. Approximately 72 acres were surveyed with DGM within the limits of the Impact Area MRA 100-foot buffer.

7.2.1 Instrumentation

As described in previous sections, EM61-MK2A sensors (towed array and single units) were utilized to obtain DGM data at the project area. A Leica RTK GPS was used in conjunction with the EM61-MK2A sensors for navigation data.

7.2.1.1 EM61-MK2A

The EM61-MK2A is a four-channel, high-sensitivity time delay electro-magnetic sensor designed to detect shallow ferrous and nonferrous metallic objects with good spatial resolution and minimal interference from adjacent metallic features. The EM61-MK2A consists of two 1- by 0.5-meter rectangular coils stacked 40 centimeters (cm) apart with the source/receiver coil located below a second receiver coil. A square wave electro-magnetic pulse is generated with "time on" (positive and negative) and "time off" cycles. This induces subsurface eddy currents with an associated secondary magnetic field. The decay of the secondary magnetic fields is measured during "time off" cycles and stored as a millivolt response. By measuring the decay at "late times," the system can distinguish between natural earth materials and buried metal (ferrous and nonferrous) as the secondary field in metallic objects decays at a much slower rate than earth materials. Although the EM61-MK2A is capable of measuring a differential, calculated as the voltage difference between the top and bottom coils, for this project, data were recorded at four time gates from the bottom coil. The responses at these four specified time gates are recorded and displayed by an integrated system data logger.

7.2.1.2 Leica GPS

RTK GPS uses a base station that is set up based on a known position. Once the base station is established, it determines its location using satellites and then applies a correction based on the offset from the known coordinates at the location. This correction is then used by a rover that is in direct communication with the base station through a radio link. The rover must be within 4 miles of the base station. At distances near 4 miles, line of sight is required; at shorter distances (as in this survey) line of sight is not required. If the base station is less than 2 miles away, then the system can operate on low power. High power is required for larger distances. RTK GPS is capable of taking survey-grade measurements in real time and providing immediate accuracy to within 1 to 4 cm.

A permanent base station located within Ranges 43-48 and maintained by the USACE was used for the project area operations. The base station was periodically serviced by the Gilbane team in order to keep it operational during the field surveys.

7.2.2 Data Collection Procedures

EM61-MK2A surveys utilized the four time gate readings from the bottom coil. Readings were sampled at a minimum rate of 10 readings per second. GPS readings were logged at a rate of 1 reading per second. All data collection activities were recorded in field logs and personal digital assistants and later synchronized into the project database. The field notes were monitored by data processors and the QC Geophysicist and are included in the data delivery forms. As discussed above, a combination of two different data collection modes were employed at the project area using the EM61-MK2A. These include the towed array and single unit manual systems.

7.2.2.1 Towed Array

The towed array system consisted of three EM61-MK2A coils mounted on a wheeled platform. The three units were mounted in parallel, wide end forward, such that the center-to-center coil spacing was 2.0 feet, and the bottoms of the coils were set at the standard Geonics height of 42 cm above the ground. The wheeled platform was pulled with a bulldozer. Survey lanes were marked using a biodegradable foam-marking system mounted to the bulldozer. The EM61-MK2A and GPS data were streamed together and recorded using Geometrics MagLogNT software. Data collection on the towed array was controlled remotely by a wireless transmitter from a remote computer. This allowed the bulldozer driver to concentrate on coverage. The remote computer was operated by a field geophysicist. The remote computer controlled the functions of the field computer mounted to the towed array system. The remote computer operator monitored the data collection.

7.2.2.2 Single Unit/Manual

A single unit, consisting of an EM61-MK2A mounted on standard wheels and manually pulled, was primarily used for filling in data gaps caused by surface obstructions (tree stumps, logs, etc.) and gaps caused by inconsistent towed array survey paths. Data were recorded using a standard field data logger controlled by the operator and RTK GPS was used for navigation. These data were then appended to the appropriate data set to fill in the dataset to fulfill the measurement quality objective (MQO) requirements.

7.2.2.3 Daily Functional QC Checks

Instrument tests were performed on a daily basis to ensure the instruments met the project QC requirements. As described in the MEC Procedures Supplement (ITSI, 2011b), the following instrument tests were performed:

- Static Background Test
- Static Spike Test
- Personnel Test
- Cable Shake Test
- Repeat Data/Lag Line
- Static GPS Location Test
- Dynamic GPS Location Test (added)

These tests were performed at the beginning and end of each day the instruments were in use. If one of the instruments was not working properly, then the field crew would resolve the issue before beginning the survey. If it was determined that an instrument was not working properly at the end of the day, then the field teams notified the QC Geophysicist, and proper steps were taken to verify that the survey data met project QC standards.

In addition to the first six standard tests, two dynamic GPS location tests were conducted. One test consisted of placing a hitch-ball in the field area that was to be surveyed. The location of the hitch-ball was measured with GPS prior to obtaining data. The hitch-ball was run over by the EM61-MK2A system several times in one day. After the data were processed, the location was checked to verify that the location was within specification (2 feet).

7.2.3 Data Processing

Geophysical data were processed using Geosoft's Oasis Montaj and vendor-supplied software. Oasis Montaj processing included several steps:

1. Transforming raw data to American Standard Code for Information Interchange (ASCII) xyz files: Using vendor-supplied software, data were converted from the native file format to ASCII data files suitable for import into Oasis Montaj.

2. Initial data review: Once raw xyz files were imported into Oasis Montaj, the coordinates were converted to the project coordinate system. Data coverage and quality were assessed by the data processors. If it was determined that data quality

and coverage were acceptable, then the data proceeded to the next step. If coverage and/or data quality objectives were not met, then field teams were sent to either fill in data gaps or re-collect data where necessary.

3. Correcting for instrument latency: Using the results of the daily repeat data test, geophysical data were shifted to account for the time lag inherent in the data logging system.

4. Leveling data: Data were then leveled to the same background values removing the effects of instrument drift. The leveled data were added together to create the 4 channel sum.

Data processing procedures remained consistent for the project area. Data processing activities were logged in data processing forms. A detailed description of the processing steps is outlined in the MEC Procedures Supplement (ITSI, 2011b).

7.2.4 Data Delivery

Survey data were broken down into separate grids and/or grid blocks prior to delivery. The delivery schedule was consistently met throughout the project. Exceptions were noted on the processing forms, and the QA Geophysicist was informed. Raw and processed data were submitted as one package within five days of data collection. Raw data deliveries included the raw data in binary format, raw data in ASCII xyz format, and the field notes saved in portable document format form. Processed data included the processed data in ASCII xyz format, the final targets lists, and the appropriate data processing forms.

7.3 Measurement Quality Objectives

The DGM surveys for the Impact Area MRA 100-foot buffer were conducted with Category A MQOs based on the post-DGM activities planned for the site.

As part of the MQOs specified in the Final SSWP (Shaw, 2010), the following items were monitored throughout the project:

- Background noise
- Mean speed
- Along track spacing
- Across track spacing

- Instrument latency corrections
- Data leveling
- Systematic noise
- Anomaly selection
- Positioning errors
- Known location QC items
- Blind seed/QC items
- Reacquisition

The geophysical QC plan required the QC Geophysicist to monitor all of the MQOs. The QC Geophysicist reviewed every grid; and if there were any aberrations to the MQOs, then actions were taken to assure that the specific metric was corrected before passing the grid. These actions were documented in weekly QC reports to the USACE QA Geophysicist. During the project area surveys, the USACE QA Geophysicist reviewed grids after they passed geophysical QC. Any comments or questions were addressed for specific grids, and the issues were resolved between the Project Geophysicist and USACE QA Geophysicist. The appropriate action was then initiated.

7.4 Anomaly Reacquisition

Coordinates for geophysical target lists were exported to comma-separated files suitable for import into the Leica GPS rovers and field personal digital assistants (PDAs). Targets were then relocated in waypoint mode and flagged in the field at each target's coordinates. Once flagged, the field teams moved a single Geonics EM61-MK2 (in real time) over the flagged location in different directions to locate the anomaly peak. Once located, the flag was moved to the peak location and the offset from the original target list location was recorded in field PDAs. The final instrument readings (in millivolts or mV) were also recorded in field PDAs to ensure that the correct anomaly was relocated. All reacquisition activities were downloaded into the project database daily. A total of 8,138 DGM anomalies were originally identified as targets in the Impact Area MRA 100-foot buffer, and ultimately 4,546 DGM anomalies were successfully reacquired and investigated. Table 3 summarizes the cumulative results for all subsurface MEC removal work conducted within the Impact Area MRA 100-foot buffer.

7.5 Anomaly Excavation

Digital geophysical mapping targets were located with the aid of Schondstedt magnetometers. UXO technicians continued excavations until the source of the anomaly was located or to a depth of 4 feet below ground surface. All anomalies were treated as suspected MEC until identified as non-MEC items. No known anomalies were left uninvestigated.

After each anomaly was excavated, a field QC check of each excavation was conducted. The Geonics EM61-MK2A was used by a member of the excavation team to assess the final mV reading in and around the excavation. An area consisting of a 3-foot radius was inspected around the excavation itself. If the highest value in the area was below 14 mV (threshold for excavation), the value was recorded in the PDA, and the excavation was refilled.

During the excavation field activities, numerous excavations required more than one iteration of this process. For example, if values were above 14 mV after the first excavation attempt, the excavation was continued until the value was below 14 mV. The only exceptions were when there were permanent and immovable residual sources in close proximity to the anomaly. This information was recorded in the Fort Ord MMRP database.

Figures 7A through 7C show locations of all MEC items found during MEC remediation activities within the Impact Area MRA 100-foot buffer. During the DGM-based subsurface MEC removal, five MEC items were found. MEC items removed as part of this operation are summarized in Table 2. 56 acres of DGM-based subsurface MEC removal were completed as part of the RA within the Impact Area MRA 100-foot buffer.

The Impact Area MRA 100-foot buffer DGM target list is provided in Appendix D.

8.0 Quality Control/Quality Assurance

This section discusses the QC and QA procedures that were used at the Impact Area MRA 100-foot buffer.

8.1 Quality Control

QC is conducted by the contractor. The CQCSM oversaw the implementation of the QC program, confirmed that requirements of the Final SSWP (Shaw, 2010) were met, and ensured the USACE three phase QC program was implemented. Several QC measures were overseen by the CQCSM and conducted by the UXOQCS and by the QC Geophysicist. A discussion of these QC measures and procedures is included in the following sections.

8.1.1 Analog Quality Control

8.1.1.1 Field Activities

The UXOQCS was responsible for visually observing teams and conducting periodic spot checks to ensure grids were receiving complete coverage during the surface and subsurface remediation phase. During analog surface and subsurface MEC removal, the UXOQCS visually observed teams in the field and conducted additional spot checks to verify subsurface items were being removed. The UXOQCS also conducted a 10% QC check of completed analog grids. The UXOQCS placed 25 surface QC seeds within Impact Area MRA 100-foot buffer grids before technology-aided surface MEC removal work began. The UXOQCS also placed 23 subsurface QC seeds within Impact Area MRA 100-foot buffer grids before subsurface MEC removal work began. All QC seeds in grids addressed in this TIP were found.

8.1.1.2 Analog Quality Control During DGM Operations

Once DGM excavations began, the UXOQCS visually observed teams on a random basis to verify field QC actions, such as checks of each excavation were being implemented.

8.1.1.3 Data Entry Review

The UXOQCS or SUXOS reviewed every entry received from personnel in the field during each phase of work before entry in the database. Each entry was reviewed for completion of field QC (to confirm final Geonics EM61-MK2A reading was below 14 mV), MEC and MD nomenclature, completion of targets/digs within a given grid, and ultimate disposition of MEC items.

8.1.2 DGM Quality Control

The DGM QC standards and procedures were outlined in the Final SSWP (Shaw, 2010) and MPS (ITSI, 2011). The QC Geophysicist was responsible for planning and executing QC oversight of geophysical activities and ensuring compliance with geophysical QC requirements. Specifically, the QC Geophysicist was responsible for the following.

- Reviewing and approving the qualifications of geophysical staff.
- Planning and ensuring the acceptable performance and completion of all geophysical QC activities.
- Reviewing the geophysical QC and DGM data, target lists, and dig results as specified in the Final SSWP Geophysical Investigation Plan.
- Establishing the known and blind seed item and location control program.
- Identifying quality problems and verifying that appropriate corrective actions were implemented for geophysical activities.
- Ensuring that the requisite geophysical QC records, including submittals, were generated and retained as prescribed.

To keep track of weekly events and statistics, a weekly DGM QC report was delivered to the Project Geophysicist and the QA Geophysicist. This included all pertinent information for the week as well as cumulative information about the project including, but not limited to, information such as grids surveyed, targets picked, personnel, average acreage per day, and QC blind seeds located.

The QC Geophysicist had daily access to all geophysical QC and DGM data and was on site intermittently as needed after the completion of the initial inspections for geophysical activities, and on site as needed for meetings and seeding. The QC Geophysicist reported to the CQCSM and supported the UXOQCS.

8.2 Quality Assurance

QA is conducted by the USACE Ordnance and Explosives (OE) Safety Specialist and the USACE QA Geophysicist. QA seeds were placed within the Impact Area MRA 100-foot buffer before beginning surface and subsurface MEC removal operations. USACE Form 948s for QA approved grids are included in Appendix C.

8.2.1 Analog Quality Assurance

Subsurface MEC removal QA has been completed for the Impact Area MRA 100-foot buffer grids addressed in this TIP. USACE Form 948s are provided in Appendix C.

8.2.2 DGM Quality Assurance

Documentation of digital geophysical operations quality assurance is provided as Appendix E to this TIP.

8.2.3 Corrective Action Requests

During the course of the Impact Area MRA 100-foot buffer surface and subsurface MEC removal field operations, no Corrective Action Requests were received from USACE.

9.0 MEC and MD Removal

This section provides a summary of the MEC and MD removed during the Impact Area MRA 100-foot buffer RA conducted by Gilbane. Table 1 provides data for the MEC item recovered within the Impact Area MRA 100-foot buffer during MEC investigations prior to the work described in this TIP. Figures 4A through 4C show grids where surface and subsurface MEC removal was conducted as part of the work described in this TIP. Figures 7A through 7C show locations of MEC recovered within the Impact Area MRA 100-foot buffer.

Statistical information for the Impact Area MRA 100-foot buffer surface and subsurface MEC RA was recorded, tracked, and reported by removal grid, individual item, and date.

The cumulative statistical results for this RA are provided in Table 3.

The Impact Area MRA 100-foot buffer RA DGM target list is provided in Appendix D and tabulates dig results for recovered material identified throughout the course of the project during DGM-based subsurface MEC removal. The target list is sorted by removal grid identification and provides specific information for MEC and MD, including type, condition, weight, recovery depth, and final disposition. The target list also provides the results of all QC investigation results. MEC and MD descriptions are provided in the following sections.

9.1.1 MEC Removal

MEC was recovered and detonated during the course of the Impact Area MRA 100-foot buffer RA. As summarized in Table 2, 13 MEC items were found and removed during RA for the Impact Area MRA 100-foot buffer surface and subsurface MEC RA. Of this total, 3 MEC items were found during technology-aided surface MEC removal, 5 MEC items were found during analog-based subsurface MEC removal, and 5 MEC items were found during DGM-based subsurface MEC removal. Figures 7A through 7C show the locations of MEC recovered during the RA. The items were encountered at depths of 0 to 12 inches below ground surface.

9.1.2 MD Removal

Recovered MD was characterized by weight on a grid-by-grid basis. An estimated total of 2,815 pounds of MD was recovered during the course of the RA. Figures 6A through 6C show the estimated weight of MD removed from each Impact Area MRA 100-foot buffer removal grid.

Detailed information regarding MD and other debris recovered during DGM-based subsurface removal is provided in the Impact Area MRA 100-foot buffer subsurface MEC RA target list in Appendix D.

MD was tracked, certified by the SUXOS, UXOQCS, and USACE OE Safety Specialist as free from explosive material, and stored in lockable roll-off containers. All MD was demilitarized as appropriate. MD, range-related debris (RRD), and other debris were inspected and certified as materials documented as safe (MDAS) and transported to a recycling facility. Department of Defense (DoD) Form 1348-1A documentation accompanied the MD. Department of Defense Form 1348-1A and chain of custody documentation are included in Appendix F.

9.1.3 Detonation of Munitions and Explosives of Concern

During the course of the Impact Area MRA 100-foot buffer MEC RA, 13 MEC items were destroyed by detonation. All procedures for demolition operations included in the Final SSWP (Shaw, 2010) were followed. All items were destroyed by detonation, and the details of these operations have been reported in the Fort Ord MMRP database.

9.1.4 Disposition of Munitions Debris

Gilbane used a systematic approach for collecting and inspecting MD. In accordance with the scope of work, MD items less than 2 inches in maximum dimension were not collected. According to Department of Defense 4160.21-M (Defense Materiel Disposition Manual), all debris collected is classified as Group 1b.

MD and RRD were initially classified as MPPEH. Following initial classification, the MPPEH was certified by the SUXOS, UXOQCS, and USACE OE Safety Specialist as either MDAS or material documented as an explosive hazard. All MDAS was certified free from explosive material and stored in lockable roll-off containers. All MDAS was demilitarized as appropriate. MDAS was inspected, certified, and transported to a recycling facility. DD Form 1348-1A documentation accompanied the MD.

MD was transported to FACT International in Los Angeles, California, for smelting and eventual recycling.

10.0 Environmental Protection

10.1 Description of Impacts and Mitigation Measures

The Impact Area MRA 100-foot buffer is within the Natural Resource Management Area which is designated for transfer to BLM as undeveloped habitat reserve under the HMP (USACE, 1997). The HMP describes special land restrictions and habitat management requirements within habitat reserve areas to protect a number of rare and listed species. Habitat reserve areas support plant and animal species protected under the Endangered Species Act that require implementing mitigation measures identified in the HMP to minimize potential adverse impacts to listed species. The site consists primarily of central maritime chaparral which contains several species covered by the HMP.

The activities conducted within the Impact Area MRA 100-foot buffer included vehicle use to support RA work, debris and vegetation removal, and excavations to support subsurface MEC removal activities.

Vegetation within the Impact Area MRA 100-foot buffer MEC RA will be allowed to regrow. Additionally, mitigation measures to reduce impacts to protected species were implemented during project activities. These measures are taken from the terms and conditions and the reasonable and prudent measures within the HMP and four biological opinions and one amendment (U.S. Fish and Wildlife Service [USFWS], 1999; USFWS, 2002; USFWS, 2005; USFWS, 2007 (amendment); and USFWS, 2011). Mitigation and other environmental protection measures that applied during this project are summarized here.

- **Employee biological and natural resources training**. Training for all personnel was conducted by a staff biologist. Training included information on rare, threatened, and endangered species on the site, including a description of the species, their protected status, and a list of measures to be implemented to avoid and reduce impacts to these species and their habitat. In addition to the training, several Habitat Checklists were prepared by the staff biologist that outlined specific avoidance and minimization measures, which were communicated to the project supervisors prior to work initiation in preparatory meetings.
- **Use of existing roads where possible**. Exceptions occurred when it was necessary to access excavation sites and to remove piles of debris. These

activities necessitated traversing the site using tracked vehicles. Access routes were sited to avoid populations of HMP species and restoration areas.

- **Reduce disturbance footprint as much as possible**. Disturbances were limited to those required for the above-mentioned activities. Work was not permitted in the HA18 and HA19 remediation areas where restoration activities are occurring. Manual vegetation removal was required in surrounding the HAs and in areas of dense oak woodland in order to avoid impacts to the restoration areas and trees. Coast live oak trees greater than four inches in diameter were not removed, although limbing up to six feet from the ground was permitted to allow access beneath the trees. Removal of limbs greater than four inches was not permitted and all limbs removed were cut all the way up to the next branch to reduce the potential for disease. Additionally, work was not permitted in grids with known populations of Monterey spineflower or sand gilia from March (approximate time of germination) through June (approximate time of seed-set).
- **Invasive Weed Control**. In order to reduce the spread of invasive weeds, all equipment that came from off of Fort Ord were washed before entering the project site; existing roads were used to the greatest extent feasible; and boots, vehicles, and equipment working in high invasive weed infestation areas were cleaned prior to moving to sites were invasive species populations are low or have not been identified.

- **Black legless lizard (BLL) and California tiger salamander (CTS) encounters.** Supervisors and field personnel were trained during the natural resources training to identify BLL and CTS, and they were informed of the potential for these species to occur within the project site and the established protocols if any individuals were encountered. There were no BLL or CTS encounters during the Impact Area MRA 100-foot buffer MEC RA.

10.2 Erosion Control

To prevent and reduce erosion concerns, normal vehicle access was restricted to existing roads and trails. Gilbane monitored the work site for potential erosion problems, and a final inspection was conducted by the Gilbane Project Biologist.

11.0 Protectiveness Assessment

The protectiveness of the RA was evaluated against the requirements of the Track 3 ROD. The RA performed within the Impact Area MRA 100-foot buffer was consistent with the Final SSWP and Final RD/RA Work Plan, and no conditions contrary to these documents were encountered at the site.

The RA for the Impact Area MRA 100-foot buffer is complete. All surface and subsurface MEC remediation areas addressed in this document passed QA/QC.

Based on the Track 3 ROD and the Final RD/RA Work Plan, the following actions will occur until all RAs within the Impact Area MRA are complete:

- Site security of the Impact Area MRA will be maintained;
- Unauthorized public access to or within the Impact Area MRA will continue to be prohibited;
- MEC recognition and safety training will be provided as needed before property transfer and during the implementation of the RA; and
- UXO support for intrusive work will continue to be provided as needed by UXO-qualified personnel.

12.0 References

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Appendix H
Range 26 MEC Remedial Action Technical Memorandum

Range 26 MEC Remedial Action
Technical Memorandum
Former Fort Ord, California

Total Environmental Restoration Contract
Contract No. *DACW05-96-D-0011*
Task Order No. 016

Submitted to:

U.S. Department of the Army Corps of Engineers
1325 "J" Street
Sacramento, California 95814-2922

Submitted by:

Shaw Environmental, Inc.
PO Box 1698
Marina, California 93933

March 2011

Issued to:_____ Date:_____

Copy #:_____ ☒ Controlled ☐ Uncontrolled

Range 26 MEC Remedial Action
Technical Memorandum

1.0 Introduction

This Technical Memorandum (TM) describes the Munitions and Explosives of Concern (MEC) remedial action that was performed by Shaw Environmental, Inc. (Shaw) within Range 26 at the former Fort Ord (Figure 1-1). The remedial action was conducted prior to soil remediation activities. Field work at the site was initiated in March 2010 (vegetation clearance) and was completed in August 2010 (Digital Geophysical Mapping, DGM). This TM summarizes the work that was conducted in accordance with the *Final Site Specific Work Plan, MEC Remedial Action, Non-Burn Areas, Former Fort Ord, California* (Final SSWP; Shaw, 2010a). Subsurface MEC remediation to support soil remediation excavation activities, post-excavation Digital Geophysical Mapping, and post excavation anomaly removal were conducted in accordance with the *Site-Specific Work Plan, Subsurface MEC Remedial Action, Pre- and Post Soil Remediation, Historical Area 26, Site 39 Inland Ranges, Former Fort Ord, California (*Shaw, 2010b*)* and are not detailed in this TM. This work was conducted in accordance with the Track 3 Record of Decision (ROD) and the Track 3 Remedial Design/Remedial Action (RD/RA) Work Plan.

1.1 Site Location

Range 26 is located along the south western boundary of the Impact Area MRA and falls within MRS-BLM. The area where surface removal and DGM were performed lies on either side of Austin Road south of Nowhere Road and North of the Blue Line (Figure 1-1). The work detailed in this TM is shown on Figure 2-1 and includes work performed in Area 2E and Area 2F of the *Final SSWP* (Shaw, 2010a).

1.2 Purpose

The Final Work Plan, Remedial Design/Remedial Action (RD/RA Work Plan), Track 3 Impact Area Munitions Response Area, Former Fort Ord (U.S. Army Corps of Engineers [USACE], 2009) specifies that the Army will prepare a TM for the Environmental Protection Agency (EPA) and Department of Toxic Substances Control (DTSC), to present a review of the results of both the surface remediation and the DGM data. This TM will provide an evaluation of the work completed to date and, if necessary, describe additional recommended remedial actions based on the evaluation.

The basic premise of the TM is to evaluate surface remediation and DGM information to determine if additional subsurface remediation is required based on information gathered following completion of the Final *SSWP,* or as requested by the future property recipient and identified in coordination with the Army. Additional information to be provided as part of this TM is as follows:

1. Original Scope of work for Range 26,
2. Remedial work completed at Range 26, and reason for modifications to work intended for Range 26, if any,

3. Summary of MEC/ Munitions Debris (MD) removed during surface MEC remediation activities from Range 26,
4. Observation of evidence of potential soil contamination for evaluation within the Site 39/ Basewide Range Assessment Program at Range 26,
5. Recommendations for additional subsurface MEC remediation within Range 26, either specific to portions of the site or as a whole, and
6. Conclusions/Summary of Recommendations for Range 26, either specific to portions of the site or as a whole.

2.0 Scope of Work

The scope of this project entailed vegetation clearance and a technology-aided surface MEC remediation as defined in the Final SSWP across approximately 50 acres of Range 26. Figure 2-1 provides a general site layout of Range 26. The extent of surface MEC remediation at Range 26 is detailed on Figure 2-2. After surface MEC remediation activities were complete, a DGM survey occurred over the entire project area. The extent of the DGM survey at Range 26 is detailed on Figure 2-3.

2.1 Vegetation Clearance

Vegetation clearance at Range 26 was started and completed in March 2010. Biological constraints limited vegetation cutting to areas NE of the southern boundary road. Following completion of this phase of work, technology-aided surface MEC remediation commenced.

2.2 Technology-Aided Surface MEC Remediation

Technology-aided surface MEC remediation was completed as discussed above. Surface MEC remediation activities commenced in April 2010 and were completed in April 2010. Surface MEC remediation was performed up to the road on the southern boundary, and did not include complete grids adjacent to the road. Biological constraints limited vegetation cutting to areas NE of the southern boundary road. No MEC items were recovered during this phase of work. Quality Control/Quality Assurance (QC/QA) processes in accordance with the *Final SSWP* (Shaw, 2010a) were implemented.

2.3 DGM Survey

DGM survey was completed with a vehicle-towed EM61-MK2A array and a single man portable unit. DGM activities commenced in April 2010 and were completed in August 2010. Figure 2-4 depicts the DGM data collected at Range 26. Category B MQOs were met and Quality Control/Quality Assurance (QC/QA) processes in accordance with the *Final SSWP* (Shaw, 2010a) were implemented.

3.0 Approved Changes During Field Work

There were no approved changes during field work at Range 26. All work was performed in accordance with the *Final SSWP* (Shaw, 2010a).

4.0 Summary of MEC/MD Removed

No MEC items were encountered and removed as part of surface MEC remediation activities described in this TM. Portions of the site have had subsurface removal to depth (RTD) performed prior to the work detailed in this TM. All MEC items encountered and removed prior to the operations detailed in this TM are included in Table 1. Table 1 includes MEC items encountered within the fuel breaks, which are adjacent to the area discussed in this TM. These items were consistent with the Conceptual Site Model for the site and were recovered prior to activities described in this TM.

Munitions debris removed from Range 26 was recorded based on weight per 100 foot by 100 foot grid. Approximately 52 pounds of MD were removed from Range 26 as part of surface MEC remediation activities. Densities of MD weights by grid are shown on Figure 4-1.

5.0 Observations of Evidence of Potential Soil Contamination

Prior to the initiation of field operations, Unexploded Ordnance field personnel were trained to recognize and report evidence of potential soil contamination. No such evidence was noted within Range 26 in areas other than those already known, characterized and scheduled for soil remediation.

6.0 Recommendations for Additional Subsurface MEC Remediation

The following conditions would result in a recommendation for further subsurface MEC remediation in the Technical Memorandum. These conditions include:

- An area determined to have a high density of subsurface anomalies and evidence of all-way-acting/piezoelectric fuzed UXO/ Discarded Military Munition (40mm high explosive grenades, LAW rockets, and 90mm High-Explosive Anti-Tank projectiles). If individual anomalies cannot be distinguished, the area will be considered to have high density of subsurface anomalies. If both conditions exist the area will be a candidate for subsurface removal via excavation and sifting.
- Areas specifically requested by the future property recipient, determined as necessary for reuse of the area as a habitat reserve, and identified in coordination with the Army.

Factors that will be considered when determining whether additional actions are necessary include, but are not limited to: (1) type of MEC encountered and risk associated with MEC; (2) proximity to potential

receptors; (3) density of items; and (4) consistency with Applicable or Relevant and Appropriate Requirements such as the HMP and Biological Opinions.

No such areas were encountered at Range 26. Evidence of the items described above was not encountered during the technology-aided surface MEC remediation. No additional subsurface MEC remediation is recommended for the site.

7.0 Conclusions/Summary of Recommendations

The surface MEC remediation and DGM survey occurred as intended within the original scope of work. No additional work is recommended and remedial action objectives have been met.

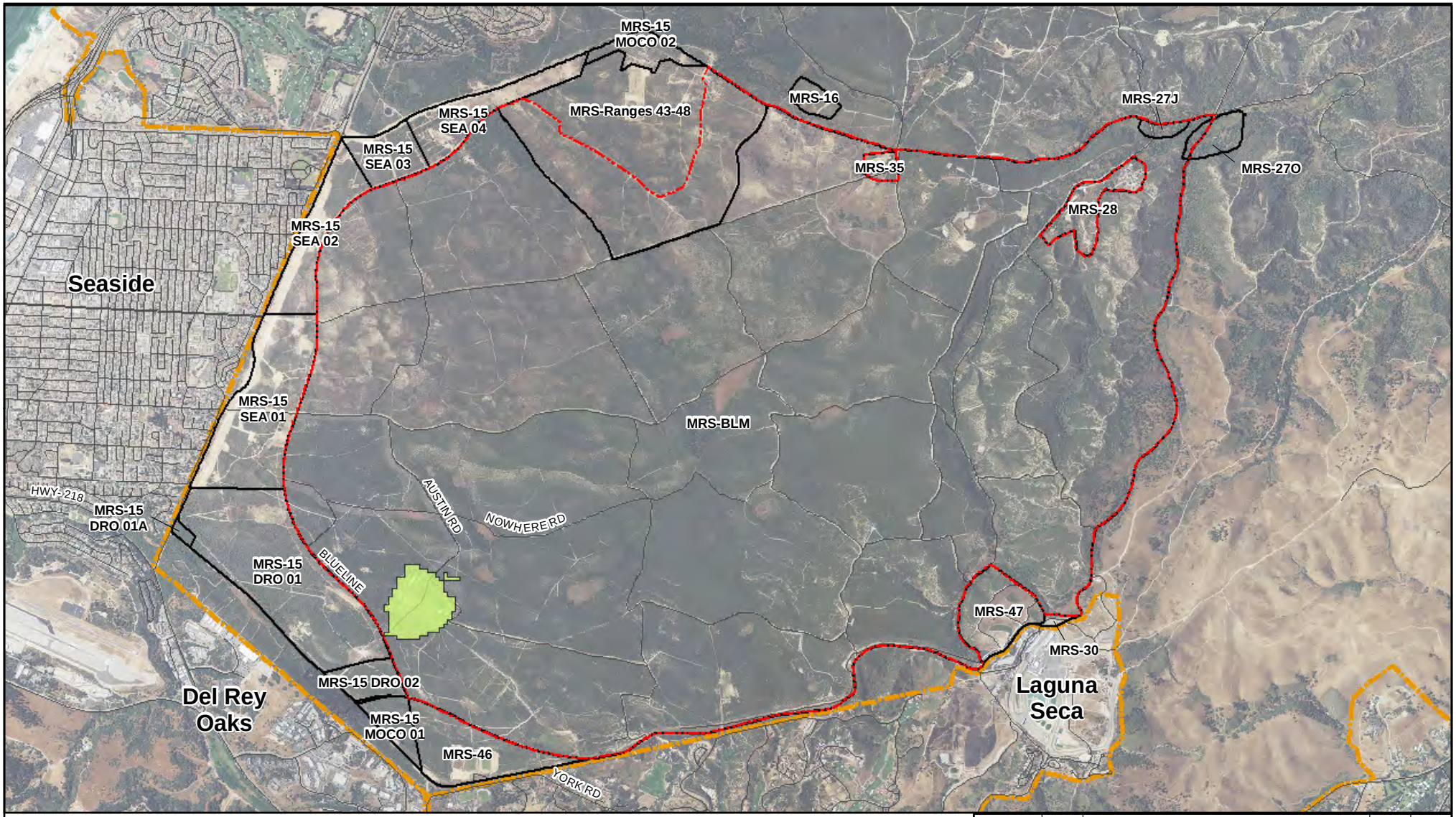
8.0 References

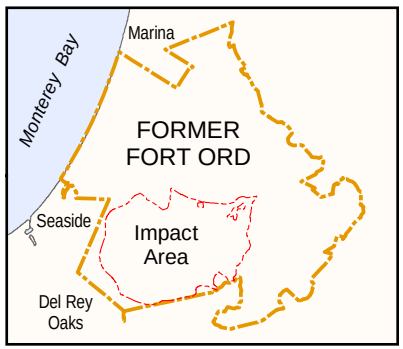
Shaw Environmental (Shaw) 2010a. Final Site Specific Work Plan, MEC Remedial Action, Non-Burn Areas, Former Fort Ord, CA

(Shaw, 2010b). Site-Specific Work Plan, Subsurface MEC Remedial Action, Pre- and Post Soil Remediation, Historical Area 26, Site 39 Inland Ranges, Former Fort Ord, CA

U.S. Army (Army) 2008. Final, Track 3 Record of Decision (Track 3 ROD), Impact Area Munitions Response Area, Track 3 Munitions Response Site, Former Fort Ord, CA

U.S. Army Corps of Engineers, (USACE), 2009. Final Work Plan, Remedial Design/Remedial Action (RD/RA Work Plan), Track 3 Impact Area Munitions Response Area, Former Fort Ord, CA





Legend

- Range 26
- Munitions Response Site
- Impact Area MRA
- Former Fort Ord Boundary

N

0 3,500 7,000 FEET

REVISION	DATE	DESCRIPTION	CHKD	APPR

Shaw Shaw Environmental, Inc.

Department of the Army
Sacramento District, Corps of Engineers
Sacramento, California

DESIGNED: K. SIEMANN
DRAWN: K. BLACK
CHECKED:

FIGURE 1-1
LOCATION MAP
RANGE 26
FORMER FORT ORD, CALIFORNIA

SUBMITTED: DATE

SCALE: SPEC. No.
SHEET FILE No. R26_loc_TM.mxd

N

Legend

- Surface Removal Area (Area 2F)
- Site 39 Soil Remediation Area (Area 2E)
- Previously Completed RTD

0 200 400 FEET

REVISION	DATE	DESCRIPTION	CHKD	APPR

Shaw Shaw Environmental, Inc.

Department of the Army
Sacramento District, Corps of Engineers
Sacramento, California

DESIGNED: K. SIEMANN
DRAWN: K. BLACK
CHECKED:

FIGURE 2-1

RANGE 26
SCOPE OF WORK

FORMER FORT ORD, CALIFORNIA

SUBMITTED: DATE

SCALE: SPEC. No.

SHEET FILE No. R26_scope_TM.mxd

N

Legend

- USACE QA Approved
- Previously Completed RTD
- Road

0 200 400 FEET

REVISION	DATE	DESCRIPTION	CHKD	APPR

Shaw® Shaw Environmental, Inc.

Department of the Army
Sacramento District, Corps of Engineers
Sacramento, California

DESIGNED: K. SIEMANN
DRAWN: K. BLACK
CHECKED:

FIGURE 2-2

RANGE 26
SURFACE REMOVAL EXTENT

FORMER FORT ORD, CALIFORNIA

SUBMITTED: DATE

SCALE: SPEC. No.

SHEET FILE No. R26_removal_TM.mxd

N

Legend

- Digital QA Complete
- Site 39 Soil Remediation Area
- Previously Completed RTD
- Road

0 200 400 FEET

REVISION	DATE	DESCRIPTION	CHKD	APPR

Shaw Shaw Environmental, Inc.

Department of the Army
Sacramento District, Corps of Engineers
Sacramento, California

DESIGNED: K. SIEMANN
DRAWN: K. BLACK
CHECKED:

FIGURE 2-3

RANGE 26
DGM GRID STATUS

FORMER FORT ORD, CALIFORNIA

SUBMITTED: DATE

SCALE: SPEC. No.

SHEET FILE No. R26_DGM_Grids_TM.mxd

N

EM61 - MK2A
4 Channel Sum Response (mV)
0 2 4 6 8 10 12 14 16 18 20

0 200 400 FEET

REVISION	DATE	DESCRIPTION	CHKD	APPR

Shaw Shaw Environmental, Inc.

Department of the Army
Sacramento District, Corps of Engineers
Sacramento, California

DESIGNED: K. SIEMANN
DRAWN: K. BLACK
CHECKED:

FIGURE 2-4
RANGE 26
GEOPHYSICAL DATA MAP
FORMER FORT ORD, CALIFORNIA

SUBMITTED: DATE
SCALE: SPEC. No.
SHEET FILE No. R26_DGM_TM.mxd

N

Legend

MD Weight (in Pounds) by Grid

- No MD
- < 1 Lbs MD
- 1 - 2 Lbs MD
- 2 - 3 Lbs MD
- > 3 Lbs MD

0 200 400 FEET

REVISION	DATE	DESCRIPTION	CHKD	APPR

Shaw Shaw Environmental, Inc.

Department of the Army
Sacramento District, Corps of Engineers
Sacramento, California

DESIGNED: K. SIEMANN
DRAWN: K. BLACK
CHECKED:

FIGURE 4-1
MUNITIONS DEBRIS WEIGHT (SURFACE)
BY GRID
RANGE 26
FORMER FORT ORD, CALIFORNIA

SUBMITTED: DATE

SCALE: SPEC. No.
SHEET FILE No. R26_MDsurface_TM.mxd

Table 1

MEC Items Encountered and Removed Prior to Remedial Action

Item Date	Grid	Depth (in)	Qty	Dig Result Type	Item Description
4/17/1997	A2H2E7	0	1	MEC-UXO	PROJECTILE, 75mm, HE, COMMON, MK I
4/17/1997	A2H2E7	0	2	MEC-UXO	ROCKET, 2.36 INCH, AT, M6 SERIES
4/10/1997	A2H2C7	0	1	MEC-UXO	ROCKET, 4.5 INCH, MK I, MOD 0 (Model Unknown)
4/10/1997	A2H0C8	0	1	MEC-UXO	ROCKET, 2.36 INCH, AT, M6 SERIES
4/16/1997	A2H2F4	0	1	MEC-UXO	ROCKET, 2.36 INCH, AT, M6 SERIES
4/12/2005	E027	12	1	MEC-UXO	ROCKET, 2.36 INCH, HEAT, M6
3/31/2005	E030	3	1	MEC-UXO	ROCKET, 2.36 INCH, HEAT, M6

TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE
(Read Instructions on the reverse side prior to initiating this form)

DATE: February 28, 2011

TRANSMITTAL NO.: 40

Section I - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS *(This Section will be initiated by the contractor)*

TO: Bill Nevius
U.S. Army Corps of Engineers
1325 "J" Street
Sacramento, CA 95814-2922

FROM: Peter Kelsall
Shaw Environmental, Inc.
P.O. Box 1698
Marina, CA 93933-1698

CONTRACT NO.
DACW05-96-D-0011

T.O. # 016 WAD # 07

CHECK ONE:
X THIS IS A NEW TRANSMITTAL

THIS IS A RESUBMITTAL OF TRANSMITTAL

SPECIFICATION NO. (Cover only one section with each transmittal)

PROJECT TITLE AND LOCATION: FORMER FORT ORD, CALIFORNIA

ITEM NO a.	DESCRIPTION OF ITEM SUBMITTED *(Type, size, model number, etc.)* b.	MFG. OR CONTR. CAT., CURVE DRAWING OR BROCHURE NO. *(See Instruction No. 8)* c.	NO. OF COPIES d.	CONTRACT REFERENCE DOCUMENT		FOR CONTRACTOR USE CODE g.	VARIATION *(See Instruction No. 6)* h.	FOR C E USE CODE i.
				SPEC. PARA. NO. e.	DRAWING SHEET NO. f.			
042	Range 26 MEC Remedial Action, Technical Memorandum, Former Fort Ord, California, Revision C	N/A	42	SOP17		A		
043	DRF for the Range 26 MEC Remedial Action, Technical Memorandum, Former Fort Ord, California, Revision C	N/A	42	SOP17		F		

REMARKS
cc:
See Distribution List

CONTRACTOR QUALITY CONTROL SYSTEMS MANAGER
Shaw Environmental, Inc.

___✓___ Approved
_____ Approved with corrections as noted on submittal data and/or attached sheet(s).

SIGNATURE: Tom Thomas
TITLE: CONTRACTOR QUALITY CONTROL SYSTEM MANAGER

I certify that the above submitted items have been reviewed in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise stated.

Shaw Environmental, Inc.

/PETER KELSALL
NAME AND SIGNATURE OF CONTRACTOR

Section II - APPROVAL ACTION

ENCLOSURES RETURNED (List by Item No.)	NAME, TITLE AND SIGNATURE OF APPROVING AUTHORITY	DATE

Shaw Shaw Environmental, Inc.

DOCUMENT REVIEW AND RELEASE FORM

Client: USACE	Authors: Shaw	Submittal Register Item No.: 043	Date: February 28, 2011

Document Title:	Range 26 MEC Remedial Action, Technical Memorandum, Former Fort Ord, California	Revision: C	T.O. # 016	WAD# 07

Reviewer (*print*)	Reviewer Initial & Date	Technical	Project Manager	CQC	Health and Safety Manager	Task Manager	Project Geophysics	SUXOS	Construction	Reviewer Comments Resolved (*Signature & Date*)
Peter Kelsall			X							
Tom Ghigliotto	3/1/11			X						3/1/11
Kevin Siemann	3/1/11					X				
Charles Nycum	3/1/11						X			
Chris Light	3/1/11							X		
Same as Technical Reviewer above		X	Topic outline with objectives for each section submitted prior to Rev. A							

Program Reviewer's Acceptance for Document Submittal	~~Signature~~	Yes	No
1) A 4025 (as applicable) prepared and submitted with document?		X	
2) Technical Conclusions adequately supported by text and data?		X	
3) Tables and Figures are in the proper format and checked and approved?		X	
4) The Table of Contents consistent with text information?		X	
5) Technical Reviewers are qualified and accepted by Project Manager?		X	
6) A document Distribution List been prepared and submitted with document?		X	

Recommended
4025 Code A

Project Manager

Contractor Quality Control Systems Manager

Appendix I
February 16, 2017
Munitions Assessment
Review Board Memorandum

DEPARTMENT OF THE ARMY
U.S. ARMY CHEMICAL MATERIALS ACTIVITY
E4585 HOADLEY ROAD
ABERDEEN PROVING GROUND, MD 21010-5424

REPLY TO ATTENTION OF:

AMSCM-D

MEMORANDUM FOR Department of the Army, Fort Ord Base, Realignment and Closure (BRAC) Office (Attn: William K. Collins/BRAC Environmental Coordinator), P.O. Box 5008, Monterey, CA 93944-5008

SUBJECT: Materiel Assessment Review Board (MARB) Recommendations for Fort Ord (ORD), CA, Items ORD-17-014 through ORD-17-016

1. The MARB met on 16 February 2017 to evaluate non-intrusive assessment data collected on three items recovered at Fort Ord, CA. The U.S. Army Chemical, Biological, Radiological, Nuclear and High Yield Explosives Analytical Remediation Activity assessed the item with X-ray and the Portable Isotopic Neutron Spectroscopy (PINS) Chemical Assay System.

2. Item ORD-17-014, a 4-inch Stokes mortar, was determined to contain an 80% liquid fill, a partial fuze and energetic materials. Analysis of the PINS spectra revealed this item contains an FM Smoke fill, high confidence, and was subsequently recommended for Local Disposition (LD) disposal by the MARB.

3. Item ORD-17-015, a 4-inch Stokes mortar, was determined to contain an 80% liquid fill, and no fuze or energetic materials. Analysis of the PINS spectra revealed this item contains a possible CNB fill, and was subsequently recommended for LD disposal by the MARB.

4. Item ORD-17-016, a 4-inch Stokes mortar, was determined to contain an 80% liquid fill, an armed fuze and energetic materials. Analysis of the PINS spectra revealed this item contains an FM Smoke fill, high confidence, and was subsequently recommended for Armed and Fuzed - Conventional disposal by the MARB. Based on the condition of the fuze, this item is unsafe to move and should be destroyed in place (Reference TM 60A 1-1-22 EOD Procedures / General EOD Safety).

5. The MARB conference notes are enclosed, and the MARB Materiel Assessment Data Sheets (MADS) are in Attachment C of the enclosure. Item-specific data, including x-ray analysis, explosive configuration, and fill are provided in the MADS. Please carefully review the MADS prior to disposal.

AMSCM-D
SUBJECT: Materiel Assessment Review Board (MARB) Recommendations for Fort Ord (ORD), California, Items ORD-17-014 through ORD-17-016

6. For more information and to report destruction of the items please call Mr. Russell Fendick, Recovered Chemical Materiel Directorate, at (410) 436-8094/ DSN 584-8094, or Mr. Robert Maddox, U.S. Army 20th Support Command, at (410) 436-7193/ DSN 584-7193.

4 Encls
1. Conference Notes
2. Attachment A
3. Attachment B
4. Attachment C

NATHANIEL W. FARMER
COL, CM
Director

CF: (w/encls)
Dr. Gus Caffrey, Idaho National Laboratory, P.O. Box 1625, Idaho Falls, ID 83415-3855
Commander, U.S. Army Research, Development and Engineering Command (AMSRD-OPH/ Mr. Smart), 5183 Blackhawk Road, Aberdeen Proving Ground, MD 21010-5424
Commander, U.S. Army CBRNE 20th Command, (AFCB-DCO/COL Muchow), 5183 Blackhawk Road, Aberdeen Proving Ground, MD 21010-5424
Director, U.S. Army Edgewood Chemical Biological Center (AMSRD-ECB-CB-C/ Mr. Blades), 5183 Blackhawk Road, Aberdeen Proving Ground, MD 21010-5424
Director, U.S. Army Chemical Materials Activity (AMSCM-RM/Mr. Lyle), E4585 Hoadley Road, Aberdeen Proving Ground, MD 21010-5424
Director, U.S. Army Chemical Materials Activity (AMSCM-TR/Mr. Hertzog), E4585 Hoadley Road, Building E4588, Aberdeen Proving Ground, MD 21010-5424
Director, U.S. Army Chemical Materials Activity (AMSCM-MO/Mr. Dolan), E4585 Hoadley Road, Aberdeen Proving Ground, MD 21010-5424

Appendix J
Addendums to the Units 1, 2, and 3 DQM Quality Assurance (QA) Report)

ADDENDUM 01 TO: **FORMER FORT ORD, CALIFORNIA**
UNITS 1, 2, & 3
QUALITY ASSURANCE REPORT:
DIGITAL GEOPHYSICAL OPERATIONS

PREPARED BY
GEOLOGY SECTION
SACRAMENTO DISTRICT
U.S. ARMY CORPS OF ENGINEERS

PREPARED FOR
FORT ORD BASE REALIGNMENT AND CLOSURE (BRAC) OFFICE

JANUARY 2018

1.0 INTRODUCTION

This addendum to *Former Fort Ord, California, Units 1, 2, & 3 Final Quality Assurance Report: Digital Geophysical Operations* covers the Quality Assurance (QA) processes conducted by the U.S. Army Corps of Engineers (USACE) with respect to the collection, processing, and evaluation of digital geophysical data collected by KEMRON Environmental Services, Inc (KEMRON). The data discussed in this addendum cover an additional 1.8 acres of Unit 1 not collected during the initial field effort for Units 1, 2, and 3. All previous QA processes with respect to collection, processing, and evaluation of digital geophysical data collected by KEMRON Environmental Services, Inc (KEMRON) are documented in *Former Fort Ord, California, Units 1, 2, & 3 Final Quality Assurance Report: Digital Geophysical Operations*. USACE QA verified that KEMRON had an adequate Quality Control (QC) program in place and that the additional 1.8 acres of data collected in Unit 1 were in accordance with the project Data Quality Objectives (DQOs) and Measurement Quality Objectives (MQOs).

1.1 Site Details

Unit 1 is on the southwestern edge of the Impact Area Munitions Response Area that is planned to be transferred to BLM, as depicted in Figure 1. Unit 1 is located just south of Historical Area 26 (HA 26), as depicted in Figure 2. DGM data were collected in HA 26 and Unit 1 in 2010 and 2015, respectively. A discrepancy between where the HA 26 DGM data were believed to have been collected, and where the data were actually collected, resulted in a 1.8 acre data gap between the two DGM data sets (yellow polygon in Figure 2). DGM data were collected in 2017 to fill in the 1.8 acre gap.

2.0 QA ACTIVITES

Previous QA processes with respect to collection, processing, and evaluation of digital geophysical data initially collected in Unit 1 are documented in *Former Fort Ord, California, Units 1, 2, & 3 Final Quality Assurance Report: Digital Geophysical Operations*.

2.1 Data Collection Methods

Production geophysical data were collected using Geonics EM-61 MKII electromagnetic sensors in a multi-coil configuration (towed array) throughout all of the site. The EM-61 MKII is a time-domain electromagnetic sensor that generates an electromagnetic pulse, inducing eddy currents within the subsurface. During the off period of the EM pulse, the eddy current decay produces secondary electromagnetic fields within both ferrous and non-ferrous metallic objects. These secondary electromagnetic fields are received and recorded over four averaged time gates per data collection interval (10Hz).

Data were collected either as individual grids or in grid blocks of variable size consisting of multiple grids. All data collected met the Category B line spacing requirements, with 98%

not to exceed a lane spacing of 3 ft. As stated in the MEC Procedures Supplement, the purpose and objective for Category B DGM surveys is to obtain high quality DGM data in order to characterize the site for overall anomaly distribution and density. Obstacles and issues with terrain precluded 100% coverage of the additional 1.8 acres in Unit 1. All data gaps were appropriately documented in the obstacle files submitted with DGM packages. Figure 3 shows the original 2015 DGM dataset for Unit 1 and the additional 1.8 acres of data collected to fill the data gap.

2.2 Field Oversight

See *Former Fort Ord, California, Units 1, 2, & 3 Final Quality Assurance Report: Digital Geophysical Operations*.

2.3 Geophysical System Verification

See *Former Fort Ord, California, Units 1, 2, & 3 Final Quality Assurance Report: Digital Geophysical Operations*.

2.4 Digital Data Review

See *Former Fort Ord, California, Units 1, 2, & 3 Final Quality Assurance Report: Digital Geophysical Operations*.

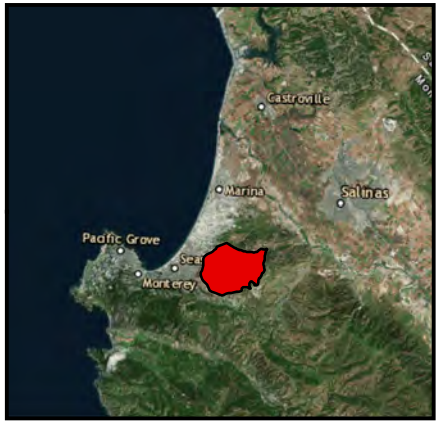
2.5 Corrective Action Request

No Corrective Action Requests (CARs) were issued that were associated with the geophysical data collection.

3.0 CONCLUSIONS

QA activities by the Government verified KEMRON had an adequate QC program in place and that the additional 1.8 acres of data collected within Unit 1 are sufficient and in accordance with the project DQOs. Furthermore, the data exceeds the quality necessary to meet Category A standards.

4.0 FIGURES



Legend

- Impact Area
- Fuel Breaks
- Unit_1

N

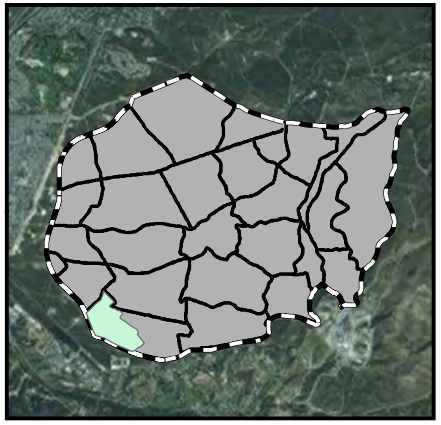
Feet

0 2,000 4,000 6,000

U.S. Army Corps of Engineers
Sacramento District

Figure 1

Unit 1
Former Fort Ord, CA



Legend

- Unit_1
- HA 26 DGM Coverage
- 1.8 Acre Data Gap
- Fence Line

95.0
90.0
85.0
80.0
75.0
70.0
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0

mV
Sum Channel

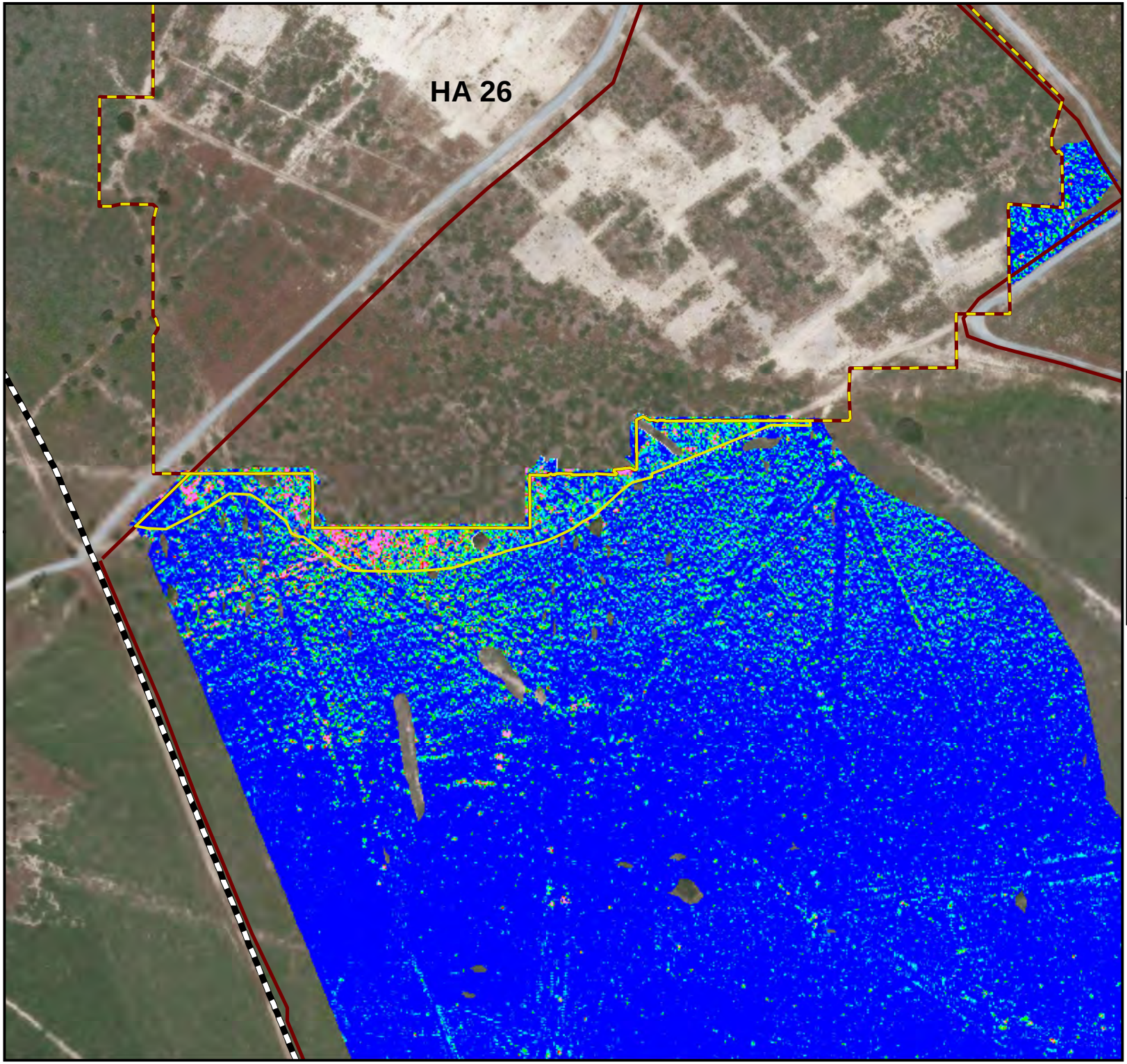
N

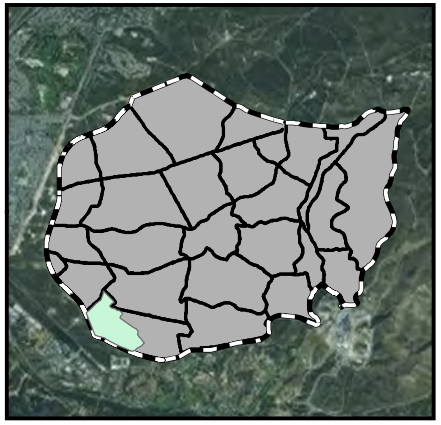
0 320 640 960 1,280 Feet

U.S. Army Corps of Engineers
Sacramento District

Figure 2

Unit 1 (2015) and HA 26 DGM Coverage
Former Fort Ord, CA





Legend

- Unit_1
- HA 26 DGM Coverage
- 1.8 Acre Data Gap
- Fence Line

95.0
90.0
85.0
80.0
75.0
70.0
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0

mV
Sum Channel

N

0 120 240 360 480 Feet

U.S. Army Corps of Engineers
Sacramento District

Figure 3

Additional 1.8 acres of DGM in Unit 1
Former Fort Ord, CA

ADDENDUM 02 TO: **FORMER FORT ORD, CALIFORNIA**
UNITS 1, 2, & 3
QUALITY ASSURANCE REPORT:
DIGITAL GEOPHYSICAL OPERATIONS

PREPARED BY
GEOLOGY SECTION
SACRAMENTO DISTRICT
U.S. ARMY CORPS OF ENGINEERS

PREPARED FOR
FORT ORD BASE REALIGNMENT AND CLOSURE (BRAC) OFFICE

FEBRUARY 2018

1.0 INTRODUCTION

This addendum to *Former Fort Ord, California, Units 1, 2, & 3 Final Quality Assurance Report: Digital Geophysical Operations* covers the Quality Assurance (QA) processes conducted by the U.S. Army Corps of Engineers (USACE) with respect to the QA confirmation survey of areas selected for subsurface removal in Units 1, 2, and 3. All previous QA processes with respect to collection, processing, and evaluation of digital geophysical data collected by KEMRON Environmental Services, Inc (KEMRON) are documented in *Former Fort Ord, California, Units 1, 2, & 3 Final Quality Assurance Report: Digital Geophysical Operations*. USACE QA verified that KEMRON had an adequate Quality Control (QC) program in place and that data collected in Units 1, 2, and 3 were in accordance with the project Data Quality Objectives (DQOs) and Measurement Quality Objectives (MQOs).

1.1 Site Details

Units 1, 2, and 3 are on the southwestern edge of the Impact Area Munitions Response Area that is planned to be transferred to the Bureau of Land Management (BLM), as depicted in Figure 1. Initially Units 1, 2, and 3 did not include any areas recommended for subsurface removal. Temporary fuel breaks and administrative areas where future reuse is planned by the BLM were later identified for subsurface MEC removal, and are shown in Figure 1.

Additionally, a limited subsurface MEC removal was performed In Unit 3 to address the possibility of encountering an item of unknown filler. This resulted in 126 potential targets that were intrusively investigated. A total of 11 MEC items were encountered and removed during subsurface MEC removal activities performed in temporary fuel breaks, administrative access areas, and during the limited subsurface MEC removal performed in Unit 3.

2.0 QA ACTIVITIES – FUEL BREAKS AND ADMINISTRATIVE AREAS

Previous QA processes with respect to collection, processing, and evaluation of digital geophysical data initially collected in Units 1, 2, and 3 are documented in *Former Fort Ord, California, Units 1, 2, & 3 Final Quality Assurance Report: Digital Geophysical Operations* and *Addendum 01 to Former Fort Ord, California, Units 1, 2, & 3 Final Quality Assurance Report: Digital Geophysical Operations.*

2.1 Digital Data Review

Data in Units 1, 2, and 3 were initially collected in their entirety to meet Category B standards; however, data in the temporary fuel breaks and administrative areas were reviewed by both the QC and QA geophysicists to ensure the data also met Category A standards.

For additional details on digital data review, see *Former Fort Ord, California, Units 1, 2, & 3 Final Quality Assurance Report: Digital Geophysical Operations*.

2.2 DGM QA Confirmation Survey

As part of USACE Quality Assurance, meandering transects were collected post intrusive investigation as part of a confirmation survey. Data were collected in the four administrations areas and six temporary fuel breaks using a Geonics EM-61MKII electromagnetic sensor in 4 channel mode. Transects covered a minimum of 5% of areas selected for subsurface removal, and are summarized in Table 1 and shown in Figures 2-11. No targets were selected for intrusive investigation as all data were below the 14 mV threshold for summed channels 1-4.

2.3 Corrective Action Request

No Corrective Action Requests (CARs) were issued that were associated with the geophysical data collection.

3.0 QA ACTIVITIES – UNIT 3 STOKES-LIVENS RISK REDUCTION

Due to targeting being performed on previously collected data, only limited QA and QC was performed in the Unit 3 Stokes-Livens Risk Reduction area. Of initial concern was the fact that the original data was collected at Category B standards; however, the majority of the area was collected with a towed array that met Category A standards. Both QA and QC assessed that the overall tight line spacing and large, shallow targets was more than adequate for target selection.

Additionally, there are no NRL response curves for the 4 inch Stokes mortar, so the 4.2 inch mortar was utilized as an equivalent threshold. Using a depth of 12 inches in the least favorable orientation, the detection threshold was determined to be 250mV on channel 2. This resulted in 126 potential targets to be intrusively investigated. Because the intent was to only remove items in the top foot, the Standard Operating Procedure for clearance did not apply. A new QC procedure was adopted to ensure the peak response was removed. Over 10% of the holes were checked and all passed QC.

4.0 CONCLUSIONS

QA activities by the Government verified KEMRON had an adequate QC program in place and that the areas selected for subsurface removal in Units 1, 2, and 3 are sufficient and in accordance with the project DQOs.

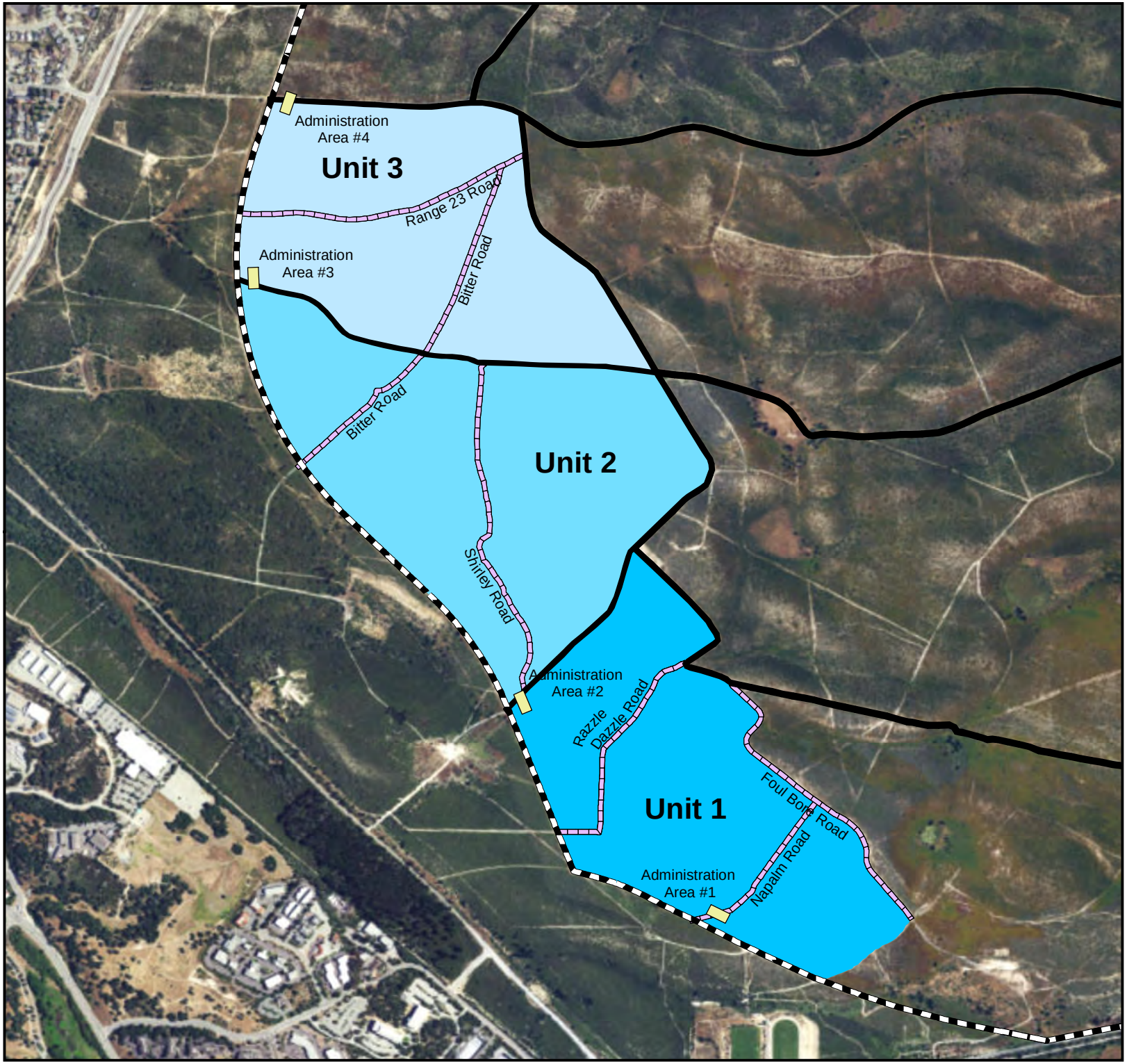
It should be noted that the risk reduction work in Unit 3 was limited in scope and nothing can be said of remaining stokes mortars outside of the area boundary selected or deeper than 1 foot.

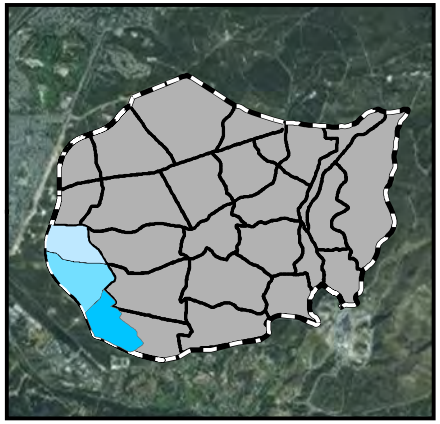
5.0 TABLES

Name	Total Area (ft^2)	Transect Area (ft^2)	Percentage Covered (%)	Number of Targets Selected
Administration Area 1	20,000	2,160.61	10.80	0
Administration Area 2	20,000	2,819.20	14.10	0
Administration Area 3	20,000	3,428.74	17.14	0
Administration Area 4	20,000	3,740.05	18.70	0
Range 23 Road	125,211.55	20,385.98	16.28	0
Bitter Road	155,456.48	28,320.96	18.22	0
Shirley Road	145,904.33	14,173.27	9.71	0
Razzle Dazzle Road	103,744.50	17,064.07	16.45	0
Foulbore Road	136,131.96	22,519.96	16.54	0
Napalm Road	76,491.76	8,995.17	11.76	0

Table 1. Summary of QA confirmation survey results.

6.0 FIGURES





Legend

- Fence Line
- Temporary Fuel Break
- Administrative Area

N

Feet

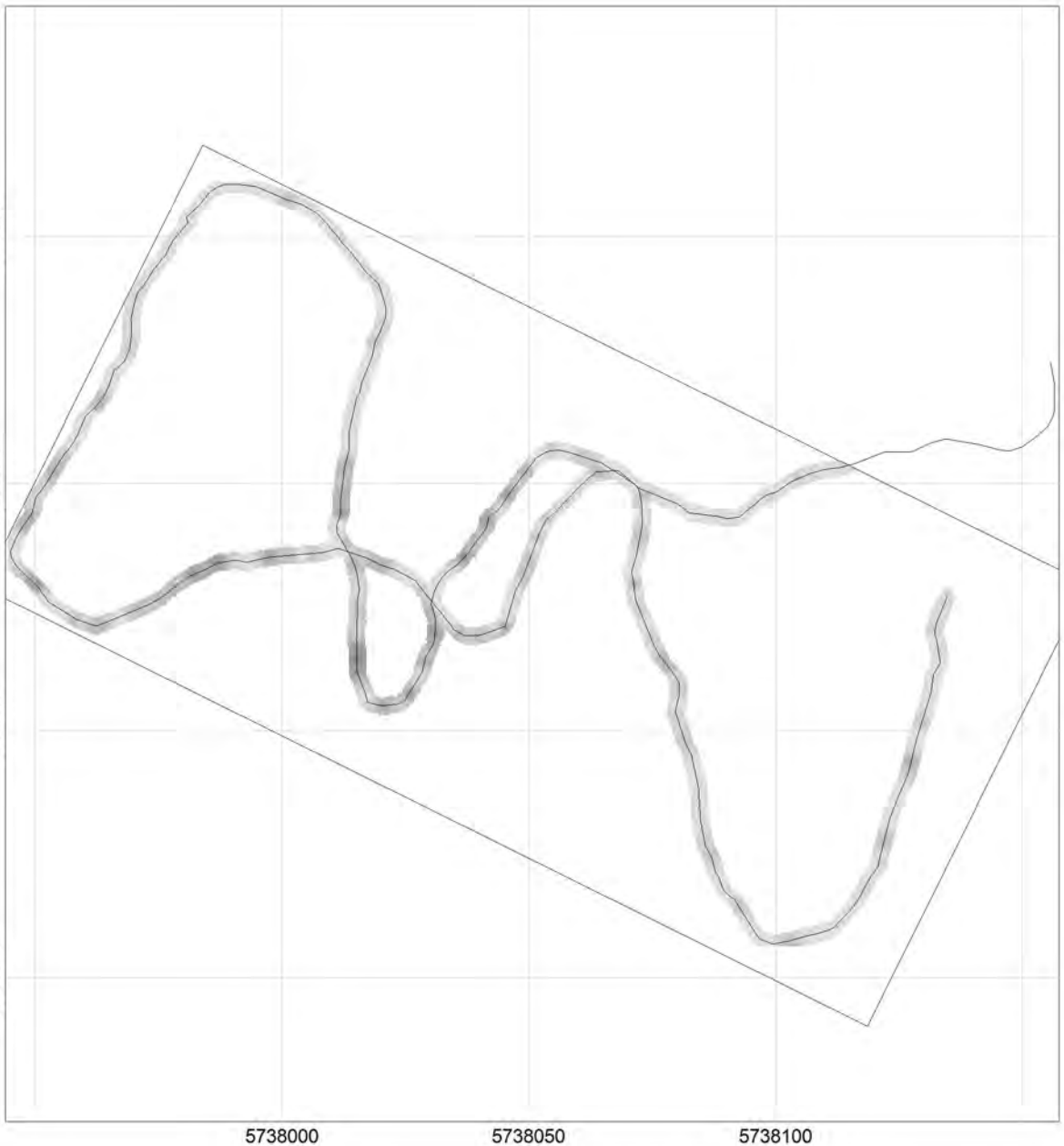
0 600 1,200 1,800 2,400

U.S. Army Corps of Engineers
Sacramento District

Figure 1

Units 1, 2, and 3 Subsurface Removal Areas

Former Fort Ord, CA



MAP

Footprint Coverage

LEGEND

Area covered: 2160.61 ftUS²
Total area:20000.00 ftUS²
Percentage covered: 10.80 %
Instrument foot print: 3.30 ftUS

Map Scale:

Scale 1:425

25 0

US survey foot

WGS 84 / SPCS83 California zone 4 (US Survey feet)

96
92
88
84
80
76
72
68
64
60
56
52
48
44
40
36
32
28
24
20
16
12
8
4

mV
Sum Channel

N

Grid North: 0°0'0"
Mag North: 0°0'0"

Client:

Project: Former Fort Ord, CA

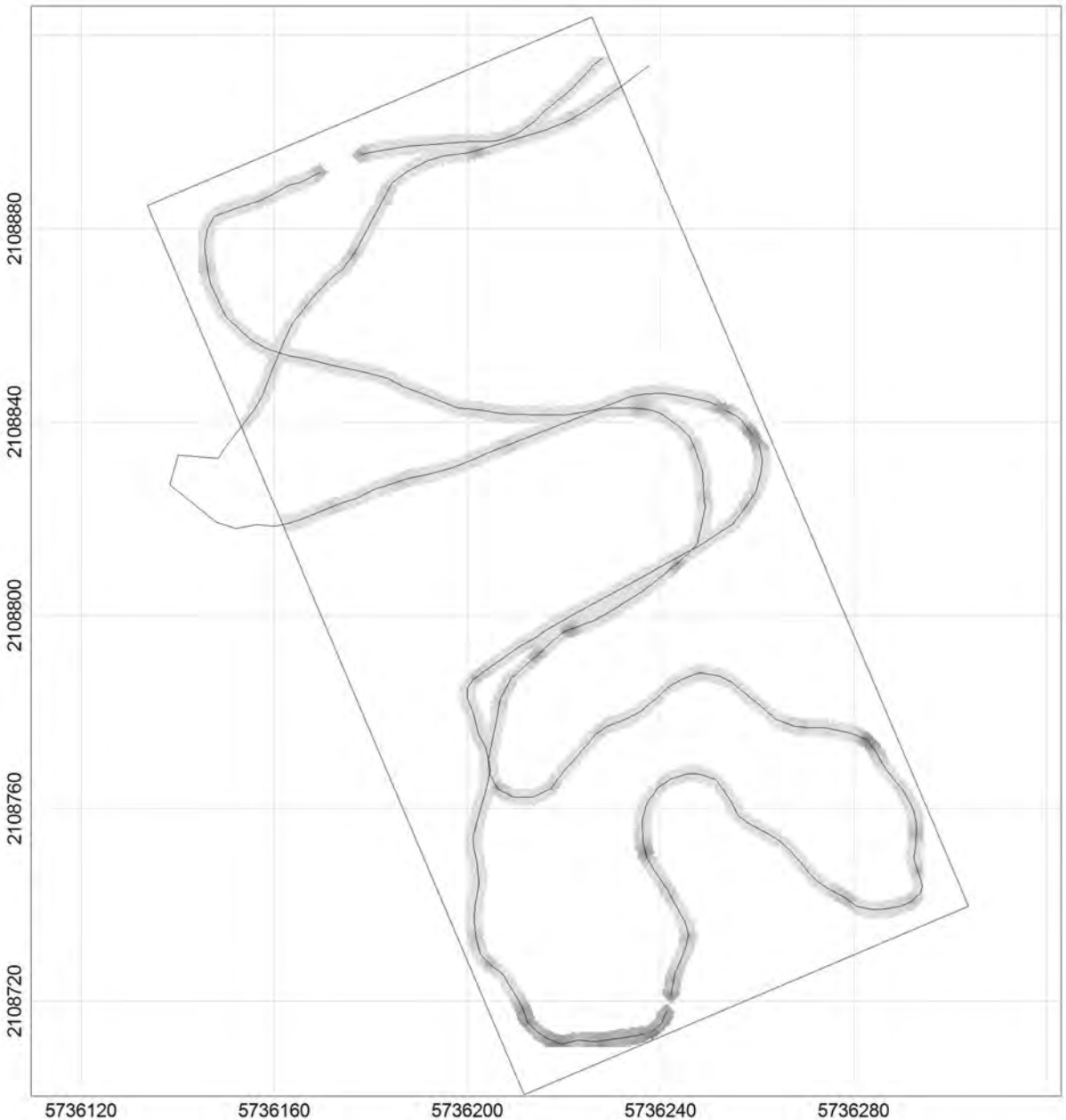
Contractor:

Created by: Kyle Lindsay | Verified by:

Date: 02/14/2018 | File: Admin_1_uceFootprintCov

Page number: | Approved:

Units 1, 2, & 3 QA re-survey: Administration Area 1



MAP

Footprint Coverage

LEGEND

Area covered: 2819.20 ftUS²
Total area:20000.00 ftUS²
Percentage covered: 14.10 %
Instrument foot print: 3.30 ftUS

Map Scale:

Scale 1:425

25 0

US survey foot

WGS 84 / SPCS83 California zone 4 (US Survey feet)

96
92
88
84
80
76
72
68
64
60
56
52
48
44
40
36
32
28
24
20
16
12
8
4

mV
Sum Channel

N

Grid North: 0°0'0"
Mag North: 0°0'0"

Client:

Project: Former Fort Ord, CA

Contractor:

Created by: Kyle Lindsay | Verified by:

Date: 02/14/2018 | File: Admin_2_1_uceFootprintCov

Page number: | Approved:

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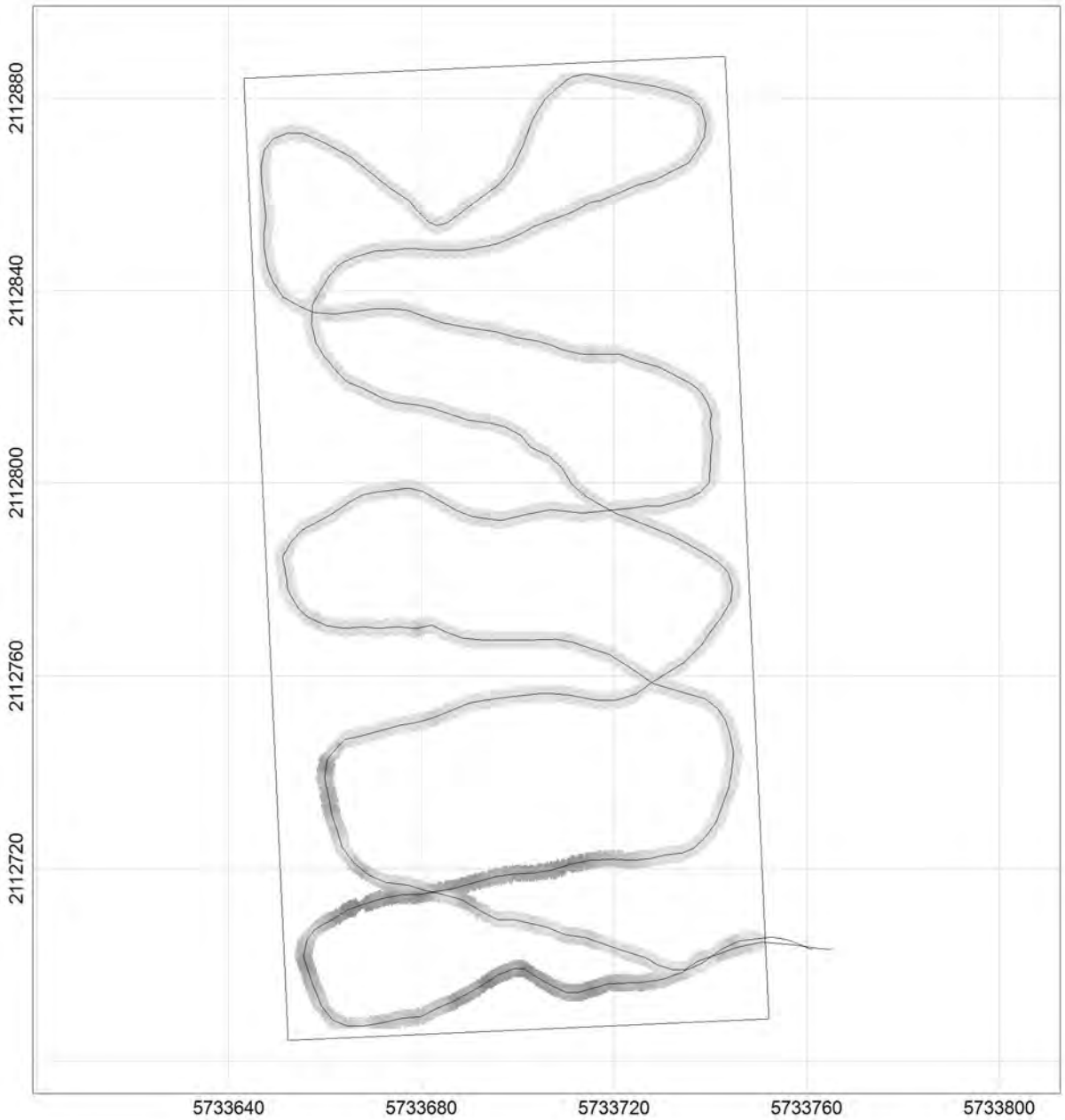


MAP

Footprint Coverage

LEGEND

Area covered: 3428.74 ftUS²
Total area:20000.00 ftUS²
Percentage covered: 17.14 %
Instrument foot print: 3.30 ftUS

Map Scale:

Scale 1:425

25 0

US survey foot

WGS 84 / SPCS83 California zone 4 (US Survey feet)

96
92
88
84
80
76
72
68
64
60
56
52
48
44
40
36
32
28
24
20
16
12
8
4

mV
Sum Channel

N

Grid North: 0°0'0"
Mag North: 0°0'0"

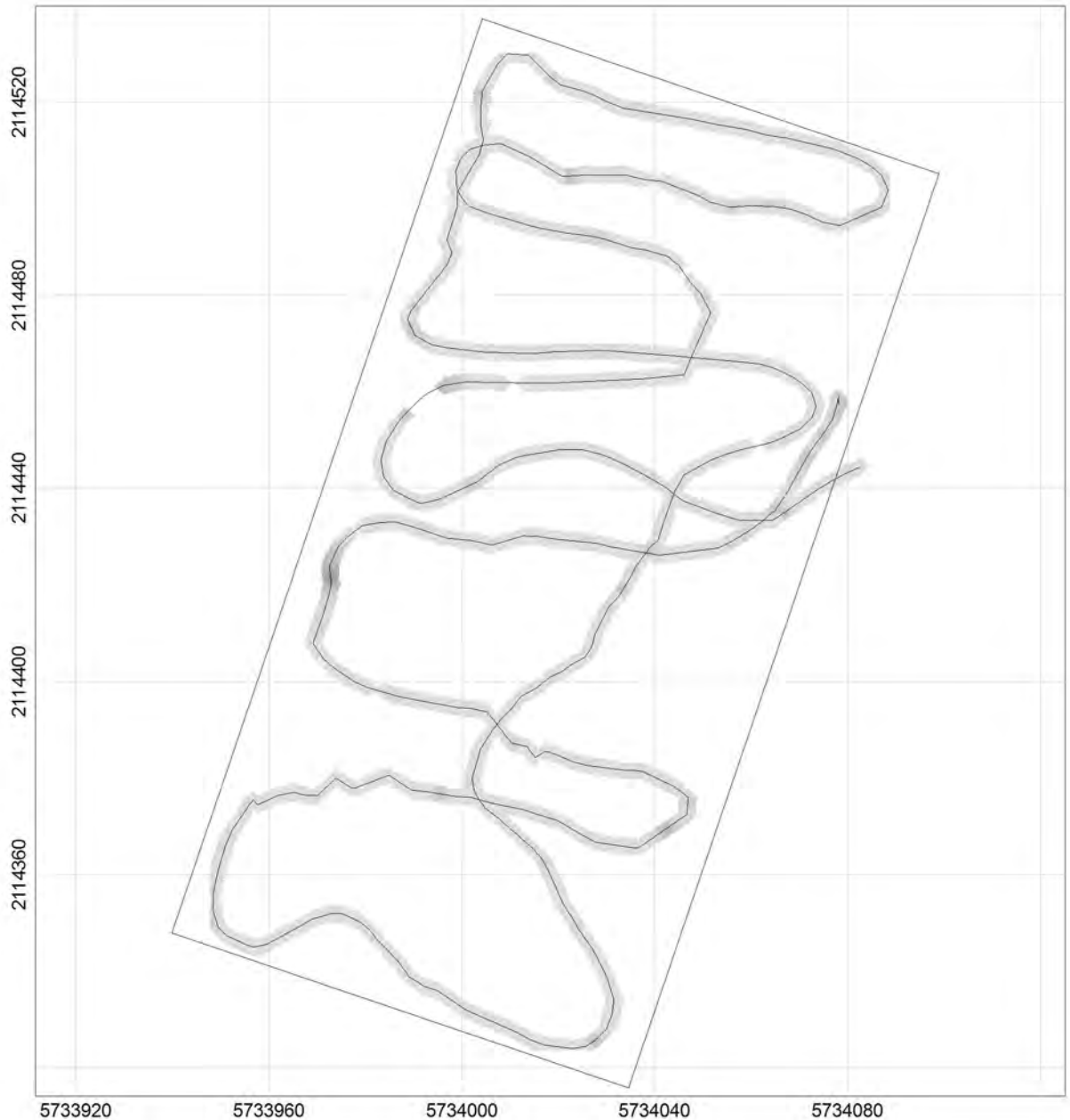
Client:

Project: Former Fort Ord, CA

Contractor:

Created by: Kyle Lindsay	Verified by:
Date: 02/14/2018	File: Admin_3_uceFootprintCov
Page number:	Approved:

Units 1, 2, & 3 QA re-survey: Administration Area 3



MAP

Footprint Coverage

LEGEND

Area covered: 3740.05 ftUS²
Total area:20000.00 ftUS²
Percentage covered: 18.70 %
Instrument foot print: 3.30 ftUS

Map Scale:

Scale 1:425

25 0

US survey foot

WGS 84 / SPCS83 California zone 4 (US Survey feet)

96
92
88
84
80
76
72
68
64
60
56
52
48
44
40
36
32
28
24
20
16
12
8
4

mV
Sum Channel

N

Grid North: 0°0'0"
Mag North: 0°0'0"

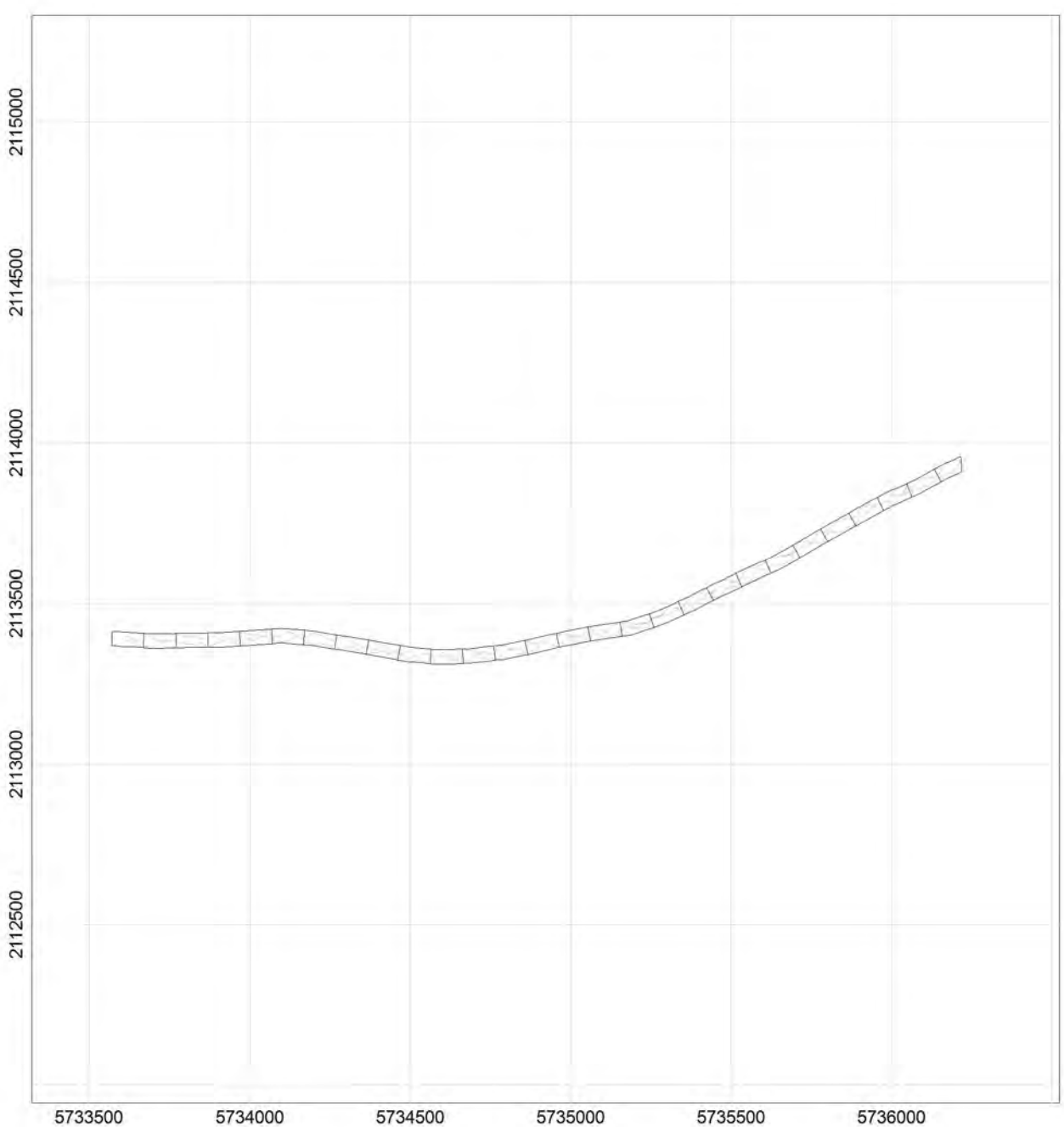
Client:

Project: Former Fort Ord, CA

Contractor:

Created by: Kyle Lindsay	Verified by:
Date: 02/14/2018	File: Admin_4_uceFootprintCov
Page number:	Approved:

Units 1, 2, & 3 QA re-survey:
Administration Area 4



MAP

Footprint Coverage

LEGEND

Area covered: 20385.98 ftUS²
Total area:125211.55 ftUS²
Percentage covered: 16.28 %
Instrument foot print: 3.30 ftUS

Map Scale:

Scale 1:6100
250 0
US survey foot

96
92
88
84
80
76
72
68
64
60
56
52
48
44
40
36
32
28
24
20
16
12
8
4
mV
Sum Channel

N
Grid North: 0°0'0"
Mag North: 0°0'0"

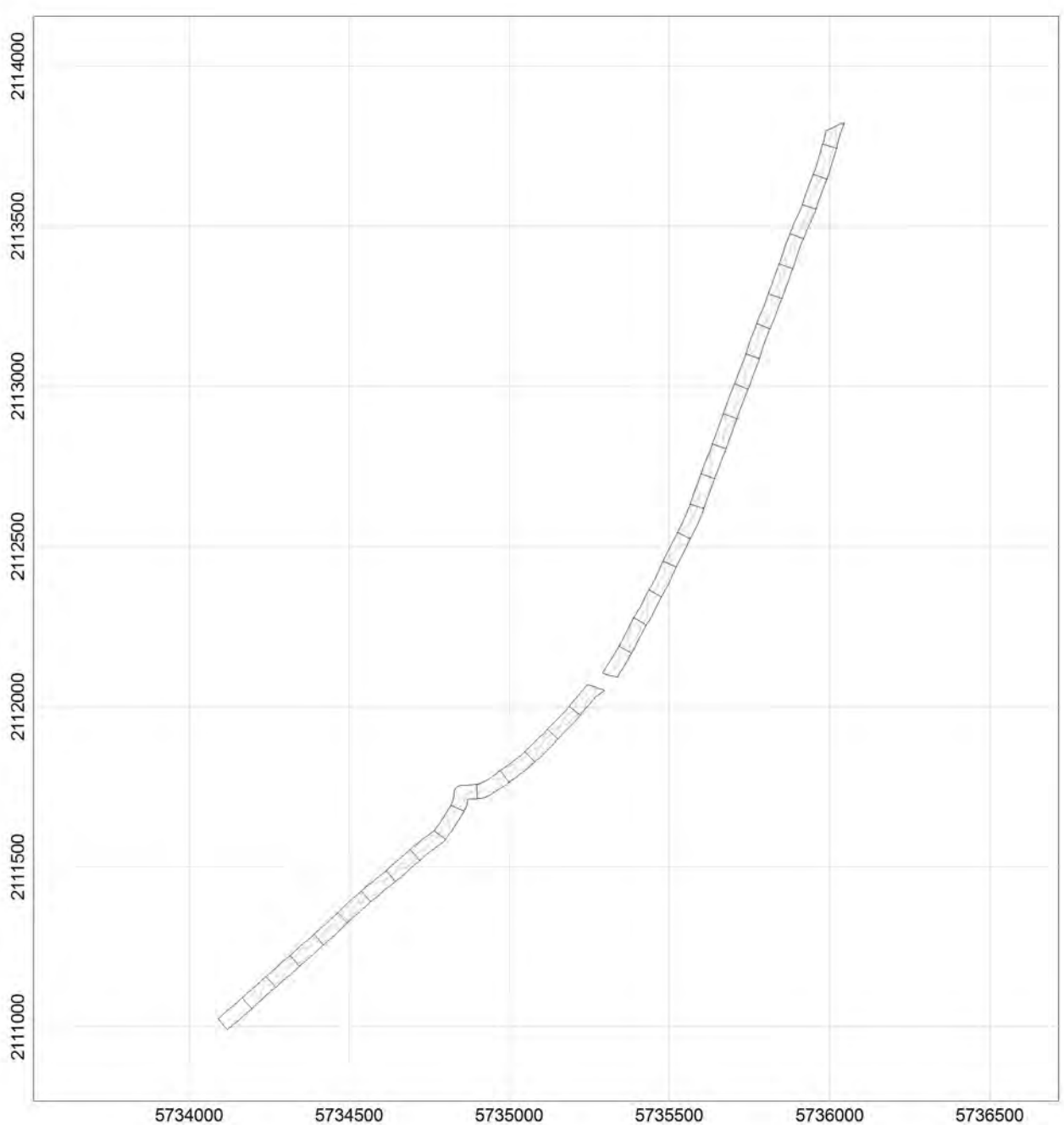
Client:

Project: Former Fort Ord, CA

Contractor:

Created by: Kyle Lindsay	Verified by:
Date: 02/14/2018	File: Range_23_Rd2_uceFootpr...
Page number:	Approved:

Units 1, 2, & 3 QA re-survey:
Range 23 Road



MAP

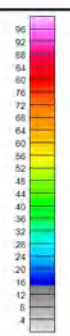
Footprint Coverage

LEGEND

Area covered: 28320.96 ftUS²
Total area:155456.48 ftUS²
Percentage covered: 18.22 %
Instrument foot print: 3.30 ftUS

Map Scale:

Scale 1:6100
250 0
US survey foot



Grid North: 0°0'0"
Mag North: 0°0'0"

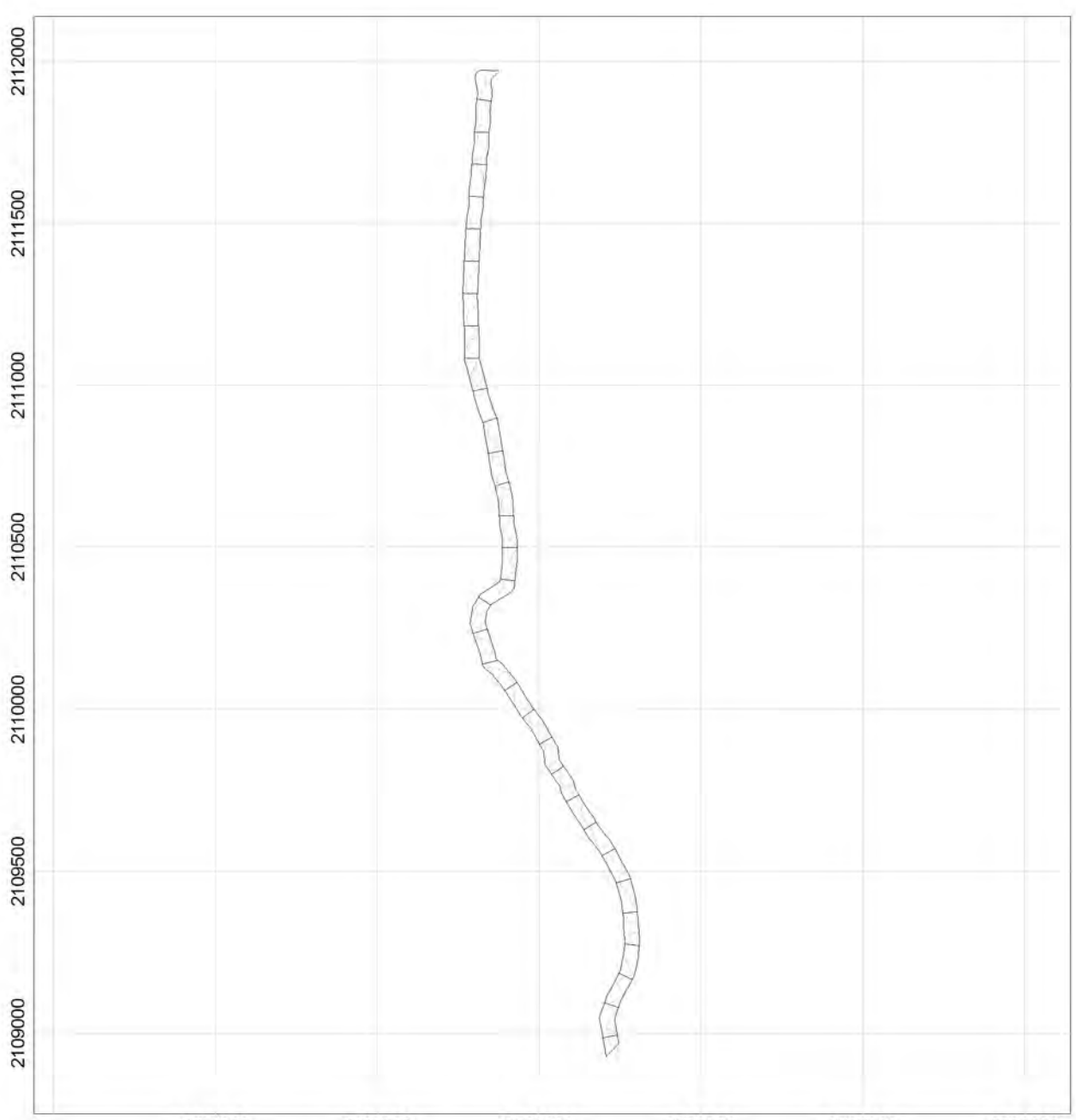
Client:

Project: Former Fort Ord, CA

Contractor:

Created by: Kyle Lindsay	**Verified by:**
Date: 02/14/2018	**File:** Bitter_Rd2_uceFootprintCov
Page number:	**Approved:**

Units 1, 2, & 3 QA re-survey: Bitter Road



MAP

Footprint Coverage

LEGEND

Area covered: 14173.27 ftUS²
Total area:145904.33 ftUS²
Percentage covered: 9.71 %
Instrument foot print: 3.30 ftUS

Map Scale:

Scale 1:6100
250 0
US survey foot
WGS 84 / SPCS83 California zone 4 (US Survey feet)

96
92
88
84
80
76
72
68
64
60
56
52
48
44
40
36
32
28
24
20
16
12
8
4
mV
Sum Channel

N
Grid North: 0°0'0"
Mag North: 0°0'0"

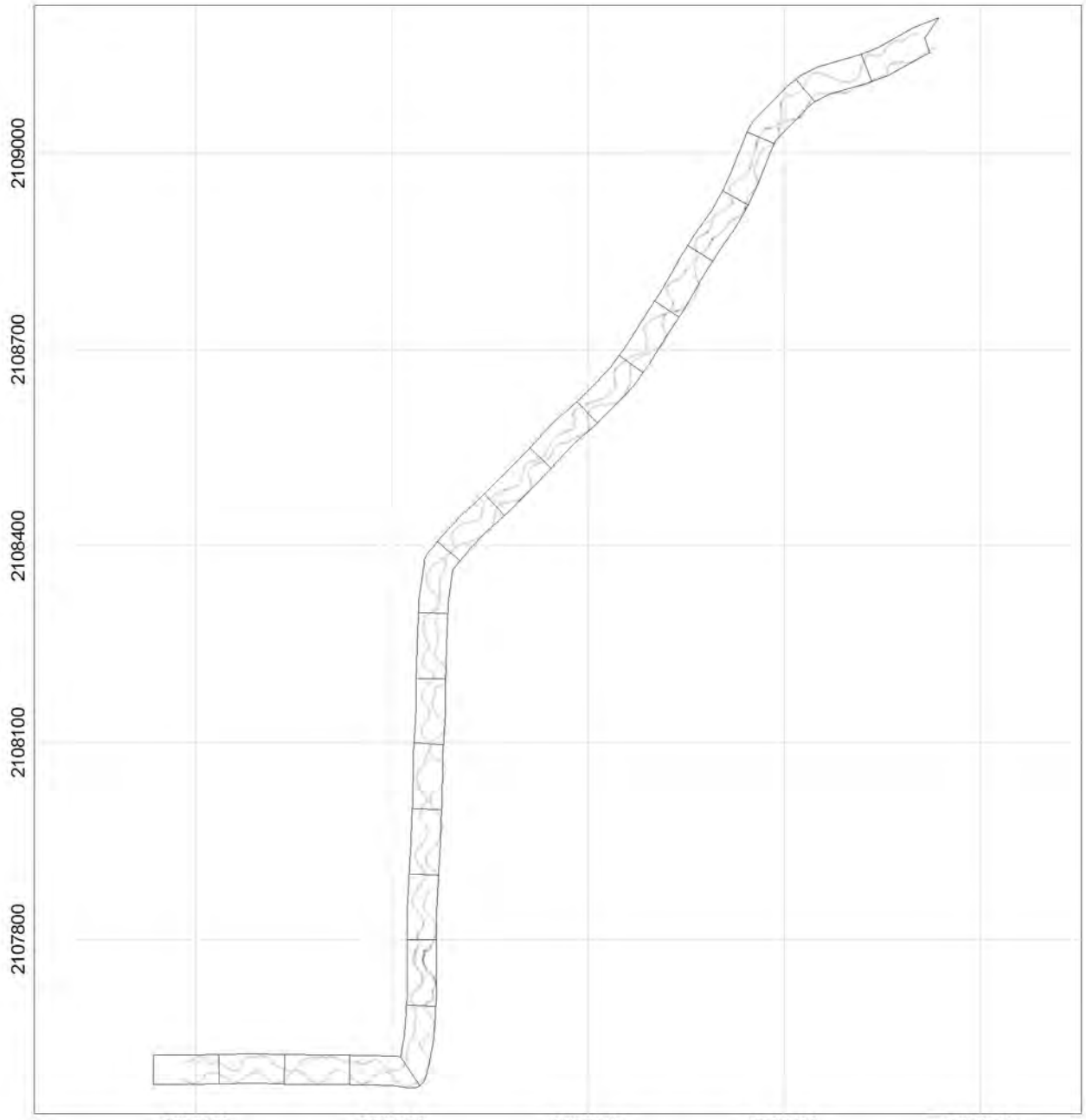
Client:

Project: Former Fort Ord, CA

Contractor:

Created by: Kyle Lindsay	Verified by:
Date: 02/14/2018	File: Shirley_Road2_uceFootpr...
Page number:	Approved:

Units 1, 2, & 3 QA re-survey: Shirley Road



MAP

Footprint Coverage

LEGEND

Area covered: 17064.07 ftUS²
Total area:103744.50 ftUS²
Percentage covered: 16.45 %
Instrument foot print: 3.30 ftUS

Map Scale:

Scale 1:3050

250 0

US survey foot

NAD 83 / SPCS83 California zone 4 (US Survey feet)

96
92
88
84
80
76
72
68
64
60
56
52
48
44
40
36
32
28
24
20
16
12
8
4

mV
Sum Channel

N

Grid North: 0°0'0"
Mag North: 0°0'0"

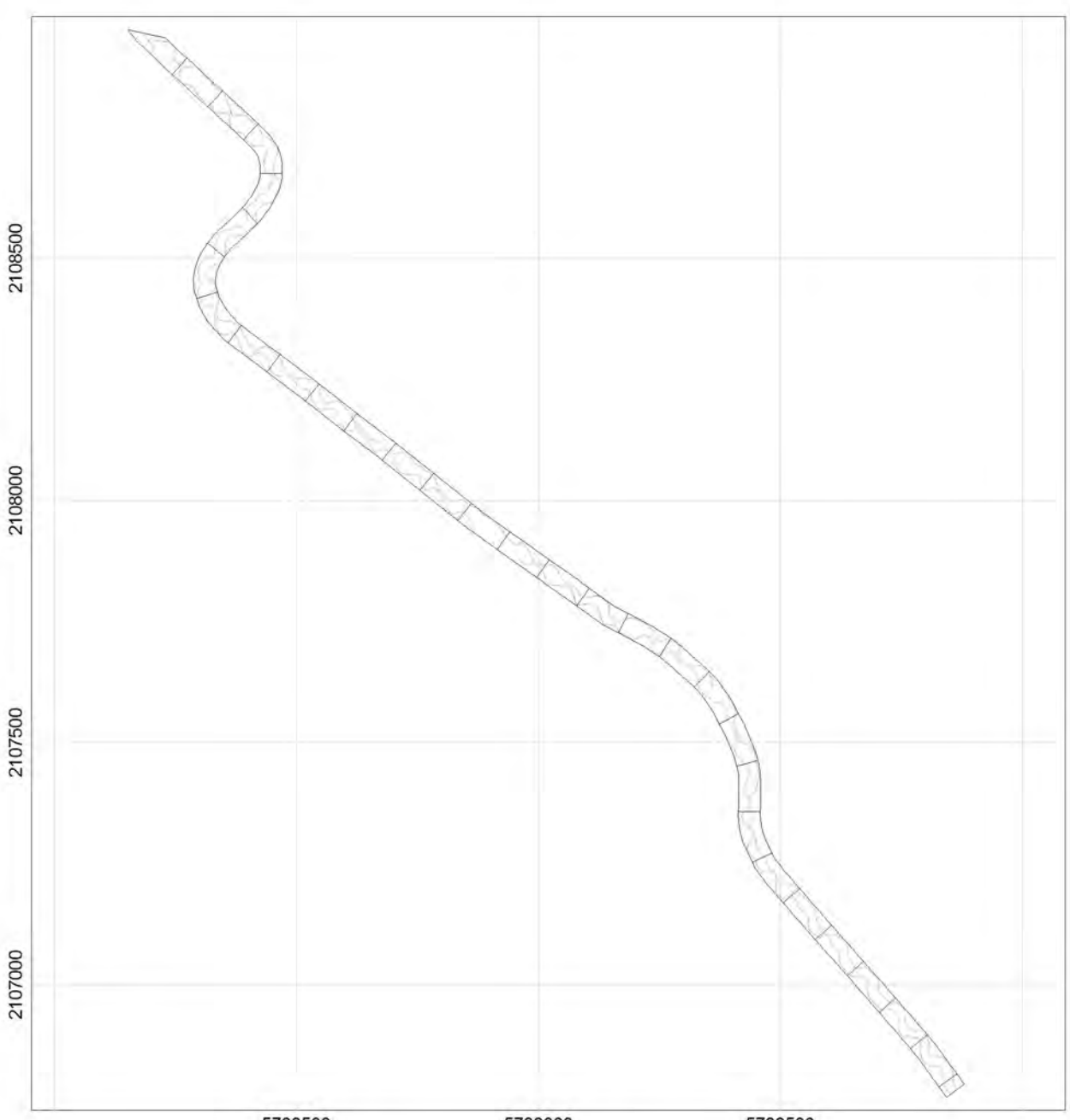
Client:

Project: Former Fort Ord, CA

Contractor:

Created by: Kyle Lindsay	Verified by:
Date: 02/14/2018	File: Razzle_Dazzle_uceFootpri...
Page number:	Approved:

Units 1, 2, & 3 QA re-survey:
Razzle Dazzle Road



MAP

Footprint Coverage

LEGEND

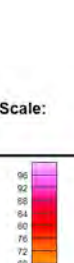
Area covered: 22519.96 ftUS²
Total area:136131.96 ftUS²
Percentage covered: 16.54 %
Instrument foot print: 3.30 ftUS

Map Scale:

Scale 1:4075

250 0

US survey foot



Grid North: 0°0'0"
Mag North: 0°0'0"

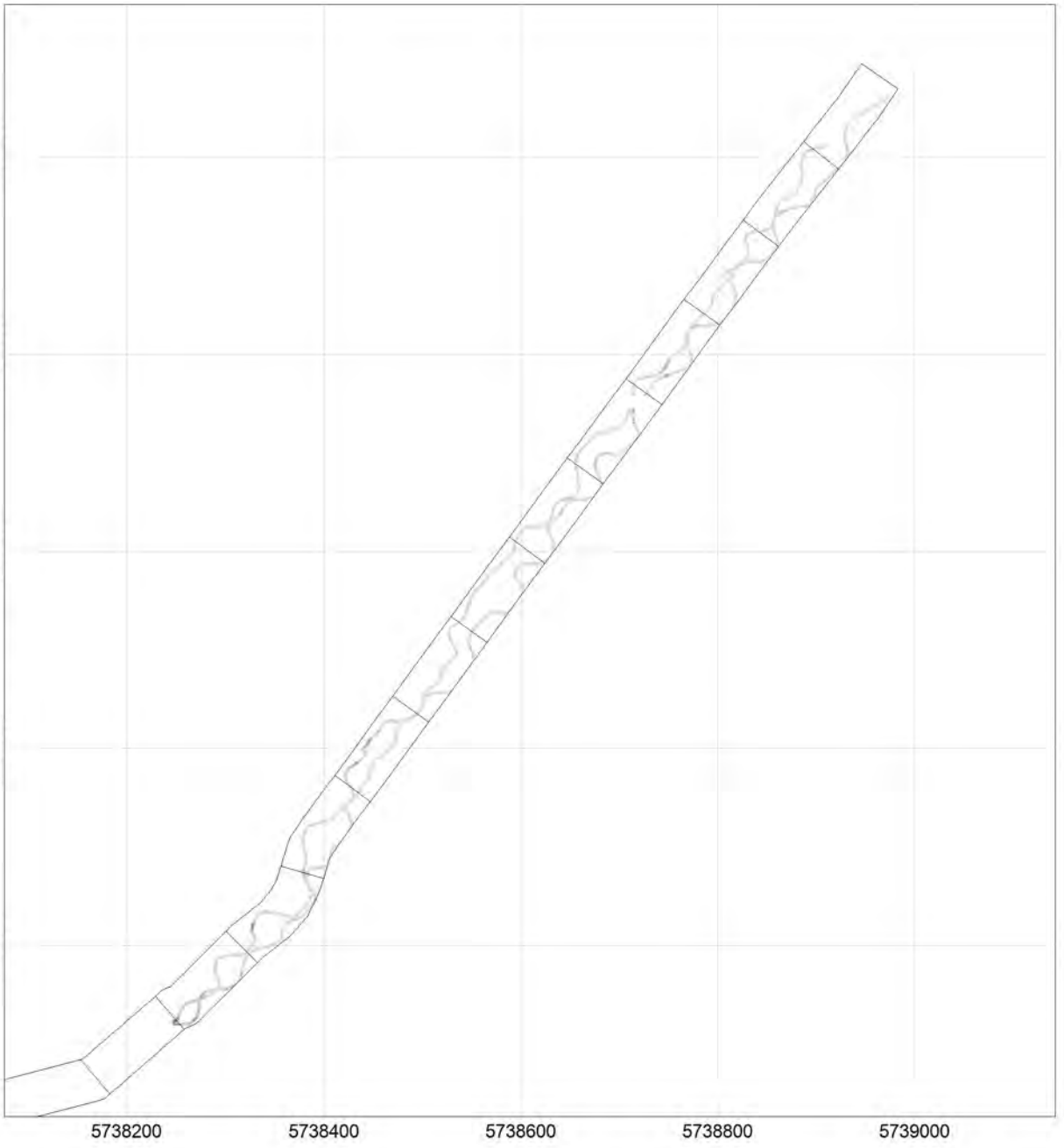
Client:

Project: Former Fort Ord, CA

Contractor:

Created by: Kyle Lindsay	Verified by:
Date: 02/14/2018	File: Foul_Bore_all2_uceFootpr...
Page number:	Approved:

Units 1, 2, & 3 QA re-survey:
Foulbore Road



MAP

Footprint Coverage

LEGEND

Area covered: 8995.17 ftUS²
Total area:76491.76 ftUS²
Percentage covered: 11.76 %
Instrument foot print: 3.30 ftUS

Map Scale:

Scale 1:2050
100 0
US survey foot
WGS 84 / SPCS83 California zone 4 (US Survey feet)

96
92
88
84
80
76
72
68
64
60
56
52
48
44
40
36
32
28
24
20
16
12
8
4
mV
Sum Channel

N
Grid North: 0°0'0"
Mag North: 0°0'0"

Client:

Project: Former Fort Ord, CA

Contractor:

Created by: Kyle Lindsay	Verified by:
Date: 02/14/2018	File: Napalm_Rd_uceFootprintCov
Page number:	Approved:

Units 1, 2, & 3 QA re-survey:
Napalm Road