Track 1
Plug-In Approval Memorandum
East Garrison Areas 2 and 4 NE
Former Fort Ord, California

Prepared for

United States Department of the Army
Base Realignment and Closure (BRAC)
Former Fort Ord, California

March 23, 2006

United States Department of The Army

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ACRONYMS AND ABBREVIATIONS

AAR	after-action report
ASR	archive search report
AT	antitank
BGS	below ground surface
BLM	Bureau of Land Management
BRA	Basewide Range Assessment
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	chemicals of concern
CSM	conceptual site model
DHS	Department of Health Services
DTSC	Department of Toxic Substances Control
EGA2	East Garrison Area 2
EGA4 NE	East Garrison Area 4 northeast
EM	engineering manual
ESD	Explanation of Significant Differences
FAAF	Fritzsche Army Airfield
FFA	Federal Facility Agreement
GIS	geographic information system
GPS	global positioning system
HA	Historical Area
HE	high explosive
HEAT	high-explosive antitank
HC	hexachloroethane-zinc
HMP	Installation-wide Multispecies Habitat Management Plan
IA	interim action
IAROD	interim action record of decision
IAW	in accordance with
ID	identification
LRC	Leadership Reaction Course
MD	munitions debris
MD-E	munitions debris-expended
MD-F	munitions debris-fragments
MEC	munitions and explosives of concern
MMRP	Military Munitions Response Program
MRS	munitions response site
MR RI/FS	munitions response remedial investigation / feasibility study
OE	ordnance and explosives
OP	ordnance publication
PA/SI	preliminary assessment / site investigation

ACRONYMS AND ABBREVIATIONS (cont)

PAH	polynuclear aromatic hydrocarbons
PPM	priority pollutant metal
PRG	preliminary remediation goal
QA	quality assurance
QC	quality control
RAC	risk assessment code
RI/FS	remedial investigation / feasibility study
ROD	record of decision
RTK	real-time kinematic
RWQCB	Regional Water Quality Control Board
SAA	small arms ammunition
SOP	standard operating procedure
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
UXO	unexploded ordnance
UXOQC	UXO quality control
WP	white phosphorous

1 INTRODUCTION

The Munitions Response Remedial Investigation/Feasibility Study (MR RI/FS; formerly ordnance and explosives [OE] RI/FS) program for the former Fort Ord is being implemented to evaluate and address all areas within the base with regards to known and suspected areas containing munitions and explosives of concern (MEC) from past military training activities. The MR RI/FS program is being completed by grouping areas and sites within the former Fort Ord as a series of "tracks" numbered 0 through 3 that are based on MEC-related characteristics to expedite clean-up, reuse and/or transfer of Fort Ord property. The Track 1 portion of the MR RI/FS program addresses sites or areas where military munitions were suspected to have been used, but based on the RI/FS for each site, it falls into one of the following three categories:

- Category 1: There is no evidence to indicate military munitions were used at the site, i.e., suspected training did not occur.
- Category 2: The site was used for training, but the military munitions items used do not pose an explosive hazard, i.e., training did not involve explosive items.
- Category 3: The site was used for training with military munitions, but military munitions items that potentially remain as a result of that training do not pose an unacceptable risk based on site-specific evaluations conducted in the Track 1 OE RI/FS. Field investigations identified evidence of past training involving military munitions, but training at these sites involved only the use of practice and/or pyrotechnic items that are not designed to cause injury. In the unlikely event that a live item of the type previously observed at the site is found, it is not expected that the item would function by casual contact (i.e., inadvertent and unintentional contact).

This Approval Memorandum presents the rationale for designating the approximately 114-acre East Garrison Area 2 (EGA2) and the approximately 63-acre northeast portion of East Garrison Area 4 (EGA4 NE) as Track 1 sites or areas. It provides the required documentation for these areas to be addressed using the plug-in process established in the *Record of Decision, No Further Action Related to Munitions and Explosives of Concern—Track 1 Sites, No Further Remedial Action with Monitoring for Ecological Risks from Chemical Contamination at Site 3 (MRS-22)* (referred to as the Track 1 Record of Decision [ROD]) [Ref. 1]. Upon receiving concurrence from the United States Environmental Protection Agency (USEPA) and acknowledgement from the California Environmental Protection Agency's Department of Toxic Substances Control (DTSC), this memorandum will serve as the decision document stating that no further action regarding munitions response is required for EGA2 and EGA4 NE.

1.1 FORT ORD AND MR RI/FS BACKGROUND

The former Fort Ord is located in northern Monterey County approximately 80 miles south of San Francisco. The former Army base is made up of approximately 28,000 acres of land next to Monterey Bay and the cities of Seaside, Sand City, Monterey, and Del Rey Oaks to the south, and Marina to the north. The former Fort Ord is bounded to the east and north by the Salinas Valley. A Southern Pacific Railroad track and Highway 1 pass through the western portion of the former Fort Ord, separating the beach from the rest of the base. Laguna Seca Recreation Area, Toro Park, and Highway 68 border former Fort Ord to the south and southeast.

The U.S. government bought the present day East Garrison and nearby lands on the east side of Fort Ord in 1917 to use as a maneuver and training ground for field artillery and cavalry troops stationed at the Presidio of Monterey. No permanent improvements were made until the late 1930s, when administrative buildings, barracks, mess halls, tent pads, and a sewage treatment plant were constructed.

In 1940, additional agricultural property was purchased for the development of the Main Garrison. At the same time, the beachfront property was donated to the Army. The Main Garrison was constructed between 1940 and the 1960s, starting in the northwest corner of the base and expanding southward and

eastward. During the 1940s and 1950s, a small airfield within the Main Garrison was present in what is now the South Parade Ground. In the early 1960s, Fritzsche Army Airfield (FAAF) was completed. The Main Garrison airfield was then decommissioned and its facilities were redeveloped as a motor pool and other facilities. Significant construction activities at the former Fort Ord have not occurred since that time.

Since it was established in 1917, Fort Ord served primarily as a training and staging facility for infantry troops. Fort Ord was a basic training center from 1947 to 1975, served as a base for 7th Infantry Division after 1975, and was selected for closure in 1991. Fort Ord was officially closed in September 1994 in response to the 1991 Base Realignment and Closure Act (BRAC). No active Army division is stationed at Fort Ord; however, Army personnel operate the areas of Fort Ord still held by the Army. Much of the Installation has been or will be disposed to federal, state, local, and private entities through economic development conveyance, public benefit conveyance, negotiated sale, or other means.

Because various Army divisions used portions of Fort Ord for maneuvers, target ranges, and other training/staging activities, military munitions may be present at the former Fort Ord. In preparation for transfer and reuse of Former Fort Ord property, various military munitions-related investigative and removal/remedial activities have been performed since 1993. Potential chemical contamination at the Former Fort Ord was investigated under the Basewide Remedial Investigation/Feasibility Study [Ref. 2].

In 1998, the Army agreed to evaluate military munitions at former Fort Ord in an MR RI/FS consistent with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). A Federal Facility Agreement (FFA) was signed in 1990 by the Army, USEPA, and the DTSC (formerly the Department of Health Services [DHS]) and the Regional Water Quality Control Board (RWQCB). The FFA established schedules for performing remedial investigations and feasibility studies and requires that remedial actions be completed as expeditiously as possible.

In April 2000, an agreement was signed between the Army, USEPA, and the DTSC to evaluate military munitions at the former Fort Ord subject to the provisions of the Fort Ord FFA [Ref. 3]. The MR RI/FS utilizes a "tracking" process which categorizes areas with similar MEC-related characteristics to expedite clean-up, reuse and/or transfer of Fort Ord property. According to this "tracking process," an area under investigation is assigned one of four tracks, Track 0 through Track 3, which are described as follows:

Track 0: Areas that contain no evidence of MEC and have never been suspected as having been used for military munitions-related activities of any kind. Details of the Track 0 program and areas addressed are provided in the Track 0 ROD [Ref. 4], and the Track 0 Explanation of Significant Differences [Ref. 5].

Track 1: Sites where military munitions were suspected to have been used, but based on the RI/FS for each site, it falls into one of the following three categories:

- Category 1: There is no evidence to indicate military munitions were used at the site, i.e., suspected training did not occur.
- Category 2: The site was used for training, but the military munitions items used do not pose an explosive hazard, i.e., training did not involve explosive items.
- Category 3: The site was used for training with military munitions, but military munitions items that potentially remain as a result of that training do not pose an unacceptable risk based on site-specific evaluations conducted in the Track 1 OE RI/FS. Field investigations identified evidence of past training involving military munitions, but training at these sites involved only the use of practice and/or pyrotechnic items that are not designed to cause injury. In the unlikely event that a live item of the type previously observed at the site is found, it is not expected that the item would function by casual contact (i.e., inadvertent and unintentional contact).

Details of the Track 1 program and sites addressed are provided in the Track 1 ROD.

Track 2: Sites where MEC items were present and MEC removal action has been conducted.

Track 3: Areas where MEC items are known or suspected to be present, but MEC investigations have not yet been completed.

1.2 TRACK 1 PLUG-IN PROCESS

This section describes the Track 1 program and summarizes the steps for addressing sites eligible for Track 1 through the plug-in process.

As described in the Track 1 ROD, No Further Action decisions for future Track 1 plug-in sites will be proposed and documented in Approval Memoranda. This memorandum provides the same level of information that was included in the RI Site Reports in the Track 1 OE RI/FS [Ref. 6], and describes the rationale for Track 1 designation. In accordance with the Track 1 ROD, the Approval Memorandum for EGA2 and EGA4 NE includes the following information:

(1) Descriptions of the areas
(2) The historical use of the areas.
(3) The rationale for the designation of these areas as Track 1 sites.
(4) A map of the areas detailing their location and any pertinent available MEC-related information.

There will be a public review process for all Approval Memoranda, and these memoranda will be primary documents under the Fort Ord FFA. Each Track 1 Plug-In Approval Memorandum will be submitted and finalized according to the agency consultation process outlined in Section 7 of the FFA. Following the agency review of draft Approval Memorandum and necessary revisions, the Army will submit the Approval Memorandum for a 30-day public review and comment period. A public notice will be posted in a local newspaper announcing the opportunity to review and comment on the proposed decision(s). Subsequently, the Army will submit to the agencies a summary of public comments and responses to the comments, and any needed revisions to the Approval Memorandum, at which time the Approval Memorandum will be considered a draft final document as defined in the FFA. Within 30 days of this submittal, the agencies will, in writing, either concur with or acknowledge the Army's decision(s), or initiate a dispute per Section 12 of the FFA.

When the written concurrence from EPA and acknowledgement from DTSC are received, a public notice will be posted in a local newspaper. Planned and completed 'No Further Action Related to MEC' site determinations will also be described in Fort Ord environmental cleanup newsletters (formerly *The Advance)* prepared by the Army for local residents. Notification of these proposed and completed activities will also be distributed to appropriate local agencies. The Proposed Plan and ROD for Track 1 and other tracks, as well as all associated Approval Memoranda, will be placed in the former Fort Ord Administrative Record and the local information repositories.

1.3 APPROVAL MEMORANDUM ORGANIZATION

This approval memorandum contains two major elements: (1) a presentation and assessment of archival data (Sections 2 and 3), and (2) a site evaluation (Section 4), which uses the archival data presented in the preceding sections.

The archival data presented in Section 2 includes a review of the area history, evaluation of potential military munitions in the area, and a summary of previous munitions response investigations. Section 3 presents the conceptual site models (CSMs) for each area. The Site Evaluation in Section 4 was conducted in accordance with the procedures described in the *Final Plan for Evaluation of Previous Work* [Ref. 7] and may restate some information presented in Sections 2 and 3. The Site Evaluation discusses the evaluation of the literature review, sampling, and site walk processes. These discussions are based upon information from standardized literature review and site walk review checklists (Appendix B). The conclusions and recommendations for EGA2 and EGA4 NE are presented in Section 5.

2 AREA SUMMARIES

2.1 EGA2

2.1.1 Description

EGA2 comprises the central portion of the East Garrison area and is located south of the developed portion of East Garrison. EGA2 is bordered by the Track 0 East Garrison Area to the north, the base boundary and Reservation Road to the east, an unnamed dirt road and Barloy Canyon Road to the south, and Barloy Canyon Road, MRS-5, MRS-59A, and MRS-59 to the west.

Currently, the land encompassed by EGA2 is not officially being used. Bureau of Land Management (BLM) lands border EGA2 to the west. EGA2 contains transfer parcels E11b.6.3, E11b.7.2, L20.19.1.2, L23.3.2.2, and L23.3.3.2. The planned reuse of EGA2 is mostly future development with residential and commercial uses. Habitat reserve areas are planned for the southwestern corner and eastern side of EGA2.

Map 1 in Appendix A displays the location and boundaries of EGA2 and the reuse parcels in the area.

2.1.2 History

The following presents a summary of the history of EGA2 based on archival research and review of historical training maps and aerial photographs. Maps have been prepared that present pertinent features digitized from historical training maps and scanned aerial photographs that have been reviewed (Maps 2 through 5, Appendix A).

It should be noted that minor discrepancies between source maps, combined with the natural degradation of older source maps and photographs, has resulted in misalignment of some map features. In addition, camera angle and lens distortion introduced into older aerial photographs, combined with changes in vegetation and site features over time has also resulted in misalignments of some map features with respect to the aerial photographs.

The following historical features in, or in close proximity to, EGA2 were identified from aerial photos, the Basewide RI/FS [Ref. 8], training facilities maps in the 1997 ASR [Ref. 9], or historical maps in the Basewide Range Assessment (BRA) [Ref. 10]:

(1) Leadership Reaction Course (LRC) Training Site
(2) Site 31 Burial Area
(3) Mechanic Training Site
(4) Historical Training Areas
(5) Tank Driving Area

2.1.2.1 LRC Training Site

An LRC training site is identified in a 1968 training areas and facilities map and in the undated "Beardsley" map. This site consisted of obstacles and pools, but no specific training with military munitions occurred on it. The facility was located on a ridge top just slightly northeast of the Crescent Bluff Road-Barloy Canyon Road intersection. The buildings were removed in preparation for the remediation of Site 31.

2.1.2.2 Site 31 Burial Area

The Site 31 burial area is located just south of the LRC and was used as a dump site for incinerated refuse in the 1940s and 1950s.

2.1.2.3 Mechanic Training Site

Also referred to as the field expedient area or AMHC, this site is located in a clear area in the south central part of EGA2 in training facilities maps dating back to 1956. Based on the name of the site, it is

assumed that the activities in this area centered on field repair of military vehicles and did not include specific training with military munitions.

2.1.2.4 Historical Training Areas

A. HA-78 (Small Arms Range)

On pre-1941 and 1941 aerial photos of East Garrison, five parallel cleared areas were identified in EGA2 just northwest of Barloy Canyon Road. These areas may have served as a target area for a small arms range, which is identified as "Light Machine Gun Range" on a 1940 map of Fort Ord [Ref. 10]. This range is also apparent on a late-1930s photograph of the East Garrison and on 1942 and 1943 photo maps of Fort Ord. This small arms range was designated HA-78 under the BRA. The training maps show targets located 500, 600, and 800 yards downrange; firing points are apparent on the same ridge as the LRC.

B. HA-86 (Pistol Range) and HA-88 (Subcaliber Rifle Range)

Site characterization was performed in the East Garrison Firing Ranges (Site 39A) from October 1994 to August 1995. The characterization included visual surveys and test pit excavations to estimate the surface and subsurface contamination of spent ammunition and clay pigeons (skeet). In addition, soil samples were collected and analyzed for metals and/or polynuclear aromatic hydrocarbons (PAHs) (considered representative of chemical of concern [COCs] present in clay pigeons). The site characterization results indicated that remediation was necessary in several ranges, including portions of ranges EG-1 and EG-3 (designated HA-86 and HA-88, respectively, under the BRA), which extend into what is now the southwestern section of EGA2 [Ref. 11].

EG-1 (HA-86) was used for military training, local police training, and recreational firing. Weapons use was limited to pistols. EG-3 (HA-88) was originally constructed as a small range for practice firing from tanks using subcaliber .22 caliber ammunition. However, no tank training reportedly ever occurred at this range. Instead, EG-3 was used for .22 caliber rifles [Ref. 11].

2.1.2.5 Tank Driving Area

A Tank Driving Area is identified on a 1956 training facilities map in the center of the adjacent MRS-59A.

2.1.3 Potential Military Munitions Based on Historical Use of the Area

Historical records do not indicate any evidence of military munitions training activities in EGA2. However, portions of historical training areas (HA-78, HA-86, and HA-88) and an LRC are located in EGA2, and EGA2 is in close proximity to the Tank Driving Area identified on the 1956 training facilities map.

2.1.4 History of Area Investigations

Prior to the site walk, no munitions response investigations had been conducted in EGA2. Other work did occur in and near EGA2 and included the following activities: a remedial action in the Site 31 burial area; reconnaissance in HA-78; remedial actions in HA-86 and HA-88; sampling, visual searches, and site walks in sites MRS-5 and MRS-59/MRS-59A, located to the west of EGA2.

The following subsections summarize these activities and the site walk conducted in 2005. Map 6 (Appendix A) displays the results of the munitions response investigations in MRS-5 and MRS-59/MRS-59A, and Map 7 displays the results of the site walk.

2.1.4.1 Site 31

Site 31 was a refuse disposal area in the 1940s and 1950s. Site 31 was investigated and remediated for chemical contamination related to incinerated refuse in accordance with (IAW) the Basewide RI/FS. During this remedial action, approximately 350 cubic yards of soil and debris on the northern slope of the

site containing lead above the health-based level of concern were excavated. (Other environmental contaminants of potential concern [metals, pesticides, dioxins, polynuclear aromatic hydrocarbons, and petroleum hydrocarbons] were found in this area, but only lead was determined to be above the level of concern.) The Remedial Action Confirmation Report [Ref. 12] did not report any evidence of military munitions encountered during the action.

2.1.4.2 HA-78

Reconnaissance was conducted on HA-78 in July 1999 as part of the BRA. During this investigation, munitions debris (casings, blank small arms rounds, and links) as well as a possible firing location (sandbags) were identified. No MEC was found. Access to the area was limited by dense brush and poison oak [Ref. 10].

2.1.4.3 HA-86 and HA-88

Remedial work was conducted on HA-86 and HA-88 between November 1997 and July 1998 under an Interim Action Record of Decision (IA ROD) process. Soil was excavated and confirmation samples were collected from IA areas within HA-86 and HA-88 that lie outside EGA2. The results of the confirmation sampling indicated that metals and PAHs above their allowable concentrations had been removed from the IA areas [Ref. 13]. No evidence of military munitions was found in HA-86 and HA-88 during this remedial action.

2.1.4.4 MRS-5

MRS-5 is a Track 1, Category 3 site. It was identified based on a 3.5-in. rocket motor found in the branches of a tree during the 1993 ASR.

In 1994, no evidence of military munitions was found during grid sampling to a 3-ft depth conducted on 17 grids (deeper excavations were approved by the U.S. Army Corps of Engineers [USACE] safety specialist). Of the 17 grids sampled, 7 lie within the current MRS-5 boundary (another 8 grids lie within the current MRS-59A boundary and the remaining 2 grids are located just to the east of MRS-5 and MRS-59A, respectively.) It should be noted that the documentation regarding the anomaly excavations for the MRS-5 grid sampling investigation could not be verified. Two unfired 40mm M781 practice cartridges (MEC) were found on the surface of a road outside MRS-5.

In 2001, no evidence of military munitions was found in MRS-5 during reconnaissance activities conducted under the BRA. The reconnaissance activities included visually searching the surface of historical training areas at the former Fort Ord, several of which covered portions of MRS-5.

In 2003, an expended M125 series illumination signal and small arms ammunition (SAA) were found in the subsurface of MRS-5 during a site walk conducted with a Schonstedt magnetometer [Ref. 6].

Per the Track 1 ROD, MRS-5 was approved for no further action related to MEC.

2.1.4.5 MRS-59/MRS-59A

MRS-59A is a Track 1, Category 3 site. It was originally a part of MRS-59. MRS-59 was identified by interviews conducted during the preliminary assessment/site investigation (PA/SI) phase of the 1997 ASR. The site reportedly included a 2.36-in. rocket range (type not stated) in the early 1940s, although no evidence of a range was found in the area during subsequent investigations. In 1996, MRS-59 was subdivided into MRS-59 and MRS-59A for property transfer purposes. The Army retained MRS-59A and transferred MRS-59 to BLM. MRS-59A contains a small portion of the reported 2.36-in. rocket range area, although the range has not been confirmed to exist.

In 1994, no evidence of military munitions was found in the eight grids within the current MRS-59A boundary that were investigated under the grid sampling action in MRS-5.

In 1996, an expended pyrotechnic item (type not stated) was found during a site walk conducted on MRS-59A with a magnetometer.

In 2001, no evidence of military munitions was found in MRS-59A during reconnaissance activities conducted under the BRA. The reconnaissance activities included visually searching the surface of historical training areas at the former Fort Ord, several of which covered portions of MRS-59A.

In 2003, two expended M125 series illumination signals, SAA, and SAA clips were found in the subsurface of MRS-59A during a site walk conducted on the northeastern portion of the site with a Schonstedt magnetometer [Ref. 6].

Per the Track 1 ROD, MRS-59A was approved for no further action related to MEC.

2.1.4.6 2005 Site Walk

A site walk was conducted at EGA2 from March 28 to March 31, 2005. The site walk was conducted as part of the site assessment that was done on EGA2 to identify any evidence of military munitions training in the area. The site assessment background and the approach and results of the site walk are detailed in the *EGA2 Site Assessment Site Report* [Ref. 14].

The site walk was conducted by a three-person team consisting of an unexploded ordnance (UXO) supervisor, who directed the field operations, a UXO specialist, and a geophysicist. The site walk team visually searched the open, accessible portions of EGA2 while operating geophysical detection instruments—the EM61-MK2 time-domain metal detector and the Schonstedt GA-52/Cx magnetometer—to locate subsurface geophysical anomalies. The EM61-MK2, which is used to detect buried ferrous and non-ferrous objects, served as the primary detection instrument. It was mounted on an operator-pulled cart and used—in analog mode—over the dirt roads, trails, and open areas. The Schonstedt was used on sloped or densely vegetated areas (operating the EM61-MK2 on these types of areas is usually unsafe and/or too cumbersome).

The paths walked, the locations of detected anomalies, and features related to military munitions training, were identified using a Leica SR530 real-time kinematic (RTK) geophysical positioning system (GPS) and then recorded in a pocket PC. The site walk team excavated a minimum of 20% of the anomalies detected and recorded the anomaly excavation results in the pocket PC.

The site walk team covered approximately 3.15 acres of the 114-acre EGA2 (slightly less than 3%). Approximately 2.4 acres of EGA2 was geophysically searched with an EM61-MK2; the other 0.75 acres were searched with a Schonstedt. The site walk team detected 234 geophysical anomalies on the paths and excavated 113 of them (48%). Fifteen of the anomaly excavations resulted in military munitions. The military munitions found consisted of expended M1 antitank (AT) practice mines (expended munitions debris [MD-E]), expended German WWII T MI.35 and T MI.42 AT practice Teller mines (MD-E), an expended M125 series illumination signal (MD-E), an expended M74 airburst simulator (MD-E) and pyrotechnic mixture (MEC) that was likely the flash charge from the simulator, an expended rocket motor (type unknown; munitions debris [MD]) found in a burial pit, a pressure plate from a mine (MD), and expended small arms (MD). Table 1 lists the military munitions found during the 2005 site walk in EGA2.

The findings of the M1 and Teller practice mines may be related to the Tank Driving Area identified on a 1956 training facilities map in the center of the adjacent MRS-59A.

The expended M125 series illumination signal, the expended M74 airburst simulator and pyrotechnic mixture, and expended small arms were all found in the southern portion of EGA2. An obstacle course and a ranger training area were also observed in close proximity to these items in the south-central portion of EGA2. Tactical training is typically associated with the facilities observed, and this training generally involves the munitions found nearby such as the pyrotechnics and small arms. Other munitions typically associated with tactical training include simulators and smoke and practice grenades.

The expended rocket motor was found in a burial pit along with c-ration cans; therefore, it is more likely that the item was placed there rather than fired from another location.

Table 1—Military Munitions Encountered in EGA2 During Site Walk

Item Description	Type	Qty
Simulator, airburst, M74 series	MD-E	1
Mine, AT, practice, M1	MD-E	3
Mine, AT, practice, T.MI.35, Teller	MD-E	1
Mine, AT, practice, T.MI.42, Teller	MD-E	3
Pressure plate from mine	MD	1
Pyrotechnic mixture	MEC	1
Rocket motor, type unknown	MD-E	1
Signal, illumination, ground, M125 series	MD-E	1
Small arms, 5.56mm	MD	3

2.2 EGA4 NE

2.2.1 Description

EGA4 NE occupies the northern and easternmost portions of EGA4. It is bordered by Reservation Road and EGA2 to the north; the base boundary and Reservation Road to the east; and Crescent Bluff Road to the west and south.

Currently, EGA4 NE is undeveloped. BLM lands that are open to the public for recreational activities are located to the south of EGA4 NE. EGA4 NE is coincident with reuse parcel E11b.7.1.2, which is planned for future habitat reserve.

Map 1 in Appendix A displays the location and boundaries of EGA4 NE and reuse parcel E11b.7.1.2.

2.2.2 History

The following presents a summary of the history of EGA4 NE based on archival research and review of historical training maps and aerial photographs. Maps have been prepared that present pertinent features digitized from historical training maps and scanned aerial photographs that have been reviewed (Maps 2 through 5, Appendix A).

It should be noted that minor discrepancies between source maps, combined with the natural degradation of older source maps and photographs, has resulted in misalignment of some map features. In addition, camera angle and lens distortion introduced into older aerial photographs, combined with changes in vegetation and site features over time has also resulted in misalignments of some map features with respect to the aerial photographs.

The following historical features in, or in close proximity to, EGA4 NE were identified from aerial photos or training facilities maps in the 1997 ASR:

(1) Military Munitions Burial Site (MRS-33, OE Cache)
(2) Mechanic Training Area
(3) Engineer Training Area “B”
(4) Demolition Area

2.2.2.1 Military Munitions Burial Site (MRS-33, OE Cache)

A single burial site containing military munitions was identified in the northeast portion of EGA4 near Reservation Road. A 4-ft removal was conducted on this burial site in 1995 (deeper excavations were approved by the USACE safety specialist). All anomalies detected were investigated and resolved, and all the military munitions encountered were removed. The military munitions burial site was initially designated "OE Cache" and then later named MRS-33.

2.2.2.2 Mechanic Training Area

Interviews indicate there was a concrete pit in the easternmost portion of EGA4 near Crescent Bluff Road. The concrete pit was reportedly used to verify that amphibious vehicle engines would operate in water. SAA cartridge cases and pieces of an M49 trip flare were noted during an initial inspection of the area. Four shallow depressions, initially thought to be used for demolition activities, were suspected of being burn pits used for firefighting drills.

2.2.2.3 Engineer Training Area "B"

An engineer training area "B" is marked on a 1957 training areas and facilities map just northwest of the mechanic training area in MRS-23. This designation may further indicate that the area in the vicinity of MRS-23 was used for demolition activities.

2.2.2.4 Demolition Area

A demolition area just west of MRS-23 is indicated on 1945 and 1946 training areas and facilities maps. This designation may further indicate that the area in the vicinity of MRS-23 was used for demolition activities.

2.2.3 Potential Military Munitions Based on Historical Use of the Area

Historical records do not indicate any evidence of military munitions training activities in EGA4 NE. However, historical records do indicate that EGA4 NE contains a military munitions burial site (MRS-33).

2.2.4 History of Area Investigations

The investigations conducted in EGA4 NE consist of the removal action conducted in MRS-33 in 1995 and the site walk conducted in June 2005. In addition to the aforementioned investigations, other activities have occurred in areas near EGA4 NE. A remedial action was conducted in Site 41 (an interim action site coincident with northern portion of MRS-23); a site walk was conducted in 1995 in MRS-60, which borders the southeastern end of EGA4 NE; a removal action was conducted in 1997 in MRS-23; and in 2001, three 3-in. MK1 practice Stokes trench mortars were found incidentally by BLM crews to the southwest of EGA4 NE.

Tables 2 and 3 list the military munitions found in EGA4 NE during the previous munitions response investigations and those found during the site walk, respectively. Map 6 (Appendix A) displays the results of the previous munitions response investigations and incidental findings in and around EGA4 NE. Map 7 displays the results of the site walk.

2.2.4.1 MRS-23

Between November 18 and December 11, 1997, a 4-ft removal was conducted over the entire site (thirty-nine 100-by-100-ft and partial grids) with Schonstedt magnetometers (deeper excavations were approved by the USACE safety specialist). All anomalies detected were investigated and resolved. During this removal work, the only items encountered were a single 0.25-lb piece of a TNT demolition charge (MEC) and an M10 AT practice mine (expended munitions debris [MD-E]). The AAR recommended no further action for MRS-23 [Ref. 15].

2.2.4.2 MRS-33

In 1995, a 4-ft removal was conducted over this military munitions burial site (deeper excavations were approved by the USACE safety specialist). All anomalies detected were investigated and resolved. During this removal action, six MEC and 8,773 SAA were encountered. The six MEC consisted of five 40mm smoke cartridges (model unknown) and a 40mm M781 practice cartridge. The AAR had no specific recommendations for MRS-33 [Ref. 16].

2.2.4.3 Site 41

Site 41 is coincident with northern portion of MRS-23. Site 41 was identified as an interim action (IA) site during the site characterization phase of the Basewide RI/FS due to limited surface soil contamination. A remedial action was completed at Site 41 IAW the IA Record of Decision (IAROD) for the remediation of contaminated surface soil at the former Fort Ord [Ref. 17]. Under the IAROD, three pits at Site 41 were excavated 1 ft below ground surface (bgs), removing approximately 76 cubic yards of soil. Soil samples were taken from the bottom of the excavations and the concentrations of priority pollutant metals (PPMs) detected were below preliminary remediation goals (PRGs) [Ref. 18].

2.2.4.4 MRS-60

As stated in the 1997 ASR, a site visit was conducted in MRS-60 in 1995 with a magnetometer to assign a risk assessment code (RAC) to the site. During the search of MRS-60, illumination signals and flares (MD-E) were encountered. It was recommended that no further action be taken at this site.

2.2.4.5 Incidental Findings

Between March and April 2001, three expended 3-in. MKI practice Stokes trench mortars (MD-E) were found by BLM crews southwest of EGA4 NE. Based on these incidental findings and Stokes trench mortars found in grids along the eastern boundary of the MRS-42 expansion area during a 4-ft removal conducted between 1998 and 2000, an impact area for Stokes trench mortars is suspected of being present in the eastern portion of Area 4. Map 6 in Appendix A shows the proximity of EGA 4 NE to the MRS-42 expansion area and the three 3-in. MKI practice Stokes trench mortars incidentally found.

Table 2—Military Munitions Previously Encountered in EGA4 NE

Site	Item Description	Type	Qty
MRS-23	0.25 lb demolition charge	MEC	1
MRS-23	Mine, AT, practice, M10	MD-E	1
MRS-33	Cartridge, 40mm, smoke (model unknown)[a]	MEC	5
MRS-33	Cartridge, 40mm, practice, M781[a]	MEC	1
[a]Item(s) removed from military munitions burial site			

2.2.4.6 2005 Site Walk

A site walk was conducted at EGA4 NE on June 14, 2005. The site walk was conducted as part of the site assessment that was done on EGA4 to identify any evidence of military munitions training in the area. The background, approach, and results and of the site walk are detailed in the *EGA4 Site Assessment Site Report* [Ref. 19].

The site walk was conducted by a three-person team consisting of an unexploded ordnance (UXO) supervisor, who directed the field operations, a UXO specialist, and a geophysicist. The site walk team visually searched the open, accessible portions of EGA4 while operating geophysical detection instruments—the EM61-MK2 time-domain metal detector and the Schonstedt GA-52/Cx magnetometer—

to locate subsurface geophysical anomalies. The EM61-MK2 served as the primary detection instrument. It was mounted on an operator-pulled cart and used—in analog mode—over the dirt roads, trails, and open areas. The Schonstedt was used on sloped or densely vegetated areas (operating the EM61-MK2 on these types of areas is usually unsafe and/or too cumbersome).

The paths walked, the locations of detected anomalies, and features related to military munitions training, were identified using a Leica SR530 RTK GPS and then recorded in a pocket PC. The site walk team excavated a minimum of 20% of the anomalies detected and recorded the anomaly excavation results in the pocket PC.

The site walk team covered approximately 1.25 acres of the 63-acre EGA4 NE (approximately 2%). Nearly 100% of the paths walked in EGA4 NE were geophysically searched with the EM61-MK2. The site walk team detected 13 geophysical anomalies on the paths and excavated all of them. Four of the anomaly excavations resulted in military munitions. The military munitions found consisted of expended small arms (MD), two M1 SAA clips (MD), and a tail fin assembly from a rifle grenade (MD). A rifle grenade is a grenade that fits onto the muzzle of a rifle and is launched when the rifle is fired. Rifle grenades travel at low velocities with high trajectories.

The model of the rifle grenade could not be distinguished from the tail fin assembly. This means that the rifle grenade could have been any of the following types: high explosive (HE) (the M9 series AT or M17 fragmentation models); white phosphorous (WP) smoke (the M19 series WP smoke model); smoke (M20 smoke, M22 series smoke, or M23 series smoke models); or inert (the M11 series AT practice model). However, no other grenades or even fragments thereof were found in the vicinity of the tail fin assembly.

The finding of the tail fin assembly without the presence of any other rifle grenades or fragments thereof is indicative of signaling and screening exercises with the M20, M22, and M23 smoke rifle grenades. Signaling and screening exercises generally occur over wide training areas, with individual M20, M22, and M23 smoke rifle grenades launched sporadically. These areas are much larger than the confined areas typically used for target training involving the HE, WP smoke, and practice grenades. The distribution of M20, M22, and M23 smoke rifle grenades in a given area would be expected to be more widespread than the high explosive antitank (HEAT), WP smoke, and practice models. It is therefore most likely that an isolated rifle grenade or component thereof would originate from the M20, M22, or M23 smoke rifle grenade.

Furthermore, the functioning of a HEAT or WP rifle grenade would likely result in fragments being found in the immediate area around the tail fin assembly. When the M9 HEAT rifle grenade functions, fragments can scatter over an approximately 91m to 232m radius; when the M19 series WP rifle grenade functions, fragments can spread over an approximately 10m radius. But as previously stated, no fragments were observed on the paths searched around the tail fin assembly.

Overall, the military munitions encountered in EGA4 NE are indicative of tactical training, which typically involves the types of munitions found in the area.

Table 3—Military Munitions Encountered in EGA4 NE During Site Walk

Item Description	Type	Qty
ordnance components (rifle grenade fin assembly) [a]	MD	1
M1 small arms clips	MD	2
small arms, 30cal	MD	1
[a]Model could not be determined from rifle grenade component.		

3 CONCEPTUAL SITE MODELS

A conceptual site model is a description of a site and its environment that evolves as work on that site progresses. CSMs are developed for areas of interest such as EGA2 and EGA4 NE to identify potential exposure pathways (ways in which humans may come into contact with military munitions). This entails focusing on the current and future accessibility of the site and all the activities that may expose human receptors to military munitions. Per USACE Engineering Manual (EM) 110-1-1200 [Ref. 20], the identification of potential exposure pathways should result from the analysis of five categories of information (profiles) collected from the area of interest:

(1) Facility—identification of military munitions origin (determined from sources such as historical records, land features, historical scars, military munitions previously encountered, and eyewitness accounts).

(1) Physical—physical properties (e.g., terrain, vegetation, geology), which affect the location, movement, detectability, and recovery of military munitions

(2) Release—natural processes (e.g., erosion) or human activity (e.g., excavation, construction) that contribute to an increased accessibility of military munitions.

(3) Land Use and Exposure—current and future use of the site and surrounding area, available human receptors at or near a site, and the current and future activities that human receptors may engage in at or near a site in which they may be exposed to military munitions.

(4) Ecological—type of habitat and species occurring in the habitat, disturbances, and potential exposure to military munitions. It should be noted that CSMs for MRSs primarily focus on the potential exposure of human receptors to military munitions as opposed to the habitat, as the habitat does not participate in activities that exposes itself to military munitions. In addition, future site activities that could affect ecological receptors (e.g., vegetation clearance and detonation of suspected MEC) are not planned for the subject areas. As a result, the CSMs for EGA2 and EGA4 NE do not include ecological profiles.

The following subsections present the CSMs for EGA2 and EGA4 NE.

3.1 EGA2 CSM

3.1.1 Facility Profile

The facility profile for EGA2 consists of four features: a ranger training area and an obstacle course that were both identified during the site walk, small arms range HA-78, and a Tank Driving Area identified on a 1956 training facilities map.

3.1.1.1 Obstacle Course and Ranger Training Area

The obstacle course and a ranger training area were found in the south-central portion of EGA2, between Barloy Canyon Road and a diagonal dirt road immediately to the east. The military training typically associated with these facilities is tactical training, and the munitions involved with such training includes smoke grenades, pyrotechnics, and small arms. Pyrotechnic items were encountered approximately 1,000 to 1,200 ft to the west and small arms were encountered approximately 300 to 800 ft to the south of these facilities during the site walk.

3.1.1.2 Small Arms Range (HA-78)

Small arms range HA-78 is identified as “Light Machine Gun Range” on a 1940 map of Fort Ord. It is also apparent on a late-1930s photograph of the East Garrison and on 1942 and 1943 photo maps of Fort Ord. During a 1999 BRA reconnaissance activity, blank small arms rounds, and links were found in this

range. In addition, pyrotechnics were found within the identified range fan and SAA was found just outside of it during the site walk.

3.1.1.3 Tank Driving Area

A Tank Driving Area is displayed on a 1956 Fort Ord training facilities map of Fort Ord in the adjacent MRS-59A. This area was assigned to the 759th Tank Battalion in the early and mid-1950s. Tank training activities include use of an area for tank driving. No range safety fans associated with a tank driving area or the area assigned to the 759th Tank Battalion are delineated on training facilities maps. It is not expected that EGA2 was used for the firing of tank weaponry. Seven practice mines and one component thereof were found within approximately 1,100 to 2,500 ft of this historical feature during the site walk.

3.1.2 Physical Profile

3.1.2.1 Vegetation

Portions of EGA2 consist of central maritime chaparral with several plant species listed as either endangered, threatened, or as a species of concern. Rare shrub species occurring within all maritime chaparral areas include Toro manzanita, Hooker's manzanita, Monterey ceanothus, and Eastwood's golden fleece. The rest of the vegetation in EGA2 consists of coast live oak woodland and grasslands.

3.1.2.2 Terrain

EGA2 varies from gentle sloping areas in the south and west to steep canyon walls in the north and east. Three ravines extend from the east up into the northern portion of the area.

3.1.2.3 Geology

EGA2 is underlain by several hundred feet of eolian deposits consisting mostly of sand.

3.1.3 Release Profile

Military munitions were found on the surface and near-surface of EGA2 during the site walk. It can therefore be concluded that if any additional military munitions are present in EGA2, erosion or future excavations would likely increase their accessibility.

3.1.4 Land Use and Exposure Profile

3.1.4.1 Land Use

Currently, the land encompassed by EGA2 is undeveloped. Removable cable barriers are present on the entrances of the dirt roads intersecting Barloy Canyon Road and Crescent Bluff Road. However, EGA2 is still accessible from BLM lands that border the area to the north and west. Access into EGA2 from Reservation Road, which borders the area to the east, is considered to be nearly impossible because the terrain in EGA2 near Reservation Road is extremely steep and thus difficult to traverse.

The planned reuse of EGA2 is mostly future development with residential and commercial uses. Habitat reserve areas are planned for the southwestern corner and eastern side of EGA2.

3.1.4.2 Exposure

The BLM lands bordering EGA2 to the north and west are currently used for hiking, biking, and horseback riding. Reservation Road borders EGA2 to the east and is a major access road for commuters traveling between the cities of Marina and Salinas.

In the future, intrusive activities are expected in the parcels within EGA2 that are designated for development (parcels L20.19.1.2, L23.3.2.2, and L23.3.3.2) as part of the reuse and development of the land. In addition, the development of the land includes residential housing, so future residents will be living on parts of EGA2. Significant intrusive activities are not expected in the habitat reserve areas in the southwestern corner and eastern side of EGA2 (parcels E11b.6.3 and E11b.7.2).

3.1.5 Potential Exposure Pathway Analysis

Based on the preceding profiles, the potential exposure pathways in EGA2 are currently considered complete. This means that human receptors accessing EGA2 now or in the future may come into contact with military munitions. However, the military munitions that could potentially be encountered in EGA2 are not expected to pose a threat to human health or life.

The military munitions encountered to date in EGA2 consist of expended M1 AT practice mines, expended Teller AT practice mines, pyrotechnics (an M125 series illumination signal and smoke pyrotechnic mixture), small arms, and an expended rocket motor.

The following information is listed for the types of military munitions previously encountered and thus potentially remaining in EGA2: (A) a description of the item; (B) how the item was designed to function; and (C) the likelihood the item would function if encountered, and the type of injury that could result from the functioning of the item. Note that the expended rocket motor is not listed. This is because it was discovered in a burial pit and thus is believed to have been placed there rather than resulting from training activities.

3.1.5.1 M1 AT Practice Mine

Three expended M1 AT practice mines (MD-E) were found in the southeast portion of EGA2 during the 2005 site walk.

A. Description

An AT mine is designed to disable or destroy vehicles and tanks. The explosive can be activated by many types of fuze mechanisms, including pressure, tilt rod, influence or command detonated.

The M1 AT practice mine was designed to simulate the M1 and M1A1 HE antitank mines. The M1 series mine may be used with the M1A1 or the M1A2 fuze. The M1 AT practice mine was used for training soldiers in the proper methods and precautions to be observed in the care, handling, laying, booby trapping, arming and disarming of the mine [Ref. 21].

B. Design for Functioning

The M1 AT practice mine is functioned by applying pressure (200 to 500 pounds) to the pressure plate, which fires the activator, which contains a small detonator (2.34 grains) and 20 grains of smoke composition. The activator operates when the action of a firing device initiates the igniter charge, which in turn, ignites the smoke charge, releasing a puff of white smoke with accompanying noise. The mine could be caused to function by incidental contact by applying sufficient force to the pressure plate of the mine. The mine, being antitank by type, requires more weight than a large person can apply by just stepping on the pressure plate. It would require a vehicle to generate the necessary pressure to activate the M1 activator.

C. Probability of Functioning

It is highly unlikely that a human receptor would be able to trigger an M1 practice mine through casual contact (i.e., inadvertent and unintentional contact). This is supported by the following reasons: (1) the mine would have to contain a live fuze and active detonator; (2) a human receptor would have to apply enough force (200 to 500 lb.) on the mine's pressure plate to trigger the mine (a vehicle, for which the mines were designed for, could generate this force); and (3) the components of the mine would have been exposed to moisture, degradation, and weathering for many years, which could decrease their effectiveness.

In the unlikely event an M1 practice mine were to function through casual contact, it would not be expected to result in injury or death. The functioning of the mine would generate a puff of white smoke from the mine's spotting charge and noise. Injury to a human receptor would require extreme abuse of the

mine or its fuze (the fuze primer contains small amounts of low and/or high explosives and the fuze body contains pyrotechnics and/or sound charges).

3.1.5.2 Teller AT Practice Mine

Expended T MI.35 and T.MI.42 AT Teller practice mines (MD-E) were found in the southwest portion of EGA2 during the 2005 site walk.

A. Description

The Teller mine was the standard AT mine used by Germany in WW II. It is a round, plate-shaped device with a built-in carrying handle. Germany produced over 3.6 million mines between 1943 and 1944, including models 35 and 42 [Ref. 22]. Following WWII, there was a large surplus of Teller mines. European countries stockpiled the Teller mines for training purposes. The Teller mines were also brought to the U.S. for training purposes, as the fuze well of the Teller mine matched the size and threading pattern of a fuze used in U.S. practice mines.

The body of the M35 is a circular metal box with a dome-shaped top surface containing 11 lbs. of high-grade pressed TNT (it should be noted that U.S. military training activities such as tank driving did not involve HE-filled mines; therefore, it is believed that a version of the mine containing a practice fuze with a smoke spotting charge was also produced. This is supported by the findings of four such Teller mines during the EGA2 site walk). A "floating" cover is held down by a heavy metal ring attached to the body and is supported in the center by a heavy spring. A compressible rubber ring serves as a cushioned seat for the bottom of the igniter. A threaded washer locks in the detonator and an adjusting collar serves to position the igniter. The igniter is screwed into the mine cover until it bears firmly on the rubber washer. There are two receptacles in the mine body, one in the side and one in the bottom, threaded to receive the secondary firing devices. Either pull friction igniter Z, Z.35, or ZDSCHN. ANZ. 29 is used with a detonator for the secondary firing. A rubber strip seals the junction between the cover and the body of the mine against the entry of water and dirt.

The M42 is similar to M35 except that the pressure plate is much smaller and does not include the entire top surface. The main igniter, the T. Mi. Z. 42 is placed in the receptacle in the center of the mine. Then the pressure cap is screwed onto the pressure plate and comes to rest on the head of the striker. [Ref. 23]

B. Design for Functioning

The M35 mine is functioned by applying 200-400 lb. of pressure to the pressure plate, which depresses the cover and the igniter housing. The igniter housing presses on top of the striker shearing pin, which holds the striker in the cocked position. Driven by the striker spring, the striker spring sets off the percussion cap, detonator, booster, and main charge.

The M42 is functioned by applying 250-400 lb. of pressure to the pressure plate, which forces the pressure cap down because it is fixed to the pressure plate, and compresses the heavy spring and detonates the mine.

C. Probability of Functioning

It is highly unlikely that a human receptor would be able to trigger a Teller AT practice mine through casual contact (i.e., inadvertent and unintentional contact). This is supported by the following reasons: (1) the mine would have to contain a live fuze and active detonator; (2) a human receptor would have to apply enough force (200 to 400 lb.) on the mine's pressure plate to trigger the mine (a vehicle, for which the mines were designed for, could generate this force); and (3) the components of the mine would have been exposed to moisture, degradation, and weathering for many years, which could decrease their effectiveness.

In the unlikely event a Teller AT practice mine were to function through casual contact, it would not be expected to result in injury or death. The functioning of the mine would generate a puff of white smoke from the mine's spotting charge and noise.

3.1.5.3 M74 Series Airburst Simulator

An expended M74 series airburst simulator (MD-E) was found next to some pyrotechnic mixture (MEC) in the southwest portion of EGA2 during the 2005 site walk. The pyrotechnic mixture was likely the flash charge from the simulator

A. Description

The M74 series airburst simulator is designed to simulate artillery fire air bursts. The simulators have a one-piece aluminum case with an extracting rim, and resemble a large shotgun shell. The case contains a percussion primer mounted in the base, a black powder propelling charge, a delay fuse, and an inner case containing a flash charge.

B. Design for Functioning

The simulators are fired from Pyrotechnic Pistol AN-M8. The firing pin of the pistol strikes the primer, igniting the propelling charge. The propelling charge expels the self-contained flash charge from the case, at the same time igniting the igniting charge. The igniting charge ignites the delay fuse, and the fuse in turn, ignites the flash charge producing a bright flash and a loud noise. The total delay from actuation of the firing pin to ignition of the flash charge is 2 to 3 seconds. Aimed at a 45 degree elevation, the height of burst is approximately 100 ft [Ref. 24].

C. Probability of Functioning if Encountered

It is highly unlikely that a human receptor would be able to function a M74 series airburst simulator through casual contact (i.e., inadvertent and unintentional contact). This is because the simulator would have been exposed to moisture, degradation, and weathering for many years, which could prevent it from functioning.

The M74 series airburst simulator contains no high explosives. It only poses only a burn hazard if functioned.

3.1.5.4 M125 Series Illumination Signal

An expended M125 series illumination signal (MD-E) was found in the southwest portion of EGA2 during the 2005 site walk.

A. Description

The M125 series illumination signal is classified as a pyrotechnic. Pyrotechnics are chemical materials used to create fire, light, heat, noise, or gas emission, but not explosions. Pyrotechnic devices include flares, smoke grenades, and military incendiaries.

Star cluster signals consist of five-star illuminant assemblies and a rocket motor propulsion assembly contained in a hand-held aluminum launching tube. The base of the launching tube contains a primer and an initiating charge. As shipped, the firing pin cap is assembled to the forward end and must be reversed for firing. Stabilizing fins on the tail assembly of rocket are folded parallel to the axis of the signal. A bolt, which also transfers the initiating charge flash to the propellant, extends into the center of the solid propellant, which fills the propulsion assembly. The illuminant assembly is mounted on top of the propulsion assembly with a delay assembly and an expelling charge between. A label specifying firing procedures is secured to the body of the signal [Ref. 25].

B. Design for Functioning

When the firing cap is placed on the initiator end in preparation for firing the signal, the firing pin is aligned with the primer. Striking the primer with the firing pin fires the initiating charge to ignite the rocket propellant. As the rocket emerges from the launching tube, the fins extend for flight stability. Before rocket motor burnout at 200 ft, the black powder expelling charge is ignited performing the two-fold function of expelling and igniting the 5-star illuminant assemblies. Burning time is 6 to 10 seconds with burnout occurring at 250 to 300 ft above the ground.

C. Probability of Functioning if Encountered

It is highly unlikely a human receptor would be able to function an M125 series illumination signal through casual contact. This is supported by the following reasons: (1) it would require precise placement of components and a hard blow to function, and (2) the signal would have been exposed to moisture, degradation, and weathering for many years, which could decrease the effectiveness of the components that cause it to function.

The M125 series illumination signal contains no explosives. It only poses only a burn hazard if functioned.

3.2 EGA4 NE CSM

3.2.1 Facility Profile

There no facilities present in EGA4 NE that can be identified as an origin of military munitions.

3.2.2 Physical Profile

3.2.2.1 Vegetation

Portions of EGA4 consist of central maritime chaparral and contain several plant species listed as either endangered, threatened, or as species of concern. Rare shrub species occurring within all maritime chaparral areas include Toro manzanita, Hooker's manzanita, Monterey ceanothus, and Eastwood's golden bush. Sand gilia and Seaside bird's-beak—both endangered species—occur in the eastern portion of EGA4 (near MRS-23 and MRS-33).

The maritime chaparral in parts of EGA4 was observed as extremely dense, particularly in the western and northern portions of the area. The site walk could not be conducted in these densely vegetated areas.

3.2.2.2 Terrain

The topography of EGA4 NE consists of a series of roughly east-west ravines. The terrain on the sides of the ravines is steep. This precluded conducting the site walk in the ravines. Some erosion was observed directly to the west of the engineer training area outside MRS-23.

3.2.2.3 Geology

EGA4 is underlain by several hundred feet of eolian deposits consisting mostly of sand.

3.2.3 Release Profile

Military munitions were found on the surface and near-surface of EGA4 NE during the site walk. It can therefore be concluded that if any additional military munitions are present in EGA4 NE, a natural process such as erosion would likely increase their accessibility.

3.2.4 Land Use and Exposure Profile

3.2.4.1 Land Use

Currently, the land encompassed by EGA4 NE is undeveloped. Removable cable barriers are present on the entrances of the dirt roads intersecting Barloy Canyon Road and Crescent Bluff Road. However,

EGA4 NE is still accessible from BLM lands that border the area to the south. Access into EGA4 NE is also possible from numerous roads and trails originating near Reservation Road.

The planned reuse of EGA4 NE is habitat reserve.

3.2.4.2 Exposure

Currently, the BLM land bordering EGA4 NE to the south is used for hiking, biking, and horseback riding. Reservation Road borders EGA4 NE to the east and is a major access road for commuters traveling between the cities of Marina and Salinas.

In the future, intrusive activities are not expected in EGA4 NE. Residential development, though, is planned in one parcel adjacent to EGA4 NE (parcel L23.3.2.2) and one nearby (parcel E11.b.8). Future residents in these parcels will be in close proximity to EGA4 NE.

3.2.5 Potential Exposure Pathway Analysis

Based on the preceding profiles, the potential exposure pathways in EGA4 NE are currently considered complete. This means that human receptors accessing EGA4 NE now or in the future may come into contact with military munitions. However, the military munitions that could potentially be encountered in EGA4 NE are not expected to pose a threat to human health or life.

The military munitions encountered to date in EGA4 NE consist of the five 40mm smoke cartridges (MEC), one 40mm M781 practice cartridge (MEC), and 8,773 SAA found in MRS-33, and the tail fin assembly from a rifle grenade (MD) found during the site walk. The 40mm smoke and M781 practice cartridges were discovered in a military munitions burial site (MRS-33) and thus are believed to have been placed there rather than resulting from training activities. The finding of the tail fin without the presence of any other rifle grenades or fragments thereof is indicative of signaling and screening exercises with the M20, M22, and M23 smoke rifle grenades.

The following information is listed for the types of military munitions previously encountered and thus potentially remaining in EGA4 NE: (A) a description of the item; (B) how the item was designed to function; and (C) the likelihood the item would function if encountered, and the type of injury that could result from the functioning of the item.

3.2.5.1 M20 Smoke Rifle Grenade

A. Description

The M20 smoke rifle grenade is used exclusively for screening purposes. It is filled with 10.8 oz. of hexachloroethane-zinc (HC) mixture [Ref. 26].

B. Design for Functioning

The fuze impacts functions on impact and ignites the smoke mixture. The smoke mixture burns for approximately 1 minute, giving off a dense, white, non-toxic smoke through the emission holes in the base of the grenade body.

C. Probability of Functioning

It is highly unlikely that an M20 smoke rifle grenade would function through casual contact (i.e., inadvertent and unintentional contact). This is supported by the following reasons: (1) the M20 smoke rifle grenade was designed to be functioned by a hard, nose-on impact with the ground or other hard target and (2) the M20 smoke rifle grenade would have been exposed to moisture, degradation, and weathering for many years, which could decrease the effectiveness of the components that cause it to function.

In the unlikely event an M20 smoke rifle grenade was to function through casual contact, it would not be expected to result in injury or death. The type of injuries that could be sustained from the functioning an M20 smoke rifle grenade would be burns from the burning smoke charge.

3.2.5.2 M22 Smoke Rifle Grenade

A. Description

The M22 series smoke rifle grenade was designed for signaling and laying smoke screens. The M22 consists of three basic parts: a steel stabilizer assembly, an integral fuze and a body. The fuze is a mechanical impact-igniting type. The body is filled with a burning-type smoke charge that contains a dye to color the smoke. The surfaces of the smoke charge within the body are coated with a starter mixture charge to facilitate ignition. A nose-closing plug covers a small opening or air hole in the nose of the ogive [Ref. 27].

B. Design for Functioning

After being fired from a rifle equipped with a grenade launcher, it is functioned by impact with the ground or other hard target, causing the firing pin to strike the primer (like a small arms primer), which ignites the starter mixture charge, and in-turn starts the smoke charge to burn. The smoke charge, consisting of baking soda, potassium perchlorate, sugar, and dye, burns for approximately 60 seconds.

C. Probability of Functioning

It is highly unlikely that an M22 smoke rifle grenade would function through casual contact (i.e., inadvertent and unintentional contact). This is supported by the following reasons: (1) the M22 smoke rifle grenade was designed to be functioned by a hard, nose-on impact with the ground or other hard target and (2) the M22 smoke rifle grenade would have been exposed to moisture, degradation, and weathering for many years, which could decrease the effectiveness of the components that cause it to function.

In the unlikely event an M22 smoke rifle grenade was to function through casual contact, it would not be expected to result in injury or death. The type of injuries that could be sustained from the functioning an M22 smoke rifle grenade would be burns from the burning smoke charge.

3.2.5.3 M23 Smoke Rifle Grenade

A. Description

The M23 series smoke rifle grenade is used only for signaling purposes, producing green, red, violet, or yellow smoke streamers. It consists of three basic parts: a steel stabilizer tube assembly, a fuze, and a body. The body is filled with a burning type smoke charge which contains a dye to color the smoke. The surfaces of the smoke charge within the body are coated with a starter mixture charge (to facilitate ignition). A small air hole opening in the nose of the ogive is covered by a piece of tape (to protect the filler against moisture). The tape must be removed prior to firing [Ref. 27].

B. Design for Functioning

The M23 series smoke rifle grenade functions upon firing, emitting a stream of colored smoke over the entire trajectory. Upon firing the grenade cartridge in the rifle, the grenade is launched and functions, as the flash from the grenade cartridge passes from the rifle through orifices in the fuze to ignite the igniting charge in the fuze. The igniting charge ignites the starter mixture charge. The starter mixture charge ignites the smoke charge. The smoke charge begins to burn, generating colored smoke. Air entering the air hole in the nose of the grenade forces smoke out of holes in the base of the body, producing streamers of colored smoke. The smoke charge continues to burn, producing smoke over the entire trajectory of the grenade, and for a few seconds after striking the ground. The total burning time is approximately 12 seconds.

C. Probability of Functioning

It is highly unlikely that an M23 smoke rifle grenade would function through casual contact (i.e., inadvertent and unintentional contact). This is supported by the following reasons: (1) the M23 smoke rifle grenade was designed to be functioned by a hard, nose-on impact with the ground or other hard target and (2) the M23 smoke rifle grenade would have been exposed to moisture, degradation, and weathering for many years, which could decrease the effectiveness of the components that cause it to function.

In the unlikely event an M23 smoke rifle grenade was to function through casual contact, it would not be expected to result in injury or death. The type of injuries that could be sustained from the functioning an M23 smoke rifle grenade would be burns from the burning smoke charge.

4 AREA EVALUATIONS

The available data (e.g., archival and reconnaissance data) regarding EGA2 and EGA4 NE has been reviewed and evaluated according to procedures described in the *Final Plan for Evaluation of Previous Work* [Ref. 7]. The evaluation process is documented through the completion of a series of checklists. This section presents a summary of the results of the checklist evaluation. Separate evaluations for EGA2 and EGA4 NE are provided. The evaluation for EGA2 consists of literature and site walk reviews; the evaluation for EGA4 NE consists of literature, munitions response (MRS-33), and site walk reviews. Copies of the checklist are provided as Appendix B.

4.1 EGA2

4.1.1 Literature Review

4.1.1.1 Type of Training and Military Munitions Expected

Five historic features in or near EGA2 are identified from Fort Ord facilities and training maps:

- LRC Training Site
- Mechanic training site
- Site 31 Burial Area
- Historical Training Areas (HA-78, HA-86, and HA-88)
- Tank Driving Area

Of the five features, only HA-78 small arms range and the Tank Driving Area are related to military munitions training that may have occurred in EGA2.

A. LRC Training Site

An LRC training site is identified in a 1968 training areas and facilities map and in the undated "Beardsley" map. This site consisted of obstacles and pools, but no specific training with military munitions occurred on it. The facility was located on a ridge top as indicated on Map 5, but some of the buildings were removed in preparation for the remediation of Site 31.

B. Mechanic Training Site

Also referred to as the field expedient area or AMHC, this site is located in a clear area in the south central part of EGA2 in training facilities maps starting in 1956. Based on the name of the site, it is assumed that the activities in this area centered on field repair of military vehicles and did not include specific training with military munitions.

C. Site 31 Burial Area

The Site 31 burial area is located just south of the LRC and was used as a dump site for incinerated refuse in the 1940s and 1950s. Site 31 was investigated and remediated for chemical contamination related to incinerated refuse IAW the Basewide RI/FS ROD. Under the ROD, approximately 350 cubic yards of soil and debris on the northern slope of the site containing lead above the health-based level of concern (1,860 mg/kg) were excavated. No evidence of military munitions was found at this site during the remedial action.

D. Historical Training Areas (HA-78, HA-86, and HA-88)

On pre-1941 and 1941 aerial photos of East Garrison, five parallel cleared areas were identified in EGA2 just northwest of Barloy Canyon Road. These areas may have served as a target area for small arms range HA-78, which is identified as "Light Machine Gun Range" on a 1940 map of Fort Ord. This range is also apparent on a late-1930s photograph of the East Garrison and on 1942 and 1943 photo maps of Fort Ord. The training maps show targets located 500, 600, and 800 yards downrange; firing points are apparent on

the same ridge as the LRC. Reconnaissance was conducted on HA-78 in July 1999 as part of the BRA. During this investigation, casings, blank small arms rounds, and links as well as a possible firing location (sandbags) were identified. Access to the area was limited by dense brush and poison oak.

The range fans of two East Garrsion Firing Ranges, EG-1 (HA-86) and EG-3 (HA-88), extend into the southwestern section of EGA2. EG-1 was used for military training, local police training, and recreational firing. Weapons use was limited to pistols. EG-3 was originally constructed as a small range for practice firing from tanks using subcaliber .22 caliber ammunition. However, no tank training reportedly ever occurred at this range. Instead, EG-3 was used for .22 caliber rifles. Portions of these ranges located outside EGA2 were characterized, sampled, and remediated under an IAROD program for contaminated surface soil.

E. Tank Driving Area

A Tank Driving Area is identified on a 1956 training facilities map outside EGA2, in the center of the adjacent MRS-59A.

4.1.1.2 Subsequent Use of the Area

EGA2 remains undeveloped. The only military munitions findings in EGA2 prior to the site walk were the casings, blank small arms rounds, and links found in HA-78 small arms range during the BRA investigation.

4.1.1.3 Establishment of Boundaries

The establishment of the EGA2 boundary is not based on any defined area of use. Instead, the EGA2 boundary was established in the planning of future land transfers in the East Garrison area.

4.1.1.4 Summary of Literature Review Analysis

Based on the literature review, the type of training that occurred in EGA2 is inconclusive. During the pre-field data evaluation phase of the site assessment, which included an evaluation of the Fort Ord facilities and training maps, it was believed military munitions would not be encountered in EGA2. Only through the results of the site walk could it be determined that HA-78 small arms range and the Tank Driving Area might have been related to training activities that occurred in EGA2.

4.1.2 Site Walk Review

As discussed in Section 2.1.4.6, a site walk was conducted in EGA2 in March 2005 to identify any evidence of military munitions training in the area. The site walk was conducted by a three-person team that included UXO technicians. The site walk team visually searched the open, accessible portions of EGA2 while operating geophysical detection instruments to locate subsurface geophysical anomalies.

4.1.2.1 Data Management and Quality Control (QC)

A. Data Management

To manage the site walk, the site walk team used a Pocket PC that was loaded with ArcPad, a mobile mapping and geographic information system (GIS) program. The pocket PC was linked to a Leica SR530 RTK corrected GPS for obtaining accurate positional data.

To track the site walk coverage, the site assessment team created a new linear shape file in ArcPad before walking a path. Based on the geophysical instrument selected, the team saved the file as either an EM61 or a Schonstedt linear shape. As the team progressed, ArcPad recorded the path walked, and the GPS connection ensured the integrity of this data. Each anomaly detected and feature observed were input into the ArcPad program.

When an anomaly or site feature was encountered, the site assessment team stopped recording the path being walked and created a new entry in an anomaly shape file set up in ArcPad. The ArcPad program automatically recorded the GPS location of the anomaly/feature and assigned it a unique identification (ID) number. For anomalies that were excavated, the site assessment team input the dig result type, the depth of item causing the anomaly, and the item's description.

At the end of each day of the site walk, the data collected in the field was downloaded from the pocket PC into a working GIS database file on the Parsons network, which was backed up every night to safeguard the data. The site walk data will be downloaded and stored in the Fort Ord MR RI/FS database once the site report for EGA2 has been finalized.

The site walk data was reviewed by an Army subcontractor UXOQC for consistency, completeness, and correct nomenclature.

B. Field QC Procedures

Field QC procedures included standardization checks for the detection equipment (the EM61-MK2 and the Schonstedt) and a position check for the GPS equipment.

For the EM61-MK2, a static test was conducted each morning before beginning the site walk. This entailed making sure that the variation (peak negative to peak positive) in the EM61 response was no greater than 1.5 millivolts (mV) for an interval lasting at least one minute. Standardization tests were performed on the EM61 before and after the instrument was used. This involved making sure the variation in the EM61 response was less than or equal to 20% when the instrument was first operated with no metal item present and then with a metal item near the coil.

The Schonstedt was tested each day prior to beginning field activities over a 105mm projectile buried 4 ft below ground surface (bgs) to check whether the instrument could detect the item.

The GPS system was tested each day prior to beginning field activities over a known point to ensure that the distance from the point to its displayed position on the GPS was less than 0.5 ft.

4.1.2.2 Results

The site walk team covered approximately 3.15 acres of the 114-acre EGA2 (slightly less than 3%). Approximately 2.4 acres of EGA2 was geophysically searched with an EM61-MK2 time-domain metal detector; the other .75 acres were searched with a Schonstedt GA-52/Cx magnetometer.

The locations of detected anomalies, as well as any features related to military munitions training, were identified using an RTK GPS and then recorded in a pocket PC. The site walk team detected 234 anomalies and excavated 113 of them (48%).

Fifteen of the anomalies resulted in military munitions. The military munitions found consisted of expended M1 AT practice mines (MD-E), expended German WWII T MI.35 and T MI.42 AT practice Teller mines (MD-E), an expended M125 series illumination signal (MD-E), an expended M74 airburst simulator (MD-E) and pyrotechnic mixture (MEC) that was likely the flash charge from the simulator, an expended rocket motor (type unknown) found in a burial pit (MD), a pressure plate from a mine (MD), and expended small arms (MD).

Overall, the military munitions encountered in EGA2 during the site walk are indicative of tank driving training and tactical training. In addition, pyrotechnics were found with the range fan of small arms range HA-78, which further supports that this range was previously used for small arms training.

4.2 EGA4 NE

4.2.1 Literature Review

4.2.1.1 Type of Training and Military Munitions Expected

Four historic features in or near EGA4 NE are identified from aerial photos or training facilities maps in the 1997 ASR:

- Military Munitions Burial Site (MRS-33 [OE Cache], located inside EGA4 NE)
- Mechanic Training Area (MRS-23, located just outside EGA4 NE to the south)
- Engineer Training Area "B" (located just outside EGA4 NE to the west)
- Demolition Area (located outside EGA4 NE, approximately 400 ft to the west)

None the four features are related to military munitions training that may have occurred in EGA4 NE.

A. Military Munitions Burial Site (MRS-33, OE Cache)

A single burial site containing military munitions was identified in the northeast portion of EGA4 NE near Reservation Road. A 4-ft removal was conducted on this burial site, in which all anomalies detected were investigated and resolved and all the military munitions encountered were removed. The military munitions burial site was initially designated "OE Cache" and then later named MRS-33.

B. Mechanic Training Area

Interviews indicate there was a concrete pit just outside EGA4 NE to the south, near Crescent Bluff Road. The concrete pit was reportedly used to verify that amphibious vehicle engines would operate in water.

SAA cartridge cases and pieces of an M49 trip flare were noted during an initial inspection of the area. Four shallow depressions, initially thought to be used for demolition activities, were suspected of being burn pits used for firefighting drills.

This area was identified as IA Site 41 during the site characterization phase of the Basewide RI/FS due to limited surface soil contamination. A remedial action was completed at Site 41 IAW the IAROD for the remediation of contaminated surface soil at the former Fort Ord. Under the IAROD, three pits at Site 41 were excavated 1 ft bgs, removing approximately 76 cubic yards of soil. No evidence of military munitions was found during these excavations; however, it was believed that military munitions could still be in the area based on historical data.

In 1997, a 4-ft removal was conducted on the area (designated MRS-23, the northern portion of which is coincident with Site 41). During this investigation, a single 0.25-lb. piece of a TNT demolition charge was found, indicating that the area had possibly been used for demolition activities.

C. Engineer Training Area "B"

An engineer training area "B" is marked on a 1957 training areas and facilities map outside EGA4 NE to the south, just northwest of the mechanic training area. This designation may further indicate that the area in the vicinity of MRS-23 was used for demolition activities.

D. Demolition Area

A demolition area approximately 400 ft to the west of EGA4 NE and MRS-23 is indicated on 1945 and 1946 training areas and facilities maps. This designation may further indicate that the area in the vicinity of MRS-23 was used for demolition activities.

4.2.1.2 Subsequent Use of the Area

EGA4 NE remains undeveloped. Prior to the site walk, no other military munitions findings had been made in the area.

4.2.1.3 Establishment of Boundaries

The establishment of the EGA4 NE boundary is not based on any defined area of use. Instead, the EGA4 NE boundary was established in the planning of future land transfers in the East Garrison area.

4.2.1.4 Summary of Literature Review Analysis

Based on the literature review, the type of training that occurred in EGA4 NE is inconclusive. During the pre-field data evaluation phase of the site assessment, it was believed military munitions would not be encountered in EGA4 NE. Only through the results of the site walk could it be determined that training activities might have occurred in the area.

4.2.2 Munitions Response Review

The only previous munitions response investigation in EGA4 NE was a removal action conducted in MRS-33 in 1995.

The POM Federal Police located a foxhole containing small arms ammunition and 40mm cartridges near the Reservation Road boundary. This foxhole was initially designated "OE Cache" and then later named MRS-33. The Army directed its MMRP contractor to clear all the military munitions in MRS-33.

In April 1995, MRS-33 was investigated to a 4-ft depth with Schonstedt GA-52/Cx magnetometers (deeper excavations were approved by the USACE safety specialist). All anomalies detected were investigated and resolved. During this munitions response, six MEC and 8,773 SAA were encountered. The six MEC consisted of five 40mm smoke cartridges (model unknown) and a 40mm M781 practice cartridge. A QC check was performed after the removal work to ensure the investigation of the site was done properly. The USACE safety specialist then performed a quality assurance (QA) check before accepting the site. The AAR had no specific recommendations for MRS-33.

4.2.3 Site Walk Review

As discussed in Section 2.2.4.6, a site walk was conducted in EGA4 NE in June 2005 to identify any evidence of military munitions training in the area. The site walk was conducted by a three-person team that included UXO technicians. The site walk team visually searched the open, accessible portions of EGA4 NE while operating geophysical detection instruments to locate subsurface geophysical anomalies.

4.2.3.1 Data Management and QC

A. Data Management

To manage the site walk, the site walk team used a Pocket PC that was loaded with ArcPad, a mobile mapping and geographic information system (GIS) program. The pocket PC was linked to a Leica SR530 RTK corrected GPS for obtaining accurate positional data.

To track the site walk coverage, the site assessment team created a new linear shape file in ArcPad before walking a path. Based on the geophysical instrument selected, the team saved the file as either an EM61 or a Schonstedt linear shape. As the team progressed, ArcPad recorded the path walked and the GPS connection ensured the integrity of this data. Each anomaly detected and site feature observed were input into the ArcPad program.

When an anomaly or site feature was encountered, the site assessment team stopped recording the path being walked and created a new entry in an anomaly shape file set up in ArcPad. The ArcPad program automatically recorded the GPS location of the anomaly/feature and assigned it a unique identification ID number. For anomalies that were excavated, the site assessment team input the dig result type, the depth of item causing the anomaly, and the item's description.

At the end of each day of the site walk, the data collected in the field was downloaded from the pocket PC into a working GIS database file on the Parsons network, which was backed up every night to safeguard

the data. The site walk data will be downloaded and stored in the Fort Ord MR RI/FS database once the site report for EGA4 has been finalized.

The site walk data was reviewed by an Army subcontractor UXOQC for consistency, completeness, and correct nomenclature.

B. Field QC Procedures

Field QC procedures included standardization checks for the detection equipment (the EM61-MK2 and the Schonstedt) and a position check for the GPS equipment.

For the EM61-MK2, a static test was conducted each morning before beginning the site walk. This entailed making sure that the variation (peak negative to peak positive) in the EM61 response was no greater than 1.5 millivolts (mV) for an interval lasting at least one minute. Standardization tests were performed on the EM61 before and after the instrument was used. This involved making sure the variation in the EM61 response was less than or equal to 20% when the instrument was first operated with no metal item present and then with a metal item near the coil.

The Schonstedt was tested over a 105mm projectile buried 4 ft below ground surface (bgs) before beginning the site walk to check whether the instrument could detect the item. The Schonstedt GA-52\Cx was checked every morning over a known item (105mm projectile buried 4-ft bgs) prior to mobilization to the field to ensure the item is detectable.

The GPS system was tested each day prior to beginning field activities over a known point to ensure that the distance from the point to its displayed position on the GPS was less than 0.5 ft.

4.2.3.2 Results

The site walk team covered approximately 1.25 acres of the 63-acre EGA4 NE (approximately 2%). Nearly 100% of the paths walked in EGA4 NE were geophysically searched with an EM61-MK2 time-domain metal detector.

The site walk team detected 13 anomalies in EGA4 NE and excavated all of them. Of the 13 anomalies, 4 resulted in military munitions. The military munitions found consisted of a tail fin assembly from a rifle grenade (MD), expended SAA (MD), and two M1 SAA clips (MD). The model of the rifle grenade could not be distinguished from the tail fin assembly; however, the finding of the tail fin assembly without the presence of any other rifle grenades or fragments thereof is indicative of signaling and screening exercises with the M20, M22, and M23 smoke rifle grenades. Overall, the military munitions encountered in EGA4 NE during the site walk are indicative of tactical training.

5 CONCLUSIONS AND RECOMMENDATIONS

This section presents conclusions and recommendations for EGA2 and EGA4 NE. These conclusions and recommendations are based on review of historical information and site walk data collected from EGA2 and EGA4 NE, as well as the results of the previous munitions response investigation conducted within EGA4 NE in MRS-33.

5.1 EGA2

5.1.1 Conclusions

A. Use and Development

Based on the literature review and site walk results, EGA2 appears to have been used for tank driving and tactical training. The site is currently unoccupied, but it is adjacent to recreational land.

B. MEC Hazards

The following MEC items, if present at the site, are considered to pose an acceptable risk if encountered, for the following reasons:

- *M1 AT Practice Mine*—It is highly unlikely that a human receptor would be able to trigger an M1 AT practice mine through casual contact (i.e., inadvertent and unintentional contact). This is supported by the following reasons: (1) the mine would have to contain a live fuze and active detonator; (2) a human receptor would have to apply enough force (200 to 500 lb.) on the mine's pressure plate to trigger the mine (a vehicle, for which the mines were designed for, could generate this force); and (3) the components of the mine would have been exposed to moisture, degradation, and weathering for many years, which could decrease their effectiveness. In the unlikely event an M1 practice mine was to function through casual contact, it would not be expected to result in injury or death. The functioning of the mine would generate a puff of white smoke from the mine's spotting charge and noise. Injury to a human receptor would require extreme abuse of the mine or its fuze (the fuze primer contains small amounts of low and/or high explosives and the fuze body contains pyrotechnics and/or sound charges).
- *Teller AT Practice Mine*—It is highly unlikely that a human receptor would be able to trigger a Teller AT practice mine through casual contact (i.e., inadvertent and unintentional contact). This is supported by the following reasons: (1) the mine would have to contain a live fuze and active detonator; (2) a human receptor would have to apply enough force (200 to 400 lb.) on the mine's pressure plate to trigger the mine (a vehicle, for which the mines were designed for, could generate this force); and (3) the components of the mine would have been exposed to moisture, degradation, and weathering for many years, which could decrease their effectiveness. In the unlikely event a Teller AT practice mine was to function through casual contact, it would not be expected to result in injury or death. The functioning of the mine would generate a puff of white smoke from the mine's spotting charge and noise.
- *M74 series airburst simulator*—It is highly unlikely that a human receptor would be able to function an M74 series airburst simulator through casual contact (i.e., inadvertent and unintentional contact). This is because the simulator would have been exposed to moisture, degradation, and weathering for many years, which could prevent it from functioning. The M74 series airburst simulator contains no high explosives; therefore in the unlikely event one was to function through causal contact, it would pose only a burn hazard.
- *M125 series illumination signal*—It is highly unlikely a human receptor would be able to function an M125 series illumination signal through casual contact. This is supported by the following reasons: (1) it would require precise placement of components and a hard blow to function, and (2) the signal would have been exposed to moisture, degradation, and weathering for many years, which could

decrease the effectiveness of the components that cause it to function. The M125 series illumination signal contains no explosives; therefore, in the unlikely event one was to function through causal contact, it would pose only a burn hazard

C. Sampling Adequacy and Data Quality

The data collected and observations made during the site walk in EGA2 are useful. The items found during the site walk are consistent with the historical features displayed on training facilities maps of Fort Ord and features identified during the site walk.

Seven expended practice M1 and Teller AT mines were found approximately 1,000 to 2,500 from the Tank Driving Area identified on a 1956 Fort Ord training facilities map; SAA was found near an obstacle course and ranger training area observed in the south-central portion of EGA2; and pyrotechnics were found within the range fan of small arms range HA-78. These findings support the conclusion that EGA2 was used for tank driving and tactical training and that it contains a small arms range that was used for firing small arms and pyrotechnics.

5.1.2 Recommendations

Based on review of existing information, MEC is not expected to be found at EGA2 and No Further Action Related to MEC is required for this area. EGA2 meets the Track 1, Category 3 criteria because historical research and field investigations identified evidence of past training involving military munitions, and training in this area involved only the use of practice and pyrotechnic items that are not designed to cause injury. The MEC items that may be present in EGA2 based on past use consist of practice AT M1 and Teller mines and pyrotechnics.

In the unlikely event that an item of the type previously observed in the area is found, it is not expected to function through casual contact (i.e., inadvertent and unintentional contact). The MEC types potentially present in EGA2 have been exposed to moisture, degradation, and weathering for many years which could prevent many of them from functioning. Additionally, practice AT mines are designed to be triggered by the weight of a vehicle, commonly in excess of several hundred pounds.

For EGA2, digging or underground "intrusive" activities are planned for the proposed re-use and development. No actionable risk was identified through the remedial investigation process. However, in the interest of safety, reasonable and prudent precautions should be taken when conducting intrusive operations in this area. As a basewide effort to promote safety and because of Fort Ord's history as a military base, the Army provides "ordnance recognition and safety training" to anyone who requests that training. Construction personnel involved in intrusive operations at the former Fort Ord may attend the Army's "ordnance recognition and safety training" to increase their awareness of and ability to identify MEC items. Section 1.3.1 (Description of the Remedy) of the Track 1 ROD describes the scope of the safety training. Trained construction personnel will contact an appropriate local law enforcement agency if a potential MEC item is encountered. The local law enforcement agency will arrange a response by the Army.

For EGA2, the Army recommends construction personnel involved in intrusive operations in this area (development parcels L23.3.2.2 and L23.3.3.2) attend the Army's "ordnance recognition and safety training." To accomplish that objective, the Army will request notice from the future landowner of planned intrusive activities, and in turn will provide ordnance recognition and safety training to construction personnel prior to the start of intrusive work. The Army will provide ordnance recognition and safety refresher training as appropriate.

Because ordnance recognition and safety training is recommended for EGA2, at the time of the next five-year review (2007), the Army, in accordance with the Track 1 ROD, will assess whether the education program should continue. If information indicates that no MEC items have been found in the course of development or redevelopment of the area, it is expected that the education program may, with the

concurrence of the regulatory agencies, be discontinued, subject to reinstatement if a MEC item is encountered in the future.

In the future, should any military munitions-related item be found within EGA2, the Army will take an appropriate immediate action (i.e., removing the found item, recording the incident), and within 90 days of the discovery, submit a plan for appropriate follow-on action to EPA and DTSC for consultation, pursuant to Section 7.7(b) of the Fort Ord Federal Facility Agreement (FFA).

5.2 EGA4 NE

5.2.1 Conclusions

A. Use and Development

Based on the literature review, the previous munitions response investigation in MRS-33, and the results of the site walk, EGA4 NE appears to be an area that has been used for tactical training and that also contains a former military munitions burial site. The area is currently unoccupied, but it is adjacent to recreational land.

B. MEC Hazards

The following MEC items, if present at the site, are considered to pose an acceptable risk if encountered, for the following reasons:

- *M20, M22, and M23 Smoke Rifle Grenades*—It is highly unlikely that an M20, M22, or M23 smoke rifle grenade would function through casual contact (i.e., inadvertent and unintentional contact). This is supported by the following reasons: (1) the M20, M22, and M23 smoke rifle grenades were designed to be functioned by a hard, nose-on impact with the ground or other hard target and (2) the M20, M22, and M23 smoke rifle grenades would have been exposed to moisture, degradation, and weathering for many years, which could decrease the effectiveness of the components that cause them to function. In the unlikely event that an M20, M22, or M23 smoke rifle grenade was to function through casual contact, it would not be expected to result in injury or death. The type of injuries that could be sustained from the functioning of an M20, M22, or M23 smoke rifle grenade would be burns from the burning smoke charge.

C. Sampling Adequacy and Data Quality

The data collected and observations made during the site walk in EGA4 NE are useful. During the site walk, only a rifle grenade tail fin, expended SAA, and SAA clips were found in EGA4 NE. These findings are consistent with the fact that no other historical features in EGA4 NE are displayed on training facilities maps. These findings support the conclusion that EGA4 NE was used for tactical training.

5.2.2 Recommendations

Based on review of existing information, MEC is not expected to be found at EGA4 NE and No Further Action Related to MEC is required for this area. EGA4 NE meets the Track 1, Category 3 criteria because historical research and field investigations identified evidence of past training involving military munitions, and training in this area involved only the use of practice and pyrotechnic items that are not designed to cause injury. The MEC items that may be present in EGA4 NE based on past use consist of M20 smoke rifle grenades and M22 smoke rifle grenades.

In the unlikely event that an item of the type previously observed in the area is found, it is not expected to function through casual contact (i.e., inadvertent and unintentional contact). The MEC types potentially present in EGA4 NE have been exposed to moisture, degradation, and weathering for many years which could prevent many of them from functioning.

The planned reuse for EGA4 NE is habitat reserve; therefore, no digging or intrusive activities are planned for the area. In the future, should any military munitions-related item be found within EGA4 NE,

the Army will take an appropriate immediate action (i.e., removing the found item, recording the incident), and within 90 days of the discovery, submit a plan for appropriate follow-on action to EPA and DTSC for consultation, pursuant to Section 7.7(b) of the Fort Ord Federal Facility Agreement (FFA).

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