



WESTCLIFFE | ENGINEERS

FIELD VARIANCE FORM

DATE: 16 MAY12 PROJECT NAME: Future East Garrison RI PROJECT LOCATION: Future East Garrison MRA
 APPLICABLE DOCUMENT / SECTION: Final Group 4 Remedial Investigation/Feasibility Study (RI/FS) Work Plan – Volume 2, Section 2.2.1, Section 2.3, Section 2.3.2, Table 2-1, and Figure 2-1
 SUBJECT: Expanded Investigation Acreage in Habitat Reserve Parcel E11b.6.1

FIELD CHANGE CONDITION:

The initial Digital Geophysical Mapping (DGM) and analog investigation of roads, trails, transects and identified grid cells for the Future East Garrison (FEG) Munitions Response Area (MRA) Parcel E11b.6.1 is complete. Figures 1 through 4 show the munitions and explosives of concern (MEC) and munitions debris (MD) recovered during the initial investigation for Parcel E11b.6.1. The initial investigation provides the data needed to determine the nature of the munitions usage and recommend additional grid investigation within the parcel

RECOMMENDED APPROACH / CHANGE:

Additional grid investigation is recommended to further define the extent of munitions usage within Parcel E11b.6.1 and to complete the RI/FS for the FEG MRA. Based on the initial DGM and analog-to-depth investigation finds related to Hand Grenades, 3-inch Stokes Mortars, and 37 millimeter Projectiles MEC and MD (Figures 1-4), additional analog-to-depth investigation is recommended for approximately 43 acres of the uninvestigated portions of Parcel E11b.6.1 (Figure 5). The ESCA RP Team will conduct the additional investigation in accordance with the field investigation plan described in the Group 4 RI/FS Work Plan, Volume 2, Sections 2.3, 2.3.2 and 2.4.

The Army's Biological Opinions allows for 50 acres of vegetation cutting of maritime chaparral in habitat reserve per MRA. To support the MEC remedial investigation activities as outlined in the Group 4 RI/FS Work Plan, vegetation cutting of 48.3 acres of maritime chaparral has occurred for the FEG MRA. In support of the 1999, 2002, and 2005 Biological Opinions, to complete the ongoing MEC remedial investigations for the FEG MRA, the Fort Ord Reuse Authority Environmental Services Cooperative Agreement Remediation Program (ESCA RP) Team provided a memorandum to the United States Department of the Army (Army) for coordination with the United States Fish and Wildlife Service (USFWS) review and approval requesting mechanical cutting of up to 50 additional acres of maritime chaparral vegetation in FEG MRA habitat parcels E11b.6.1 and E11b7.1.1 (Attachment A). The USFWS approved the requested allowance for vegetation removal of up to an additional 50 acres of maritime chaparral in a letter dated April 24, 2012 (Attachment B). The ESCA RP Team will continue implementing mitigation measures during work activities in the FEG MRA to minimize impacts to species as specified in the Installation-Wide Multispecies Habitat Management Plan. The ESCA RP Biologist will also continue coordinating with the Army Wildlife Biologist on major activities and mitigation measures in advance of their proposed implementation to allow review and provide input to the ESCA RP Team.

IMPACT ON PRESENT AND COMPLETED WORK:

The recommended additional investigation allows for complete characterization of Parcel E11b.6.1.

REQUESTED BY: Kristie Reimer, ESCA Remediation Program Manager (ARCADIS)

CLARIFICATION/FOR INFORMATION ONLY

MINOR CHANGE

MAJOR CHANGE



ESCA RP TEAM APPROVALS: G. CLARK, L. TEMPLE, B. MOE

COMMENTS

ACKNOWLEDGED BY:

GREG CLARK

ESCA RP UXO SAFETY OFFICER
(WESTON)

[Signature]
SIGNATURE

5/16/12
DATE

ACKNOWLEDGED BY:

BRUCE MOE

ESCA RP SENIOR UXO
SUPERVISOR (WESTON)

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SIGNATURE

5/16/12
DATE

ACKNOWLEDGED BY:

LINDA TEMPLE

ESCA RP REMEDIATION
PROJECT MANAGER (WESTON)

[Signature]
SIGNATURE

5/16/12
DATE

FORA APPROVAL:

COMMENTS



APPROVED



REJECTED

STAN COOK

FORA ESCA PROGRAM
MANAGER

[Signature]
SIGNATURE

5/16/12
DATE

ATTACHMENTS:

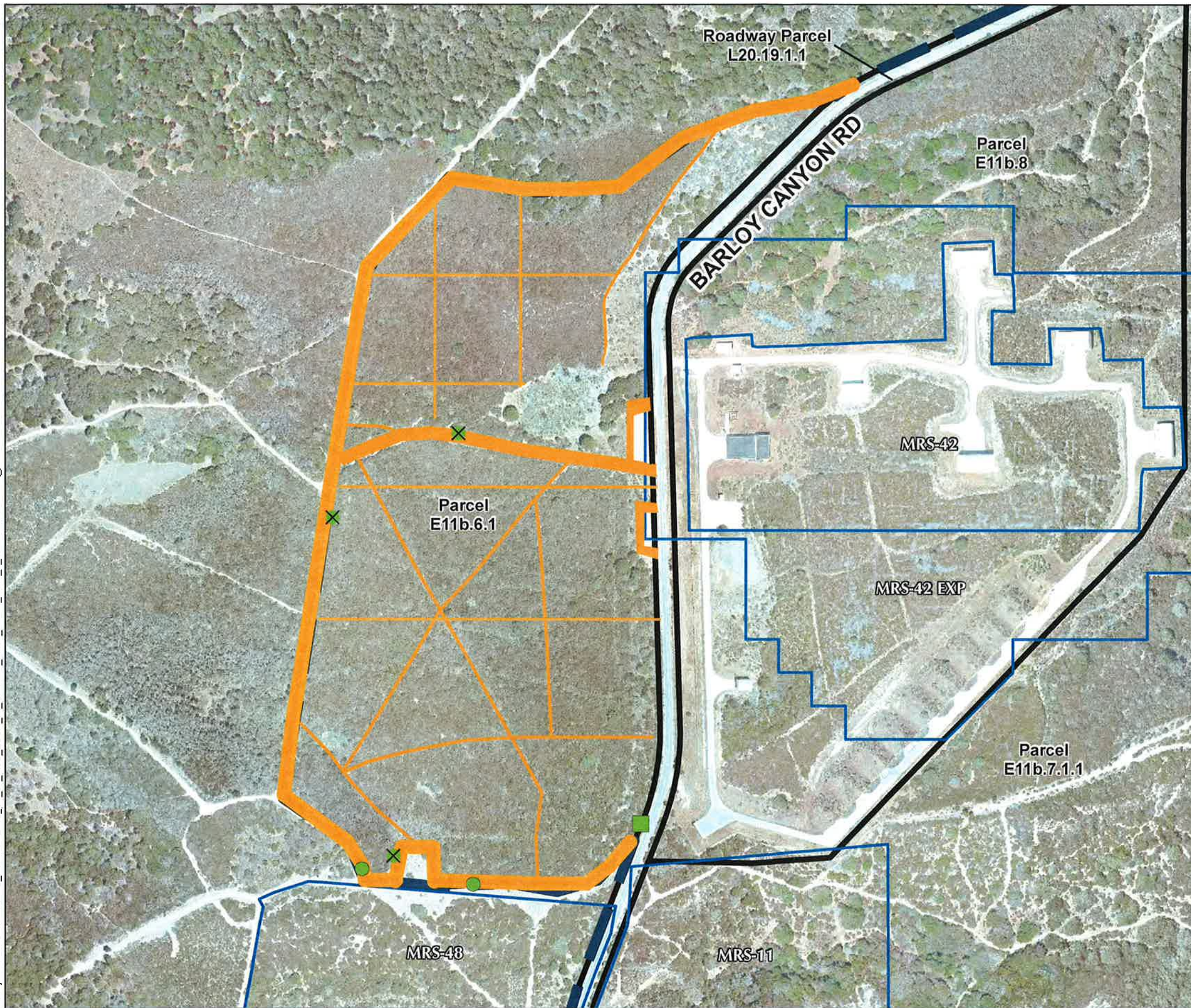
- Figure 1 - Future East Garrison MRA Sampling and Analysis Plan, ESCA RI Preliminary MEC and MD Grenade Finds in Parcel E11b.6.1
- Figure 2 - Future East Garrison MRA Sampling and Analysis Plan, ESCA RI Preliminary MEC and MD Mortar Finds in Parcel E11b.6.1
- Figure 3 - Future East Garrison MRA Sampling and Analysis Plan, ESCA RI Preliminary MEC and MD Projectile Finds in Parcel E11b.6.1
- Figure 4 - Future East Garrison MRA Sampling and Analysis Plan, ESCA RI Preliminary MEC and MD Other Finds in Parcel E11b.6.1
- Figure 5 - Future East Garrison MRA Sampling and Analysis Plan, Additional Investigation Grids Previously Investigated Areas in Parcel E11b.6.1



Attachment A – FORA ESCA RP Memorandum and Cover Letter Requesting USFWS Approval for Removal of Approximately 50 Additional Acres of Maritime Chaparral Vegetation

Attachment B – Letter from USFWS to the Army Approving Request for Removal of Approximately 50 Additional Acres of Maritime Chaparral Vegetation

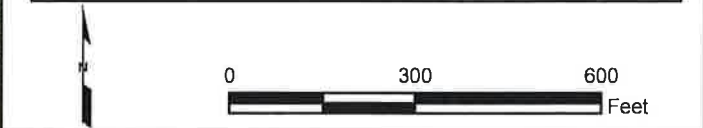
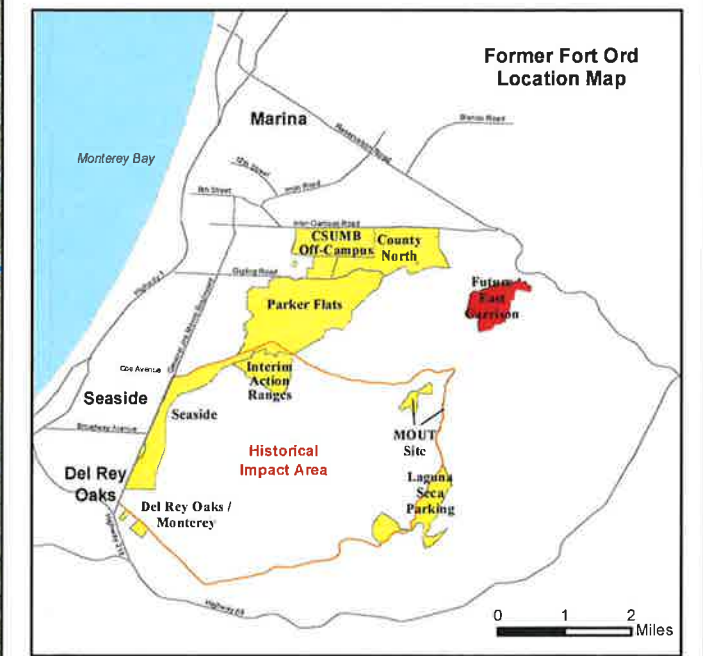
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Legend

MD

- Grenade, Hand, Fragmentation (MKII)
- ✕ Fuze, Grenade, Hand (M10)
- Grenade, Hand (Model Unknown)
- Under 1 lb Grenade MD Found in Grid
- 1 to 4.9 lbs Grenade MD Found in Grid
- 5 to 10.0 lbs Grenade MD Found in Grid
- Munitions Response Area
- E11b.8 USACE Parcel
- MRS-01 MRS Boundary
- Previously Investigated Trails, Transects, and Roads

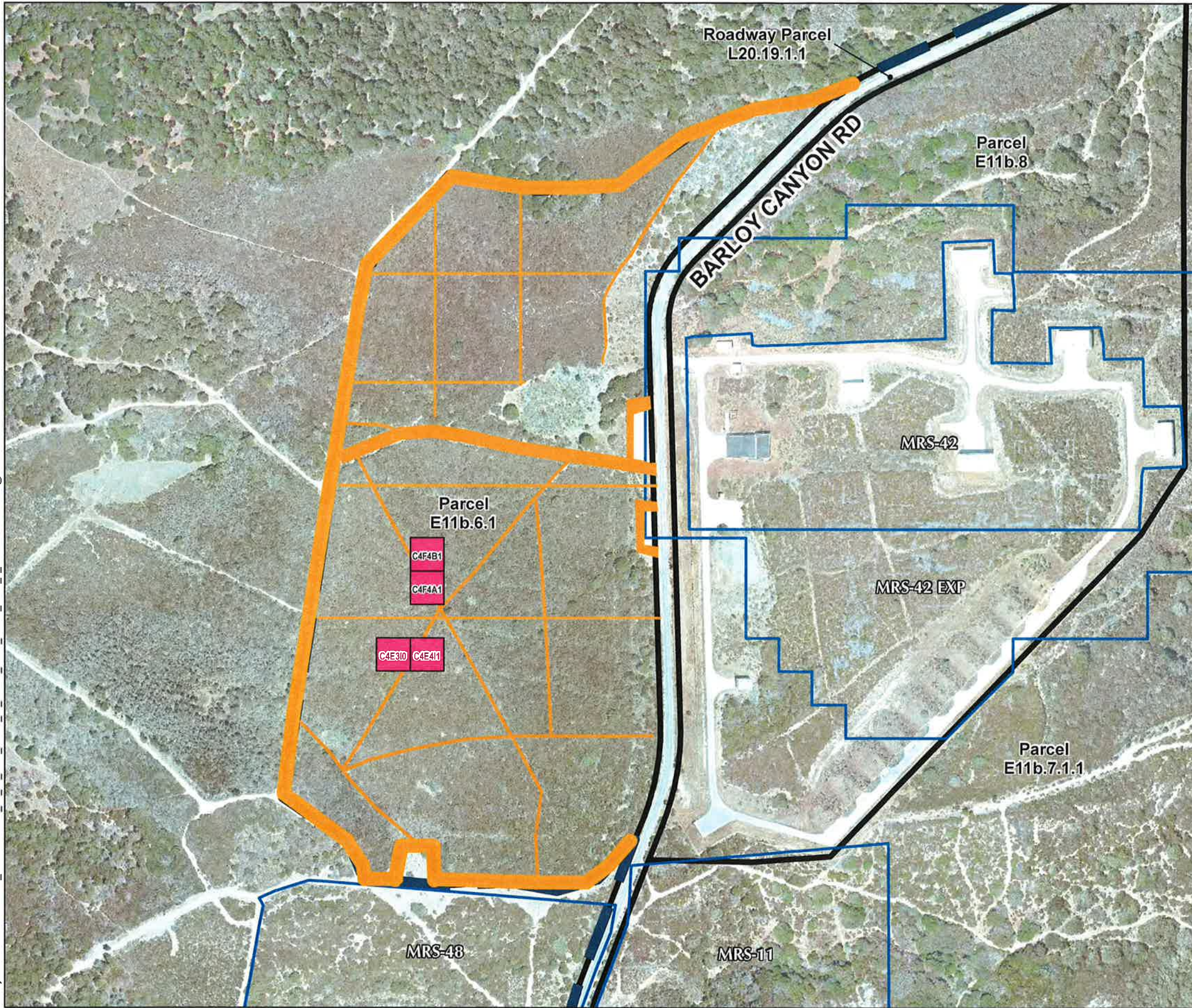


**Future East Garrison MRA
Sampling and Analysis Plan
ESCA RI Preliminary MEC and MD
Grenade Finds in Parcel E11b.6.1**

FORA ESCA RP
Monterey County, California

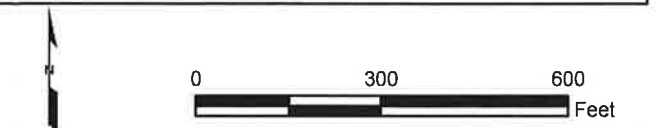
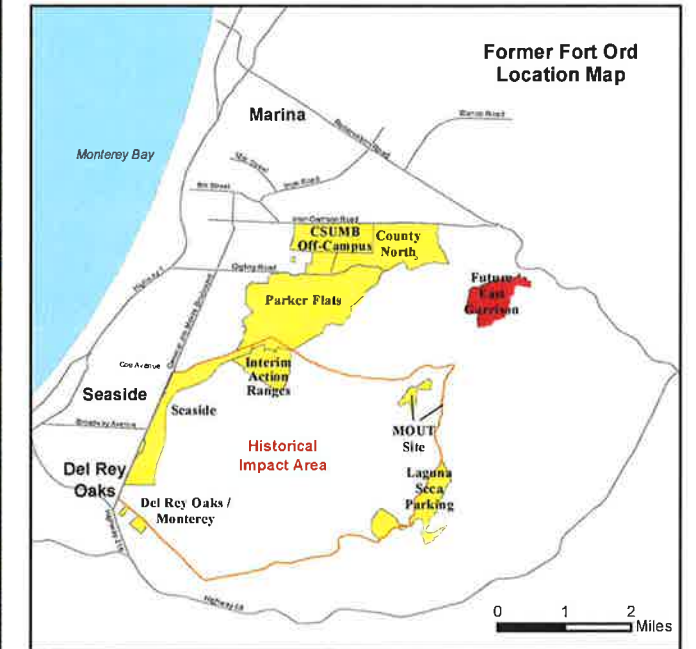
Figure 1

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- 1 to 2.5 lbs Mortar MD Found in Grid
- Munitions Response Area
- USACE Parcel
- MRS Boundary
- Previously Investigated Trails, Transects, and Roads

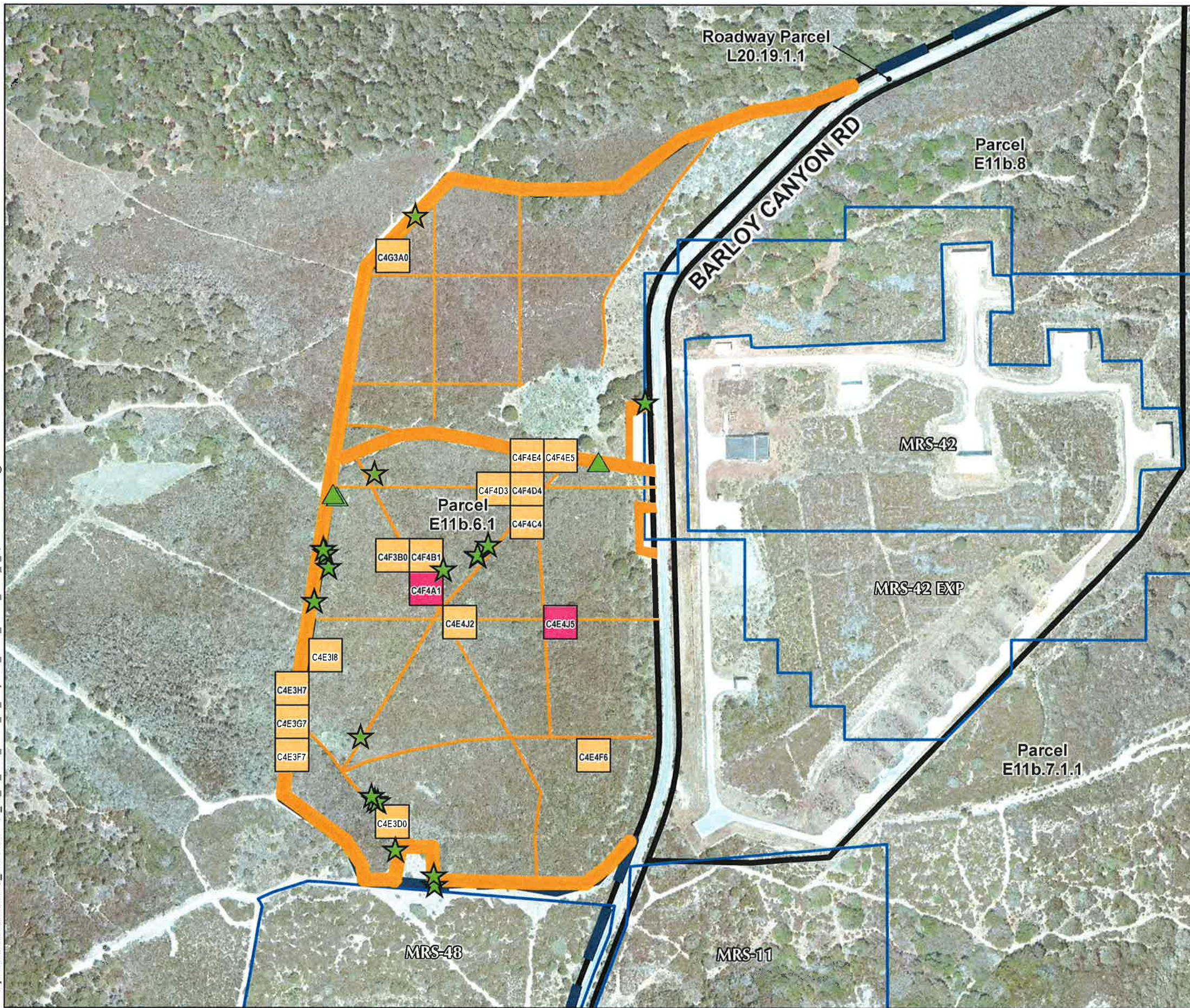


**Future East Garrison MRA
Sampling and Analysis Plan
ESCA RI Preliminary MEC and MD
Mortar Finds in Parcel E11b.6.1**

FORA ESCA RP
Monterey County, California

Figure 2

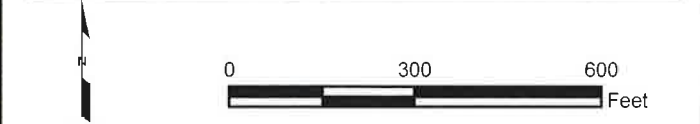
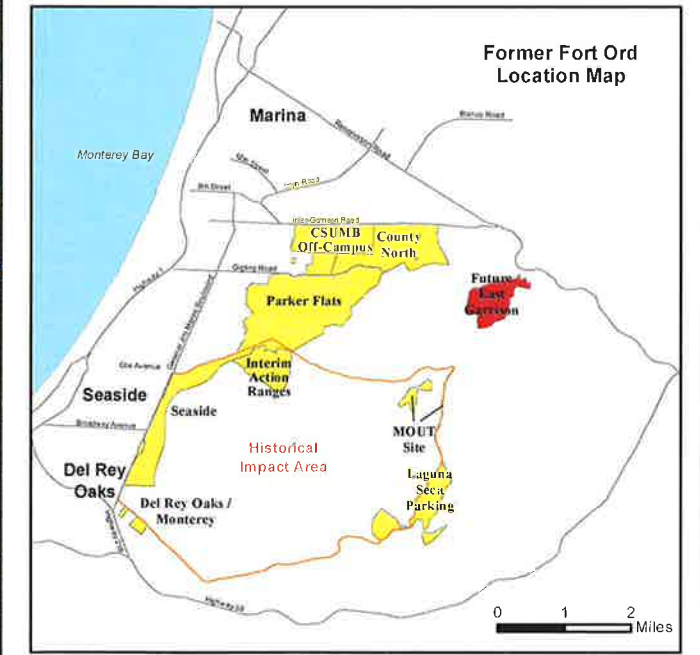
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Legend

MD

- ☆ Projectile, 37mm, Debris
- ▲ Projectile, Debris Components
- Under 1 lb Projectile MD Found in Grid
- 1 lb Projectile MD Found in Grid
- ▬ Munitions Response Area
- ▭ E11b.8 USACE Parcel
- ▭ MRS-11 MRS Boundary
- ▬ Previously Investigated Trails, Transects, and Roads

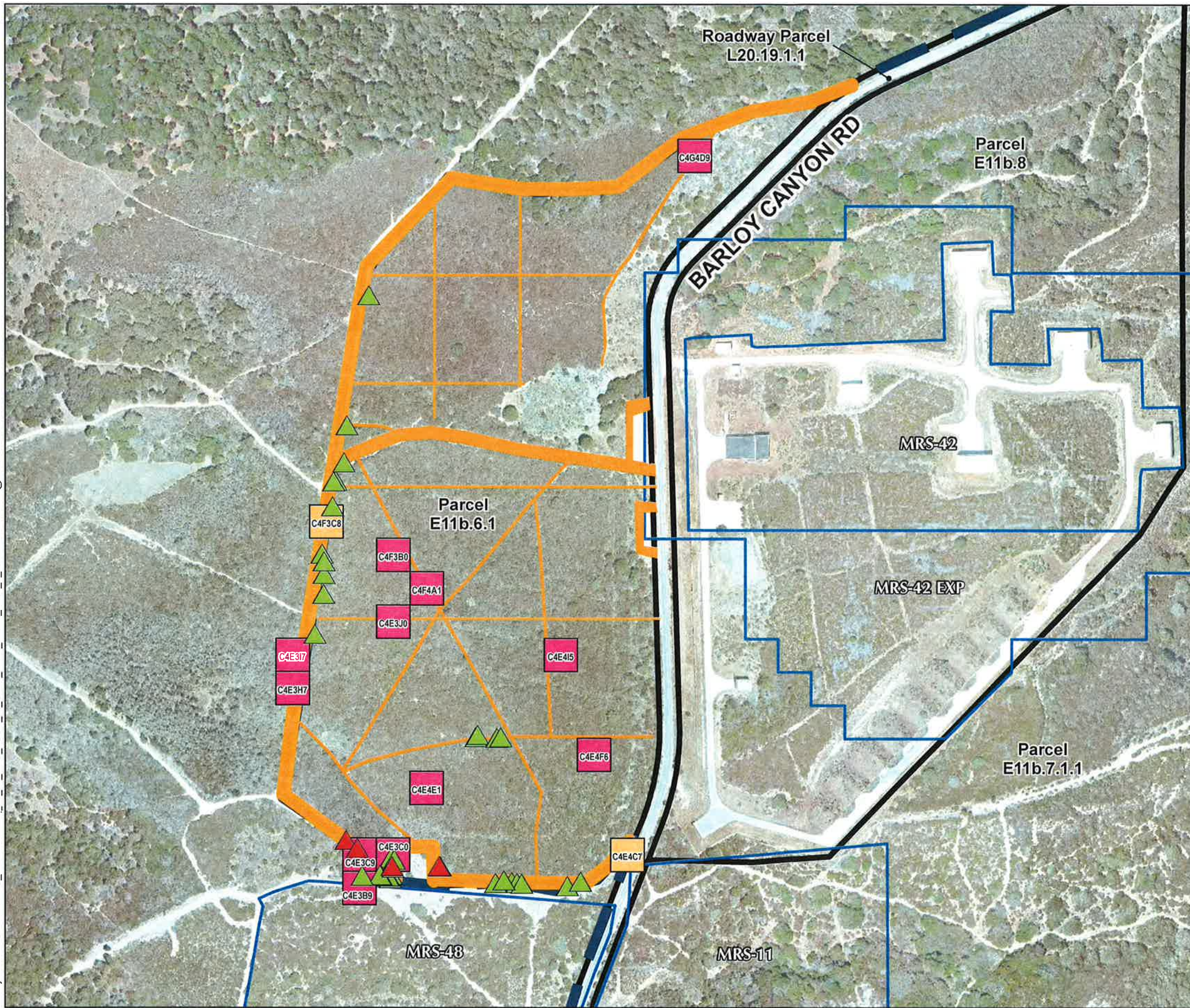


**Future East Garrison MRA
Sampling and Analysis Plan
ESCA RI Preliminary MEC and MD
Projectile Finds in Parcel E11b.6.1**

FORA ESCA RP
Monterey County, California

Figure 3

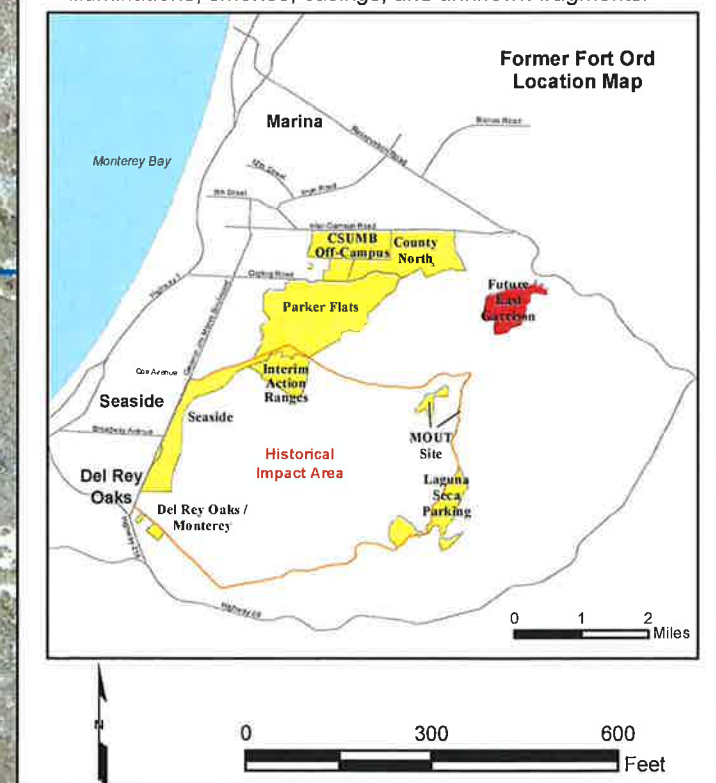
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Legend

- MEC ▲ Other Item*
- MD ▲ Other Item*
- Under 1 lb Other Item MD Found in Grid
- 1 to 3.5 lbs Other Item MD Found in Grid
- Munitions Response Area
- E11b.8 USACE Parcel
- MRS-11 MRS Boundary
- Previously Investigated Trails, Transects, and Roads

*Other MEC and MD items include flares, signals, simulators, illuminations, smokes, casings, and unknown fragments.

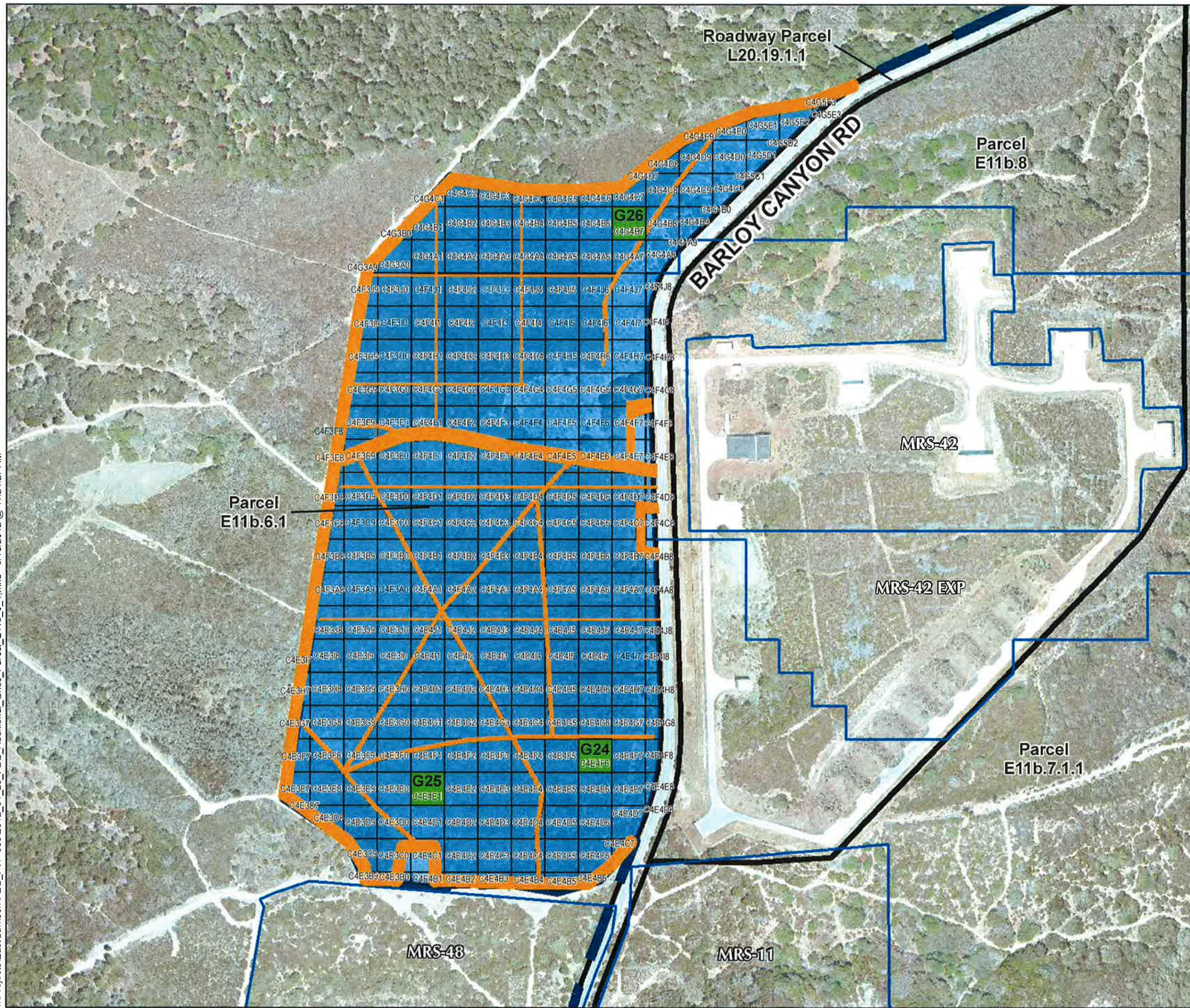


**Future East Garrison MRA
Sampling and Analysis Plan
ESCA RI Preliminary MEC and MD
Other Finds in Parcel E11b.6.1**







FORA ESCA RP
Monterey County, California

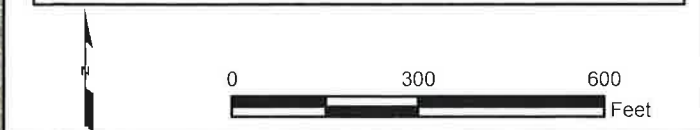
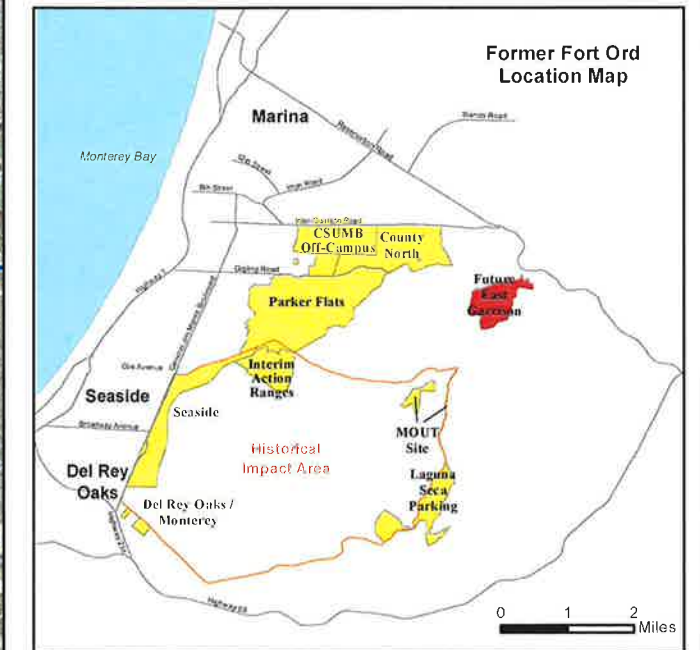
Figure 4

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-  Additional 248 Full and Partial Grids - 42.7 ac.
-  Previously Investigated Trails, Transects, and Roads - 6.3 ac.
-  Previously Investigated Grid Investigation - 0.7 ac.
-  Munitions Response Area
-  USACE Parcel
-  MRS Boundary



Future East Garrison MRA
 Sampling and Analysis Plan
 Additional Investigation Grids and
 Previously Investigated Areas
 in Parcel E11b.6.1
 FORA ESCA RP
 Monterey County, California

Figure 5

ATTACHMENT A



FORT ORD REUSE AUTHORITY

920 2ND AVENUE, SUITE A, MARINA, CALIFORNIA 93933

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WEBSITE: www.fora.org

February 08, 2012

Document Control Number: 0959-12-12-086-002

Gail Youngblood
BRAC Environmental Coordinator
Department of the Army
Fort Ord BRAC Field Office
Bldg. #4469 Gigling Road
Monterey, CA 93944

Subject: Request for USFWS Approval for the ESCA RP Team to Perform Mechanical Removal of Approximately 50 Additional Acres of Maritime Chaparral Vegetation in the Future East Garrison Munitions Response Area, Habitat Parcels E11b.6.1 and E11b.7.1.1

Dear Ms. Youngblood:

Enclosed is one copy of the Fort Ord Reuse Authority (FORA) Environmental Services Cooperative Agreement Remediation Program (ESCA RP) Memorandum requesting USFWS approval to perform mechanical removal of approximately 50 additional acres of maritime chaparral vegetation in Future East Garrison Munitions Response Area, Habitat Parcel E116.1 and E11b.7.1.1, in support of the ongoing MEC remedial investigations that are being conducted in accordance with the Group 4 Remedial Investigation/Feasibility Work Plan. Per FORA's request a copy of the FORA ESCA RP Memorandum has been provided to you for the Army to coordinate USFWS review and approval.

If you have any comments or questions regarding this submittal, please feel free to call me at (831) 883-3672 or Kristie Reimer, ESCA Remediation Program Manager at (831) 384-3221.

Sincerely,

Stan Cook
FORA ESCA Program Manager

Enclosure

Cc: William Collins (Army)
Judy Huang (EPA)
Roman Racca (DTSC)
Kristie Reimer (ARCADIS)

MEMORANDUM

Document Control Number: 09595-12-086-001

Date: February 7, 2012

To: Stan Cook – FORA ESCA Program Manager

From: Phillip A. Lebednik, Ph.D. – ESCA RP Senior Qualified Biologist (ARCADIS)

CC: Kristie Reimer – ESCA RP Team Program Manager (ARCADIS)

Chris Spill – ESCA RP Team Project Manager (ARCADIS)

ESCA RP Document Control

Subject: **Request for USFWS Approval for the ESCA RP Team to Perform Mechanical Removal of Approximately 50 Additional Acres of Maritime Chaparral Vegetation in the Future East Garrison Munitions Response Area, Habitat Parcels E11b.6.1 and E11b.7.1.1**

The Environmental Services Cooperative Agreement Remediation Program (ESCA RP) Team requests U.S. Fish and Wildlife Service (USFWS) approval to perform mechanical removal of maritime chaparral vegetation in approximately 50 additional acres in the Future East Garrison (FEG) Munitions Response Area (MRA), Habitat Parcels E11b.6.1 and E11b.7.1.1.

The FEG MRA comprises approximately 251.8 acres, of which approximately 177.7 acres are designated as habitat reserve and 74.1 acres are designated for development. Based on previous U.S. Army (Army) findings, additional munitions and explosives of concern (MEC) remedial investigation was determined to be warranted. Activities to date have included the surface-cutting and mechanical removal of approximately 48.3 acres of maritime chaparral. In addition, approximately 1.3 acres of chaparral were removed in support of field safety as best management practices (BMPs; precautionary fuel breaks for mechanized equipment/vehicle operations associated with the MEC remedial investigation activities). In support of fuel break network maintenance as established for the former Fort Ord, brush cutting was performed on approximately 1.7 acres in coordination with the Bureau of Land Management (BLM). Per the 2005 Biological Opinion (USFWS 2005, pp. 5, 33), up to 50 acres of maritime chaparral per MRA may be mechanically removed in lieu of prescribed burning. However, this limitation does not apply to the maintenance or establishment of fuel breaks (USFWS 2005, p. 5). Taking the fuel breaks into account, approximately 48.3 acres of the allowable 50-acre area has been cut to date.

The ESCA RP Team has determined that an additional (up to) 50 acres of maritime chaparral in the FEG MRA habitat parcels need to be cleared of vegetation to enable completion of the MEC remedial investigation activities in the MRA. The ESCA RP Team understands that the method preferred by USFWS for maritime chaparral removal in habitat parcels is prescribed burning; however, after evaluating a number of issues including the relatively small area(s) that would be burned and a number of FEG MRA-specific fire safety issues, the ESCA RP Team has determined that mechanical removal is the safest and most feasible method for the needed maritime chaparral removal in this MRA. Details regarding the status of the work to date and evaluation of the two vegetation removal alternatives are presented in detail in this memo. The ESCA RP Team requests that Fort Ord Reuse Authority (FORA) submit this request to the Army and USFWS for consideration and approval. It would be helpful to our effort if we could have a response from USFWS by March 15, 2012 to enable us to continue MEC remedial investigation efforts in support of the ESCA RP goal of being protective of human health and safety and the environment while avoiding potential demobilization/re-mobilization activities.

FORA ESCA Remediation Program Team



MEC Remedial Investigation Fieldwork Conducted to Date

Beginning in December 2010, the ESCA RP Team commenced MEC remedial investigation activities in the FEG MRA in accordance with the Group 4 Remedial Investigation/Feasibility Study (RI/FS) Work Plan (ESCA RP Team 2010). An "investigative" approach to MEC remedial investigation was employed because of limited pre-existing data indicating the presence of MEC within the habitat reserve parcels of the MRA.

The Army conducted a series of investigation and removal actions from 1997 through 2000. They conducted a magnetometer assisted visual surface clearance of 14.4 acres, a 1-foot removal action on roads and trails (1.6 acres) and a removal action to a depth of 1 foot across 16 acres in MRS-11 (located in the southwest portion of Parcel E11b.7.1.1). Removal actions to a depth of 4 feet were conducted in portions of MRS-42 (located in the center of E11b.8). The Army has also conducted removal actions to a depth of 4 feet in portions of MRS-42 Expansion area, which included a small area found on the west side of Barloy Canyon Road, Parcel E11b.6.1. The remaining portions of the FEG MRA habitat reserve parcels E11b.7.1.1 and E11b.6.1 were not identified as Munitions Response Sites (MRSs) in archive search reports and, therefore, were not previously investigated by the Army. Based on the ESCA RP Team's review of historical training facilities maps and the Military Munitions Response Program (MMRP) database, these areas are suspected to be in the vicinity of potential practice mortar ranges, demolition areas, and practice hand grenade ranges, in areas where troop training and maneuvers occurred, or where there were buffer zones between training areas.

The ESCA RP Team's investigative approach employed an adaptive process: initial investigation was performed in a small portion of the FEG MRA habitat reserve parcels E11b.7.1.1 and E11b.6.1, on trails and in grid cells where prior data indicated a need for additional investigation. Additional areas ("step outs" on Figure 1) were identified based on MEC findings in the field. The types of MEC recovered at the FEG MRA include mortars, projectiles, and grenades. Based on the location of MEC finds to date in FEG MRA habitat parcels E11b.7.1.1 and E11b.6.1, the ESCA RP Team recommends that additional grid investigation be conducted in accordance with the Group 4 RI/FS Work Plan, Volume 2, Sections 2.3, 2.3.2, and 12.0.

To support the MEC remedial investigation activities as outlined in the Group 4 RI/FS Work Plan, vegetation removal of 48.3 acres of maritime chaparral has occurred in FEG MRA habitat parcels (Figure 2). In addition, 1.3 acres of chaparral was removed for the BMPs or precautionary fuel breaks for mechanized equipment/vehicle operations associated with the MEC remedial investigation activities, and 1.7 acres of pre-existing BLM fuel breaks located within the FEG MRA were re-cut as a maintenance operation in support of fuel break network maintenance.

Areas of Additional MEC Remedial Investigation Fieldwork

To complete the MEC remedial investigation for the FEG MRA, the ESCA RP Team is requesting additional mechanical removal of up to 50 acres of maritime chaparral in habitat parcels E11b.7.1.1 and E11b.6.1. The proposed area is shown on Figure 3.

Timely MEC Remedial Investigation and Land Use Safety

The primary objective of the ESCA RP is to complete a timely cleanup of the property in accordance with the ESCA and the Administrative Order on Consent (AOC), while promoting and enhancing the health and safety of current and future users of the property. Although the area has appropriate signage posted prohibiting access, there are no physical barriers in the habitat reserve parcels preventing access by the public. This is one of the reasons that the FEG MRA MEC remedial investigation is a priority to the ESCA RP Team. A "step-out" approach as shown in Figure 1 was an effective approach that is proposed for the remaining areas of investigation. The ESCA RP Team proposed that the FEG MRA fieldwork be completed in 2012. The results of the remedial investigation activities conducted in the FEG MRA will be documented in the RI/FS Report.

ESCA RP Mitigation Measures Implemented

The ESCA RP Team has implemented the following mitigation measures during work activities in the FEG MRA to avoid or minimize impacts to Habitat Management Plan (HMP) species (including listed species) and their habitat to the extent practicable. Beginning with initial planning in 2010 and continuing throughout the fieldwork, ESCA RP Biologists have coordinated on a routine basis with Mr. Bill Collins - Department of the Army, Wildlife Biologist. Typically, Mr. Collins is informed of major activities and mitigation measures well in advance of their proposed implementation to allow him to review and provide input to the ESCA RP Team. Mr. Collins' input on these matters is incorporated into the field implementation and mitigation efforts. These mitigation measures will continue, as appropriate, during future additional vegetation removal work, pending USFWS approval.

- In advance of remedial investigation fieldwork, vegetation mapping (Figure 4) was conducted starting in January 2010 to obtain more accurate information on the extent of maritime chaparral. The 1992 basewide baseline vegetation mapping (USACE 1992) was performed at a coarse spatial scale and potential inaccuracies at finer scales have been discussed by USFWS (USFWS 2005, p. 12). The ESCA RP mapping effort was conducted using a combination of field visual identification of maritime chaparral and aerial imagery analysis. Field biologists walked trails and roads throughout the MRA, and where safe, accessed stands of maritime chaparral and oak woodland. Areas of contiguous vegetation were drawn on field maps and photographed. This mapping information is planned to be presented in the ESCA RP 2011 Annual Natural Resource Monitoring, Mitigation, and Management Report.
- Baseline vegetation monitoring (per the current vegetation monitoring protocol, including sampling of circular plots for focus species also known as HMP annuals or HMP herbaceous species and shrub transects in chaparral vegetation) was conducted in habitat parcels E11b.7.1.1 and E11b.6.1 between April 2010 and February 2011. Survey data will be reported by the ESCA RP Team in the 2011 Annual Natural Resource Monitoring, Mitigation, and Management Report. A total of 40 shrub transects were installed in the MRA. Focus species surveys were conducted in the spring and summer of 2010. Very small populations of Monterey gilia (*Gilia tenuiflora* ssp. *arenaria*) and Monterey spineflower (*Chorizanthe pungens* var. *pungens*) were observed in the northeastern portion of the MRA (see Figure 4).
- Aquatic features (i.e., "vernal pools," ponds, etc. – potential breeding locations of the California tiger salamander [CTS]) had been mapped in the FEG MRA. MEC remedial investigation work was not planned to occur within aquatic feature areas; nevertheless, it was considered prudent to conduct baseline aquatic larval surveys in 2010 and 2011 within 14 aquatic feature units (i.e., aquatic features or sub-basins within a feature). These surveys were conducted in accordance with the Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander, dated October 2003 (CDFG 2003) and were performed under the direct supervision of an ESCA RP Biologist who was approved by USFWS to conduct larval surveys. Several of the aquatic features were identified for the first time by ESCA RP Biologists during the 2010 survey. No larvae were detected in the 2010 survey, but a few larval CTS were captured in 2011 in two of the aquatic features located in the northeast portion of the MRA. These captures were reported to the Army and USFWS. Subsequently, MEC remedial investigations were proposed in two of the smallest aquatic features. No vegetation removal was needed and an ESCA RP Biologist was present while the analog near-surface remedial investigation activity was performed during the dry season in 2011. No targets were identified and the aquatic features were not disturbed. No further MEC remedial investigation activity in aquatic features is proposed. The 2010 survey results were reported by the ESCA RP Team in the 2010 Annual Natural Resource Monitoring, Mitigation, and Management Report (ESCA RP 2011) and the 2011 survey results are planned to be presented in the 2011 Annual Natural Resource Monitoring, Mitigation, and Management Report.
- Two Natural Resource Impact Mitigation (NRIM) checklists were developed to reduce impacts to natural resources during MEC remedial investigation: one for the habitat parcels and another for the development parcel. The NRIM checklists identify areas where populations of HMP species occur and the locations of aquatic features within areas proposed for field operations. Mitigation measures are described in the NRIM checklist to avoid or minimize surface soil disturbance in

these areas to the extent practicable. To minimize impacts to non-stump sprouting manzanita species, such as toro manzanita (*Arctostaphylos montereyensis*), mature ("tree-like") manzanitas were left standing during vegetation clearance wherever feasible. These remaining plants will augment the species' seed bank and enhance population recovery. A similar measure is in place for all coast live oak trees greater than 6 inches diameter at breast height.

- An Environmental Awareness Training module was developed (including review of NRIM checklist mitigation measures) and an ESCA RP Qualified Biologist provided Environmental Awareness Training to field crews and their supervisors. Additionally, annual CTS awareness refreshers were given to these personnel.

ESCA RP Team Biologists worked closely with the ESCA RP field team and Mr. Collins as the adaptive investigative process moved forward through a series of "step-outs" to avoid and/or minimize to the extent practicable impacts to HMP species. Coordination included biologists monitoring the cutting of vegetation and confirming that the vegetation removal was conducted in accordance with the NRIM checklists and consistent with the requirements of the HMP and Biological Opinions.

Evaluation of Impacts to the California Tiger Salamander from ESCA RP Activities in the FEG MRA

The Future East Garrison MRA is surrounded by known and potential breeding locations of CTS. The entire MRA is within 1 kilometer (km) of one or more known breeding locations and about one-half of the area where additional maritime chaparral removal is needed is within 500 meters (m) of a known breeding site. However, the areas where additional maritime chaparral removal is proposed are greater than 350 m away from a known or potential breeding site. The entire MRA is potential upland habitat (for adult and juvenile migration as well as subterranean inhabitation).

Impacts to Date

Other than the capture and release of several CTS larvae during ESCA RP larval surveys in early 2011 (previously reported to the Army and USFWS), there have been no recorded impacts on CTS or other wildlife since the beginning of MEC remedial investigation activities in the MRA. No juveniles or adults have been observed during daylight (working hours) either in the field or associated with potential nocturnal migration obstructions.

Future Impacts

As discussed by USFWS (2005), CTS individuals located in shallow subterranean cavities in upland habitats could be subject in any season to trapping, injury, or death owing to soil compaction and/or crushing from transit of vehicles and mechanized equipment. The presence of CTS in such areas as well as the extent of these effects if they occur, are likely to be undetectable and virtually impossible to quantify. A number of factors indicate that such effects are likely to be limited in spatial and vertical extent.

Firstly, vehicle and mechanized equipment transits do not affect the entire surface of a work area. We have not quantified the area affected, but it is likely to be a small fraction of the area of the habitat parcels. A simple calculation of SUV vehicle tire width (7") and spacing (52") indicates that a maximum of about 12% of an area would be affected by straight-line transits if transits were immediately adjacent. Although mechanized equipment typically has a wider footprint, the tread base is also typically wider. Immediately adjacent transits across an entire habitat parcel are highly unlikely; therefore, the area potentially subject to track pressure is likely to be much lower, probably less than 5% of the operational area. Secondly, within the transit footprint, these potential effects are associated with the pressure that is exerted on the soil surface, which is reduced with the low-impact mechanized equipment used for vegetation clearance. Hence, CTS impacts are most likely to occur in very shallow (1-3" below ground surface [bgs]) soil horizons, whereas CTS individuals may be situated in cavities below these horizons. Shallow impacts may reduce crushing effects, but would not prevent impacts from burrow closure. During vegetation clearance, substantial vegetative debris present on the ground could further cushion vehicle transit pressure. Equipment rotation or other maneuvers could result in greater impacts on subterranean animals as a result of shallow soil churning; however, these movements would likely occur only in very

small portions of the habitat parcels. ESCA RP operations potentially could occur during the current wet season (pending USFWS approval and its timing). If operations occur during the wet season, the risk of take of CTS would be increased during rain events as a result of breeding migration.

The mitigation measures that have been and will continue to be implemented by the ESCA RP Team will avoid or minimize these risks of take, including use of low-pressure tracked equipment for vegetation removal, minimizing to the extent feasible the transit/movement of vehicles/mechanized equipment to that needed to perform the vegetation removal and MEC remedial investigation activities, performance of work only during daylight hours to avoid nocturnally migrating CTS during rain events, and pre-operational onsite equipment inspections to locate trapped CTS following rain events.

Maritime Chaparral Distribution in the FEG MRA

Two discrete parcels comprise the 177.7 acre total of habitat reserve area in FEG MRA: parcel E11b.6.1 located west of Barloy Canyon Road (west parcel) and parcel E11b.7.1.1 located east of the road (east parcel). As described above, the vegetation of these areas was surveyed by ESCA RP Biologists in 2010-2011 using two methods: 1) plot sampling for focus species and establishment of 40 shrub transects per the vegetation monitoring protocol, and 2) visual field mapping of vegetation. The latter method was employed following initial reconnaissance in early 2010 indicating that a portion of the east parcel contained areas of oak woodland, other non-chaparral vegetation, and disturbed soil areas that had not been mapped in detail in 1992 (USACE 1992). Information from the 2010-2011 surveys is shown on Figure 4 and details of the methods and results will be presented in a forthcoming annual report to the Army.

West Parcel Vegetation

Of the total 50 acres of additional maritime chaparral proposed to be removed in the habitat parcels, the majority is located in the west parcel. Mapping of the vegetation in this parcel required addressing a number of logistical and technical issues. The dense vegetation prevented access because it was difficult to penetrate and was also a potential safety issue as biologists could not see the ground well enough to identify potential MEC ground surface hazards. Aerial imagery was inspected but adequate ground-truthing could not be performed to enable a robust remote-sensing approach. Therefore, it was decided to cut corridors in the vegetation (i.e., surface vegetation cuts mostly along historical trails) so that the area could be accessed for data collection and initial evaluation. This approach served the dual purpose of enabling biologists to survey for focus species populations, sample shrub transects, and perform vegetation mapping while also enabling the Unexploded Ordnance Technicians to perform MEC remedial investigation activities in the corridors.

"Low Recruitment" Areas

Reconnaissance vegetation mapping in 2010 revealed that certain areas on the east and south boundaries of this parcel exhibited sparse and weakly developed shrub vegetation (open canopy of mature shrubs widely spaced and sparsely branched). The boundaries of these areas were uniform and quite distinct in the field as well as on aerial images. These areas were designated as "low recruitment" areas. Examination of the substrate revealed that various types of debris (e.g., concrete, asphalt, etc.) had been deposited and partially buried in these areas in the past and it was presumed that the low-quality vegetation was a response to substrate modification (possibly including soil compaction). While maritime chaparral species were present, the vegetation was mixed and considered to be of low quality. Furthermore, it was concluded that the vegetation condition would not be improved by prescribed burning or other vegetation management actions. For these reasons, 5.2 acres identified as "low recruitment" areas were excluded from designation as (high-quality) maritime chaparral habitat.

Chamise Chaparral and Chamisal

During the same mapping effort described above, it was noted that chamise (*Adenostema fasciculatum*) was abundant or dominant in the northern portion of the parcel that was not within the low recruitment areas. This area was included within the maritime chaparral category that was mapped in the Fort Ord-

wide survey conducted by USACE (1992). In the 1992 report chamise chaparral was not identified as a distinct vegetation type on Fort Ord; all chaparral was identified as maritime chaparral (USACE 1992, p. 20). However, in the HMP, chamise chaparral is listed in the legend to Figure 2-4, although it is combined with maritime chaparral (USACE 1997).

In the literature, chamise-dominated chaparral (i.e., "chamise chaparral," where chamise provides greater than 50% cover) is differentiated from maritime chaparral in authoritative references on California vegetation (Sawyer et al. 2009, Holland 1986) and some authors further distinguish "chamisa" as a vegetation type with 80% or greater cover of chamise (Hanes 1988). This chaparral type typically occurs on hot, xeric sites and, when mature, forms closed-canopy stands of low diversity (Hanes 1988, Holland 1986). Poor soil conditions are also considered to favor development of chamise chaparral (Hanes 1988). Presence of chamise chaparral may indicate relatively high fire frequency (Holland 1986).

Three baseline vegetation monitoring transects were established in the northern area of the parcel by ESCA RP Biologists in 2010 (Figure 4). The chamise chaparral in this portion of the parcel was very dense. Because transect positions were determined using a random number procedure, they were not uniformly distributed but were clumped within the area. The 2010 mean percentage cover value for chamise in these three transects is 43% and the value for HMP shrubs was 51%. To better characterize the spatial distribution of chamise in the area, a visual mapping field effort was undertaken to identify areas where greater than 80% of the projected cover was occupied by chamise (i.e., chamisa). The probability of HMP species being present at more than *de minimis* abundance within chamisa is considered to be very low based on field observations of the dense canopy as well as information in the literature (Hanes 1988). These areas, amounting to 3.1 acres, were excluded from designation as maritime chaparral, as shown on Figure 3.

The total acreage of maritime chaparral in the habitat reserve parcels of the FEG MRA based on the above surveys is approximately 98 acres.

Evaluation of Impacts to Maritime Chaparral from ESCA RP Activities in the FEG MRA

Impacts to Date

Areas of maritime chaparral in the habitat parcels of the FEG MRA where vegetation was mechanically removed to date are shown on Figure 2. Excluding fuel breaks, a total of 48.3 acres have been affected.

Future Impacts

To enable the ESCA RP Team to complete the MEC remedial investigation in the FEG MRA, a proposed request for additional vegetation removal in maritime chaparral areas is being made, primarily in the west parcel and in small scattered locations in the east parcel (Figure 3). The total area to be affected is approximately 50 acres. No populations of Monterey gilia or Monterey spineflower were observed in these areas in the baseline surveys; therefore, impacts on plants of these HMP species is not anticipated. Two options are available for vegetation removal: prescribed burning and mechanical removal. These two options are evaluated in the following section.

Evaluation of Vegetation Clearance Methods for Maritime Chaparral

There are two potentially feasible methods of removing additional maritime chaparral vegetation in the FEG MRA: 1) prescribed burning (the method preferred by USFWS for habitat management purposes), and 2) mechanical removal, as implemented to date in the MRA. These alternatives are evaluated below.

Alternative 1: Prescribed Burning

Prescribed burning is beneficial because it removes vegetation via a process that is considered to be a natural phenomenon in the ecosystem. Studies have indicated that some chaparral species have evolved certain traits that are adaptive to fire events. These adaptations include lignotuber formation, seed germination triggers for certain non-sprouting shrubs and habitat modification (i.e., creating "open"

habitats) for opportunistic ephemeral species (i.e., herbaceous annuals such as HMP focus species). However, as the USFWS noted (2005), prescribed burning results in potential take of CTS that are present in upland habitats. While prescribed burning is preferred from an overall ecological perspective, a number of factors require careful consideration in determining whether or not to conduct a prescribed burn. One of the most important of these is fire safety. This subject is discussed in the following section.

Fire Hazard Evaluation / Burn Prescription

The ESCA RP Team engaged the services of Wildland Rx from Placerville, California, in 2010 to evaluate the fire hazard and viability of conducting a prescribed burn in the FEG MRA. The evaluation is provided in Appendix A. The habitat areas in the south and east exhibit steep canyons with heavy vegetation growing on the canyon walls and live oak stands in the canyon bottoms. The following considerations were evaluated when preparing the FEG MRA burn prescription:

- **Vegetation:** The vegetation in most of the FEG MRA unit is very tall (> five feet high) and dense, which can produce high rates of fire spread and difficulties in trying to control or suppress a prescribed fire. This vegetation's fire behavior is characterized with high flame lengths and rapid rates of spread making suppression with ground resources difficult without support from aircraft and earth moving equipment such as bulldozers.
- **Terrain:** The topography of this particular site adds to suppression difficulties. Much of the area has steep narrow canyons, which make direct attack on the fire almost impossible. The only reliable method of control in this topography is to use indirect attack with heavy equipment, aircraft, and burn-out operations in front of the fire. This approach would make the fire larger and would place suppression efforts on adjoining property, which is close to the homes and communities to the east of the burn area as well as along Reservation Road and the abutting agricultural fields.
- **Close proximity of homes:** There are multiple developments within close proximity of the fire unit. A large housing development is under construction 1/2-mile north of the burn unit, a farm development is located 1/3-mile east of the burn unit, and a small development with large homes and condominiums is located 3/4-mile east of the burn unit. To the southeast of the burn unit, there is a farm complex with several structures and homes that are within 6/10ths of a mile of the burn unit. Many of these structures appear to be mostly wood construction, some with flammable roofs.
- **Exposed natural gas line:** The northeasterly portion of the burn unit includes an aboveground (exposed) high pressure natural gas line, which would require significant offsets and engineering controls to prevent damage or disruption to the gas main.

Upon completion of the site visit and discussions with the Chief of the Presidio of Monterey Fire Department, FORA, Bob Nunes of the Monterey Bay Unified Air Pollution Control District, and members of the ESCA RP Team, Wildland Rx recommended mastication of the chaparral vegetation, clearing under and limbing up the oak trees in the entire area, and removal of ordnance without prescribed burning.

Based on the analysis of Wildland Rx, burning the maritime chaparral in the FEG MRA is not safe or practical. The terrain is steep, especially in parcel E11b.7.1.1, which increases chances of a fire getting out of control (Appendix A). And finally the proximity to nearby houses (less than 1/2-mile away) increase risk to human health and safety if a fire was to get out of control.

If a prescribed burn were to be conducted in the FEG MRA, the fire expert indicated that fuel breaks would need to be approximately 210 feet (ft) wide to provide the needed margin of safety. After cutting these fuel breaks (a total of approximately 29 acres [note: there would be some overlap with the fuel breaks that have already been cut; this has been accounted for in the calculations]), approximately 18 acres would remain to be burned (Figure 5). Therefore, even in the prescribed burn option, more than half of the area proposed for additional MEC remedial

investigation would need to have vegetation removed by mechanical means and the ecological benefits of burning would be limited to 18 acres.

Alternative 2: Mechanical Vegetation Removal

Alternative 2 would involve mechanical vegetation removal in all 50 acres of the maritime chaparral areas where additional MEC remedial investigation activities are proposed (Figure 3). Mechanical vegetation removal has been implemented successfully in the FEG MRA by the ESCA RP Team during 2011. These activities have not resulted in any observed/recorded impacts on CTS or other wildlife. As demonstrated previously, mechanical cutting and removal can be conducted safely at this site with appropriate precautions. Natural resource mitigation measures employed to date will be continued and are consistent with the goals of the HMP and Biological Opinions. As noted in the discussion of Alternative 1, approximately 29 of the 50 acres would need to be cut for fuel breaks for prescribed burning. As a result, the net additional mechanical removal for Alternative 2 beyond that required for Alternative 1 would be 18 acres of maritime chaparral.

Consistency with HMP and Biological Opinions

The Senior Qualified Biologist has prepared the following consistency evaluation for consideration by USFWS. The HMP and the 1999, 2002, and 2005 Biological Opinions (USACE 1997; USFWS 1999, 2002, and 2005) all discuss using a combination of burning and mechanical methods of clearing vegetation, with an emphasis on using fire to encourage HMP plant species recruitment, as described below.

“Clearance of OE may involve selectively removing vegetation, possibly burning to clear the ground surface. Burning may be infeasible in overly dense or high-moisture content vegetation in some portions of the inland range area, in which case, vegetation may be cut and chipped by a “brush hog” or other mechanical means. Where burning and mechanical removal may be used, burning will be the preferred method because of the beneficial effects of fire on HMP species associated with maritime chaparral” (USACE 1997, p.3-18).

- The 1999 Biological Opinion states that “Clearance of OE may involve selectively removing vegetation, possibly by burning, to clear the ground surface. Where burning is infeasible, vegetation may be cut and chipped.” (USFWS 1999, p.4).
- The 2002 Biological Opinion states that “Based on past correspondence with the Army (D. Noda, Service, *in litt.* 2001), we recognize that there may be a few cases where special circumstance exist such that prescribed burning cannot be implemented and manual or mechanical removal of vegetation in areas designated as habitat reserves will be used. Therefore, in this biological opinion we assume that manual or mechanical vegetation clearing would be used in areas less than 50 acres in size in the few cases where special circumstances exist (such as explosive risk, unburned patches within prescribed burns) and where it will not undermine the goals of the HMP. We expect that these areas (of less than 50 acres) will occur in large expanses of maritime chaparral that will eventually be burned. Should the Record of Decision from the CERCLA process result in selection of a different method of vegetation removal for OE clearance areas, the Army will need to reinitiate consultation as described later in this document. Prescribed burning to clear vegetation from the ground surface will typically be conducted in areas of up to several hundred acres...” (USFWS 2002, p.5).
- The 2005 Biological Opinion states that “After the Army identifies the need for vegetation clearance; site-specific vegetation clearance methods are selected. A 2002 Army technical memorandum (ACOE 2002) identifies those vegetation clearance methods that are being evaluated for use on former Fort Ord within specified vegetation types. The three methods still being considered for use are mechanical clearance, manual clearance, and prescribed burning. Vegetation clearance using manual and mechanical methods to clear unburned maritime chaparral areas within areas designated in the HMP as Habitat Reserve, Development with Reserve Areas or Development with Restrictions,

Habitat Corridor, or Habitat Corridor with Development Allowances, will be restricted to areas 50 acres or less within each munitions response site (Collins in litt. 2004~). This limitation does not apply to the maintenance or establishment of fuel breaks." (USFWS 2005, pp.4-5).

The ESCA RP Team request for approval of the proposed mechanical cutting and removal of an additional 50 acres of maritime chaparral in FEG MRA is consistent with the HMP and the Biological Opinions for the following reasons:

1. The ESCA RP Team initiated an effort to obtain a burn prescription for the area, as prescribed burning is the ecologically preferred method for removing vegetation. The report from the fire expert identified a number of site conditions and onsite and offsite risks that led him to advise against prescribed burning at this time and to recommend that vegetation be removed mechanically.
2. If a prescribed burn were to be conducted, after installation of suitable firebreaks, only relatively small areas would be burned (total of 18 acres), if it were safe and feasible to do so.
3. Mechanical removal as implemented by the ESCA RP Team is not expected to result in observable take of CTS. The activity will not occur in close proximity to potential breeding habitats. Observable take of CTS associated with this activity has not occurred to date. Take associated with soil crushing of juveniles and adults in upland habitats is unknown, but is considered to be minimally elevated (above the take that could be expected to result from a prescribed burn) based on a potential impact evaluation of mechanical clearance and taking into account the benefits of proposed mitigation measures.
4. Mechanical removal will have a similar effect to that of prescribed burning in that it will open up habitats for development of ephemeral native species populations.
5. Based on previous experience elsewhere in former Fort Ord, the chaparral vegetation is expected to re-vegetate naturally. ESCA RP Biologists' observations in areas where maritime chaparral was mechanically cut in prior years revealed that stump-sprouting shrubs re-vegetate rapidly. Shrub species with refractory seeds that are obligate seeders may not become re-established in mechanically cut areas owing to low germination rates and competition from stump sprouters. However, Keeley et al. (2005) reported that refractory seeds of some chaparral species exhibited relatively high germination rates without fire treatments after residing in soil for one year. Their results appear to indicate that obligate refractory seeders may be able to recruit from existing seed bank in the absence of fire. Post-disturbance vegetation monitoring per the vegetation monitoring protocol will confirm that the vegetation is re-establishing consistent with the baseline vegetation profile. If not, FORA and/or the future land owner would be prepared to take corrective actions in the future as needed.
6. The habitat parcels that are subject to mechanical vegetation removal per this request are subject to the habitat management requirements of the HMP, including prescribed burning. Land conveyance actions and subsequent deeds will include prescriptive covenants.

Summary and Request for USFWS Approval

After detailed evaluation of alternatives, the ESCA RP Team concludes that mechanical vegetation removal is the most appropriate method for removing additional maritime chaparral in the FEG MRA. Accordingly, the ESCA RP Team requests USFWS approval to perform mechanical vegetation removal of approximately 50 additional acres of maritime chaparral vegetation in the FEG MRA.

As indicated above, approval of this request is needed to complete the MEC remedial investigation activities in accordance with the ESCA and the AOC, while promoting and enhancing the health and safety of current and future users of the property. The AOC establishes the regulatory and administrative

framework for the expedited performance of the characterization, assessment of risks of explosive hazards, feasibility study, remedial investigation alternative analysis, cleanup of hazardous substances including, but not limited to, MEC that may pose an unacceptable risk to human health and the environment, and obtaining regulatory site closure. The results of the MEC remedial investigation activities conducted in the FEG MRA will be documented in the RI/FS Report for use by the Army in developing the proposed plan and making a decision on remedial actions. If approval is forthcoming by March 15, the work may be completed during or shortly after the 2012 wet season so that disturbance of new growth can be minimized and the area will be able to re-vegetate and recover from the disturbance more quickly than if the work is delayed.

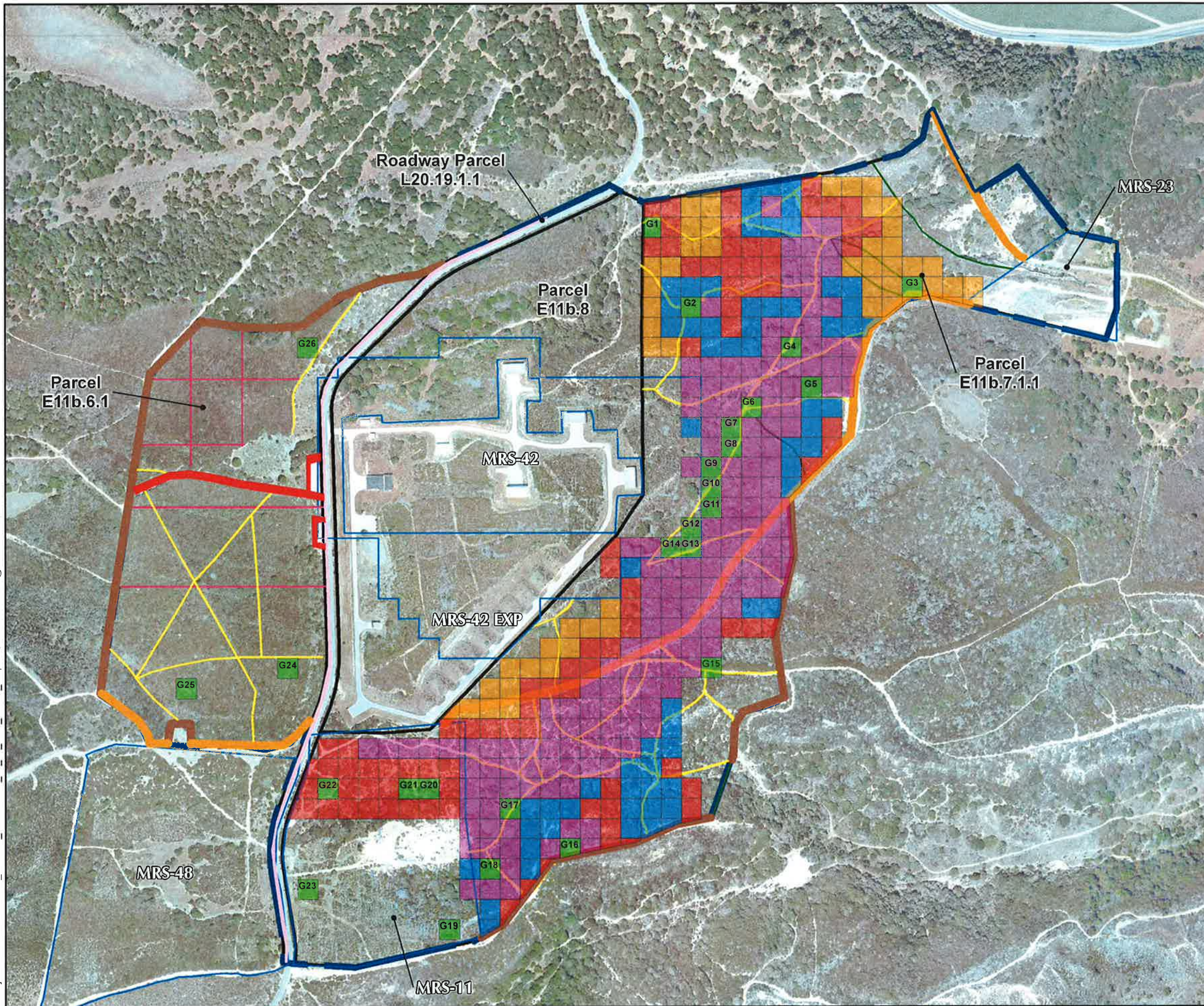
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Attachments

- Figure 1 – Future East Garrison MRA - Sampling and Analysis Plan Fourth Step Out
- Figure 2 – Future East Garrison MRA - Completed Mechanical Removal of Maritime Chaparral
- Figure 3 – Future East Garrison MRA - Maximum Additional Mechanical Removal of Maritime Chaparral Alternative 2
- Figure 4 – Future East Garrison MRA - Maritime Chaparral Areas and Habitat Monitoring Transects
- Figure 5 – Future East Garrison MRA - Maximum Additional Maritime Chaparral for Burn Alternative 1
- Appendix A – Wildland RX Letter and Graphic

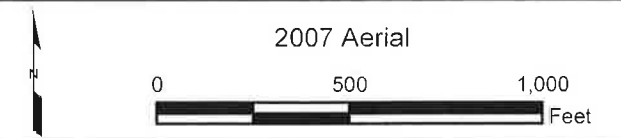
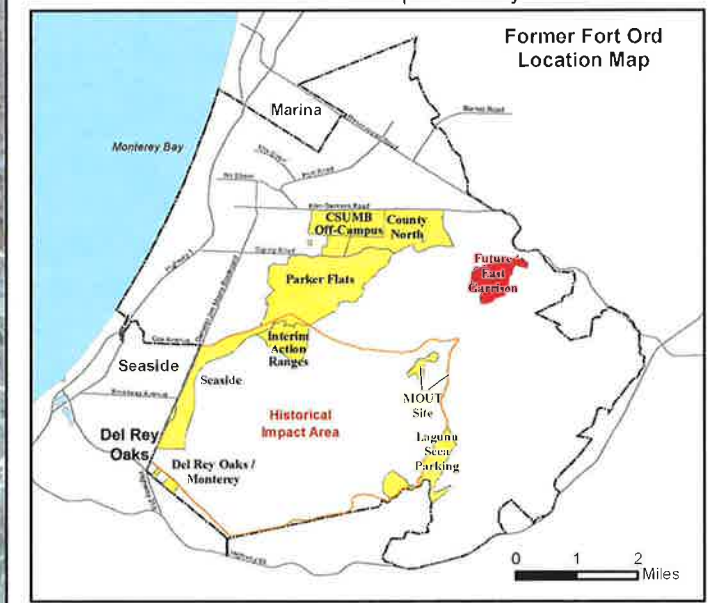
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Legend

- Grid Investigation (26 Grids) - Approx. 5.9 ac.
- First Step Out (167 Grids) - Approx. 38.0 ac.
- Second Step Out (65 Grids) - Approx. 14.3 ac.
- Third Step Out (93 Grids) - Approx. 19.6 ac.
- Fourth Step Out (54 Grids) - Approx. 11.0 ac.
- Munitions Response Area Boundary
- MRS-41 MRS Boundary
- 10-ft Off of Roads in Hab. - Approx. 1.2 ac.
- 10-ft Off of Roads in Dev. - Approx. 0.8 ac.
- 10-ft Trail Investigation (5 feet on each side of Trail) - Approx. 4.8 ac.
- 4-ft Access for Bio-Transsects - Approx. 0.5 ac.
- Trails in Work Plan Not Investigated
- Existing BLM Fuel Break - Approx. 3.9 ac.
- Best Management Practices 30-ft Fuel Break - Approx. 4.5 ac.
- E11b.8 USACE Parcel

Note: Acreage of additional grids include trails and fuel breaks that have previously been cut.



**Future East Garrison MRA
Sampling and Analysis Plan
Fourth Step Out**

FORA ESCA RP
Monterey County, California

Figure 1

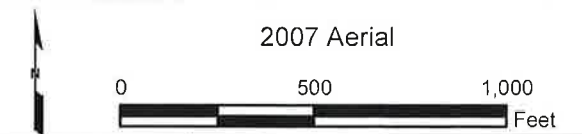
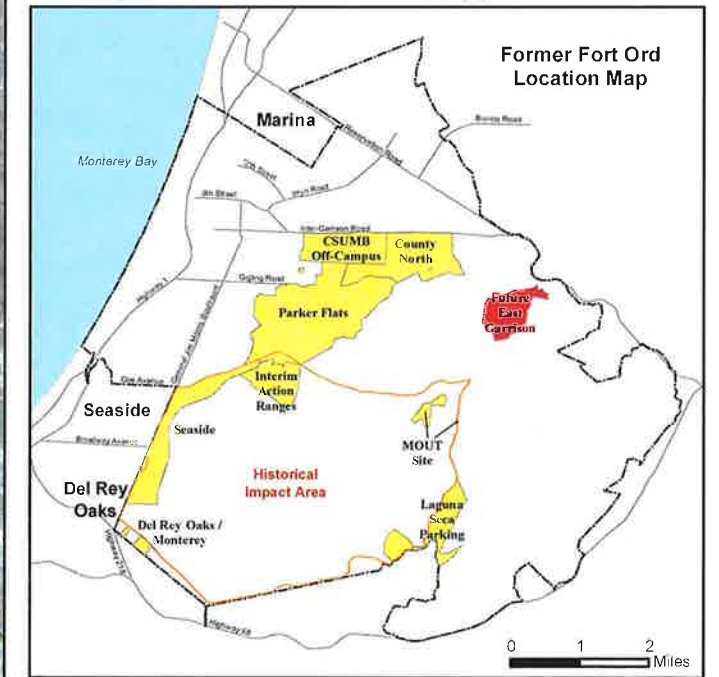
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Legend

- Completed Mechanical Removal of Maritime Chaparral - Approx. 48.3 ac.
- Completed Mechanical Removal of Maritime Chaparral in Best Management Practices Fuel Break - Approx. 1.3 ac.
- BLM Fuel Break Maintenance - Approx. 1.7 ac.
- Munitions Response Area
- USACE Parcel

Note:
 Future East Garrison MRA Total Area: Approx. 251.8 ac.
 Habitat Reserve Parcels Total Area: Approx. 177.7 ac.
 Development Parcels Total Area: Approx. 74.1 ac.

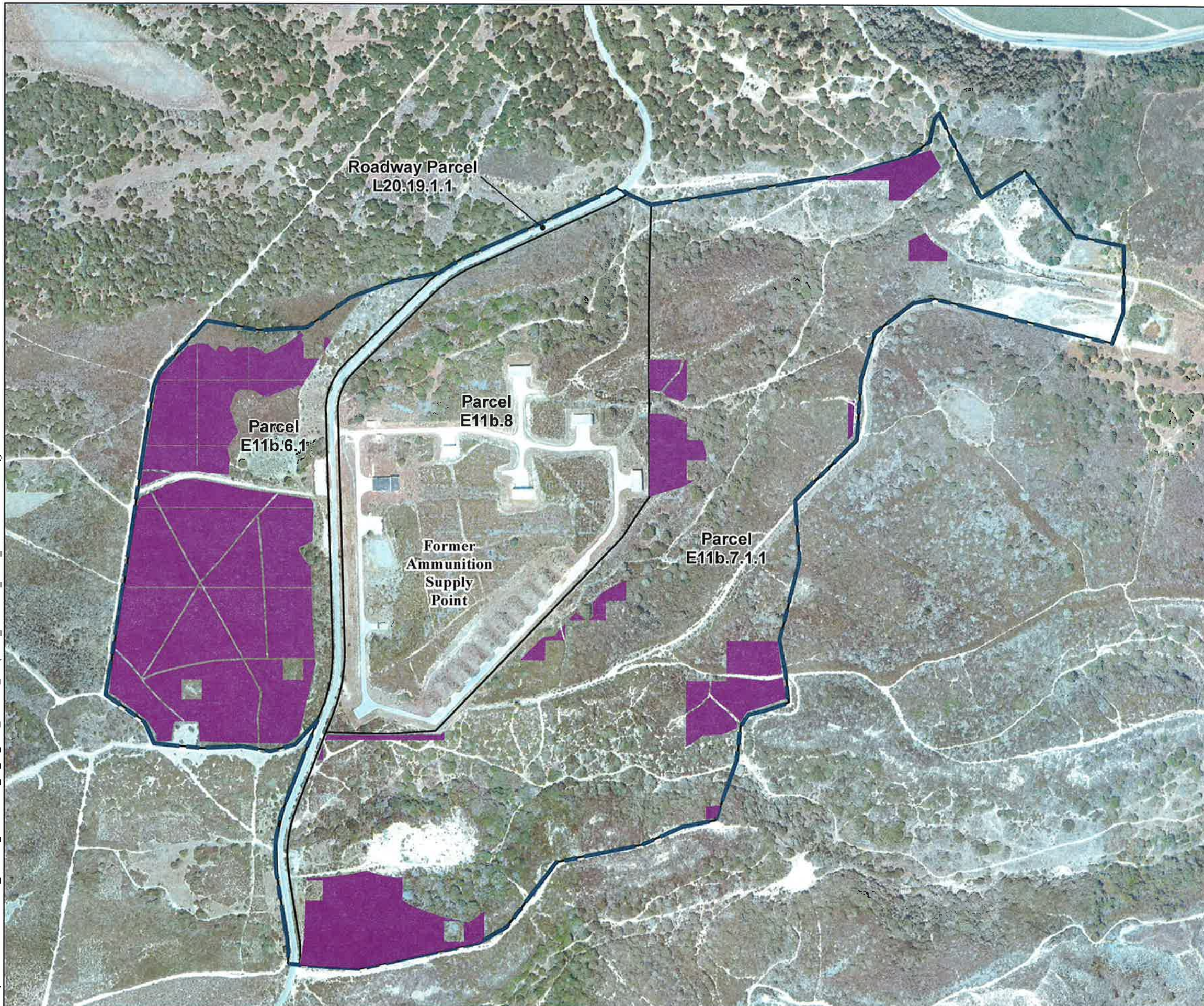


Future East Garrison MRA Completed Mechanical Removal of Maritime Chaparral

FORA ESCA RP
 Monterey County, California

Figure 2

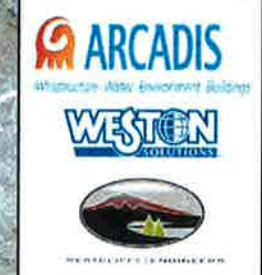
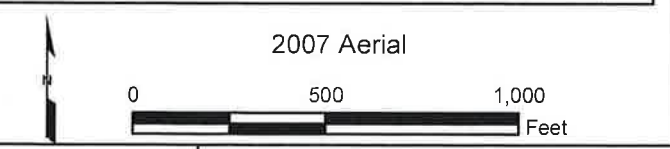
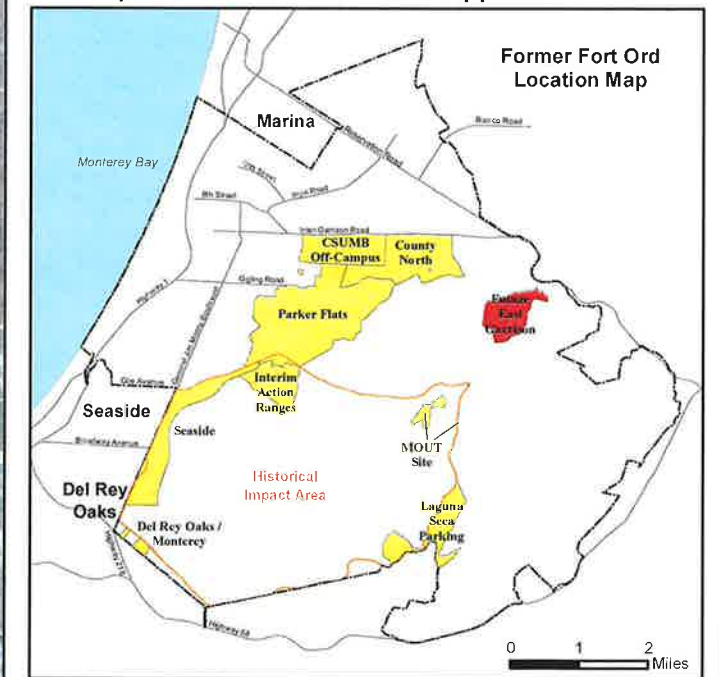
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Legend

- Maximum Additional Mechanical Removal of Maritime Chaparral - Approx. 46.8 ac.
- Munitions Response Area
- USACE Parcel

Note:
 Future East Garrison MRA Total Area: Approx. 251.8 ac.
 Habitat Reserve Parcels Total Area: Approx. 177.7 ac.
 Development Parcels Total Area: Approx. 74.1 ac.



**Future East Garrison MRA
 Maximum Additional Mechanical
 Removal of Maritime Chaparral
 Alternative 2**
 FORA ESCA RP
 Monterey County, California

Figure 3

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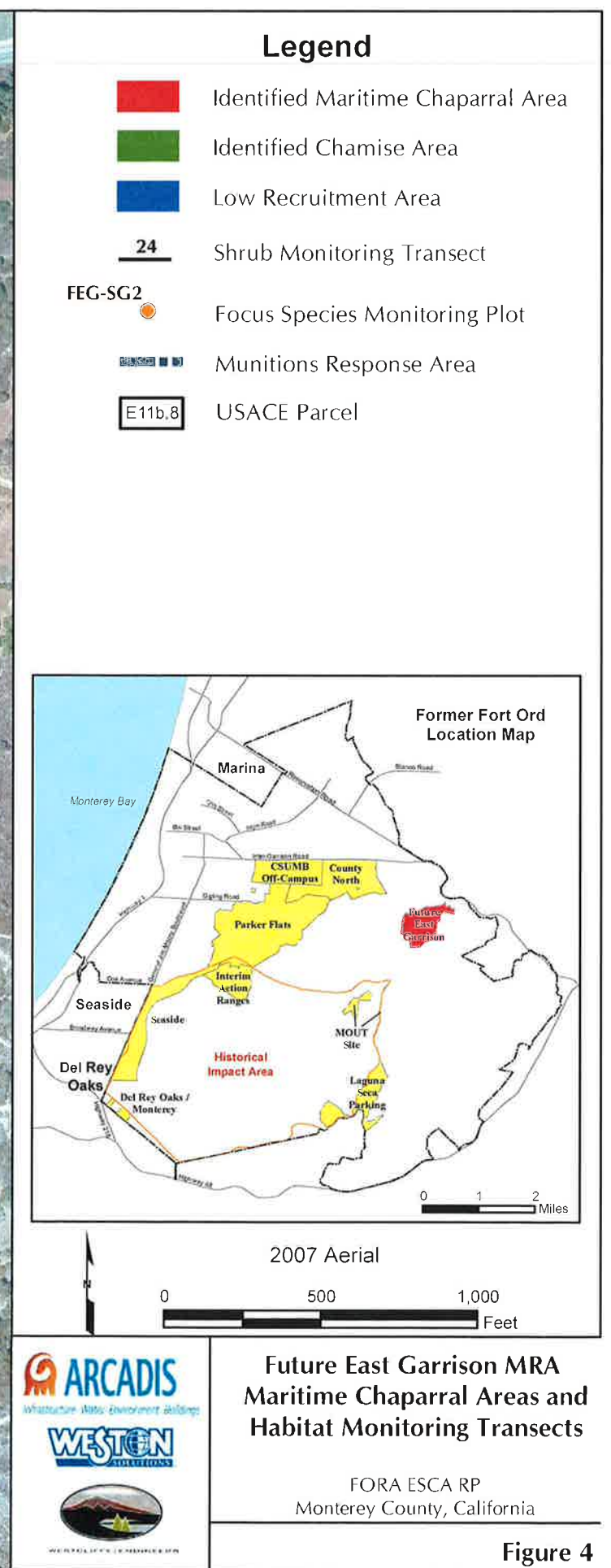
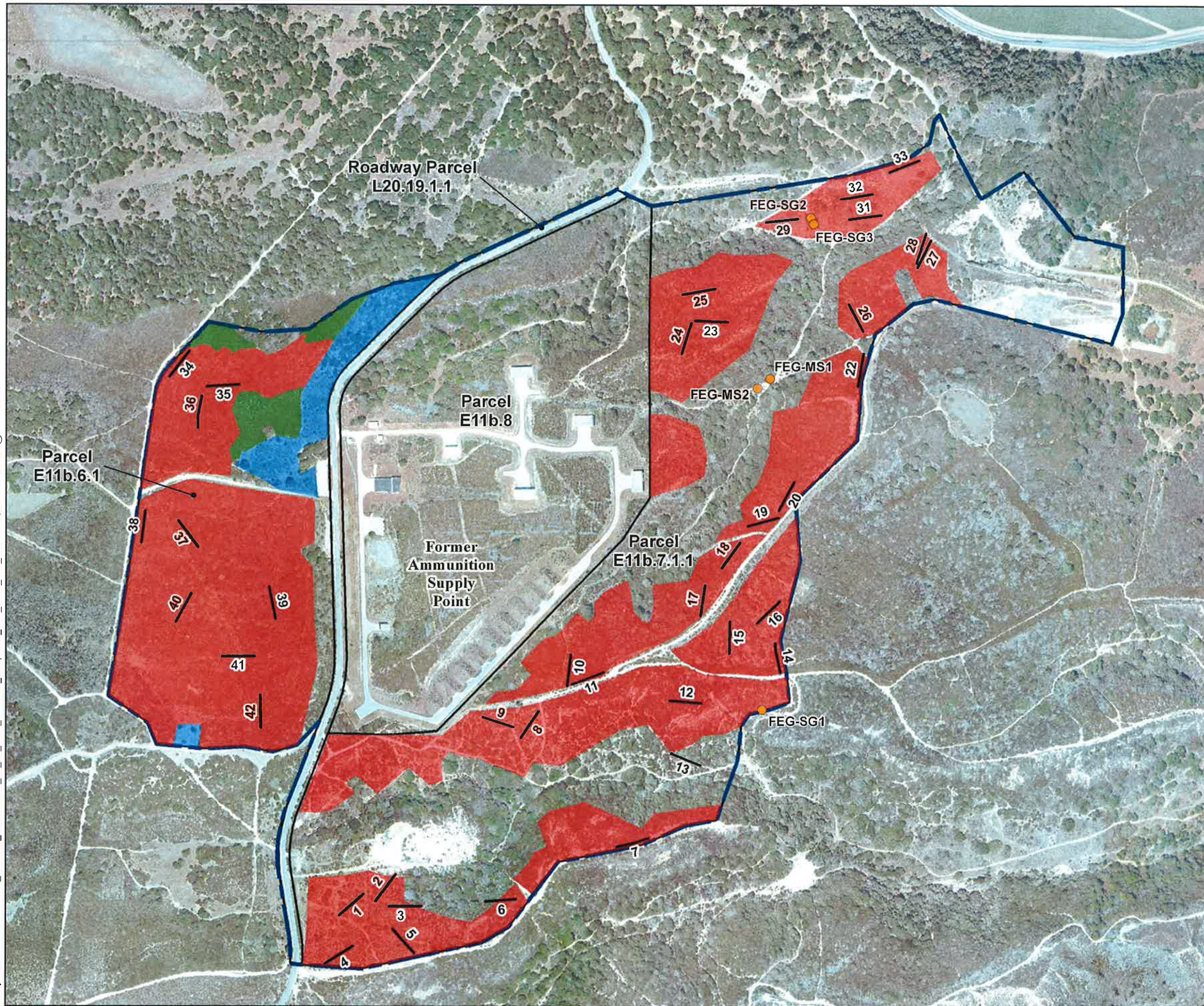
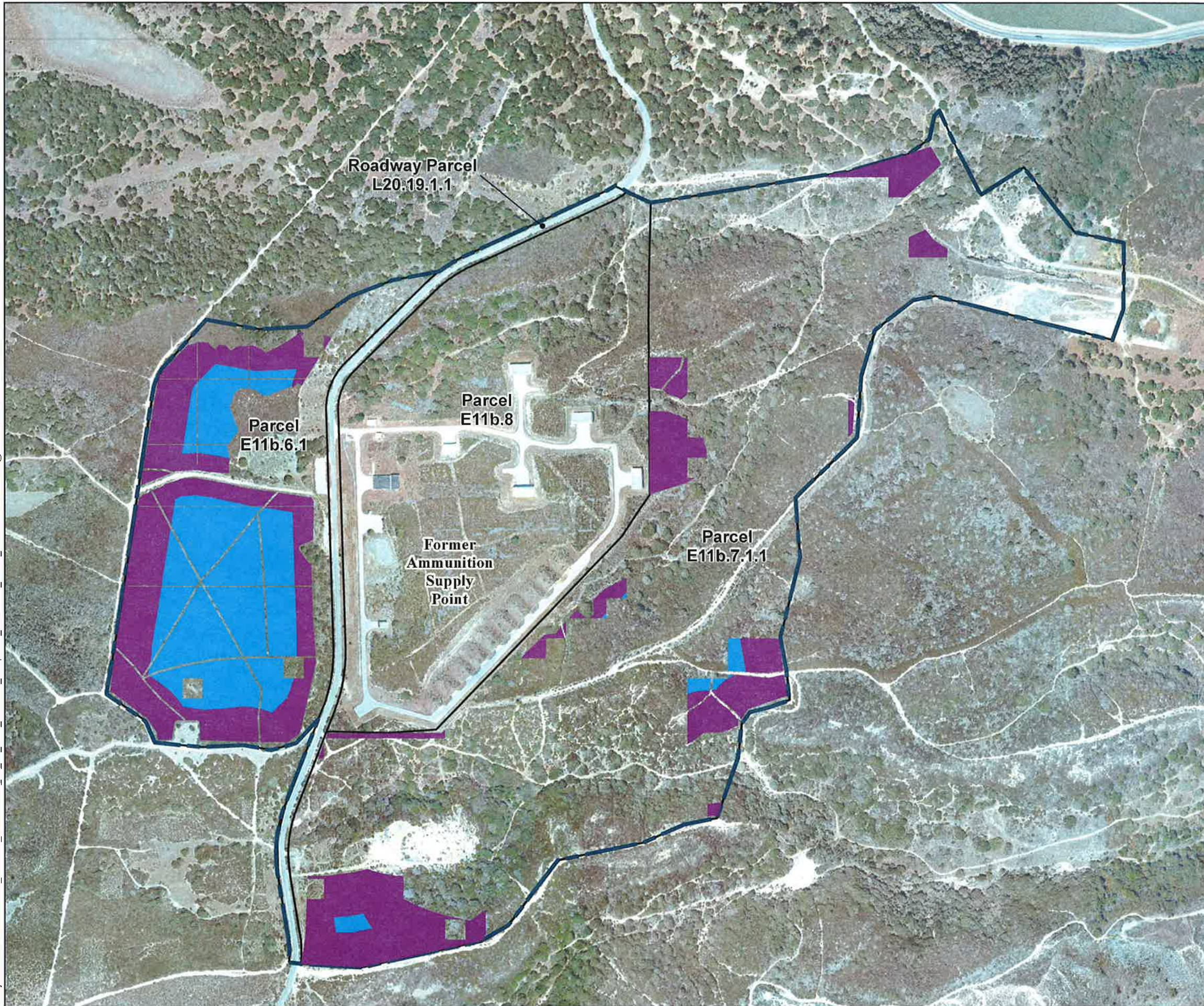


Figure 4

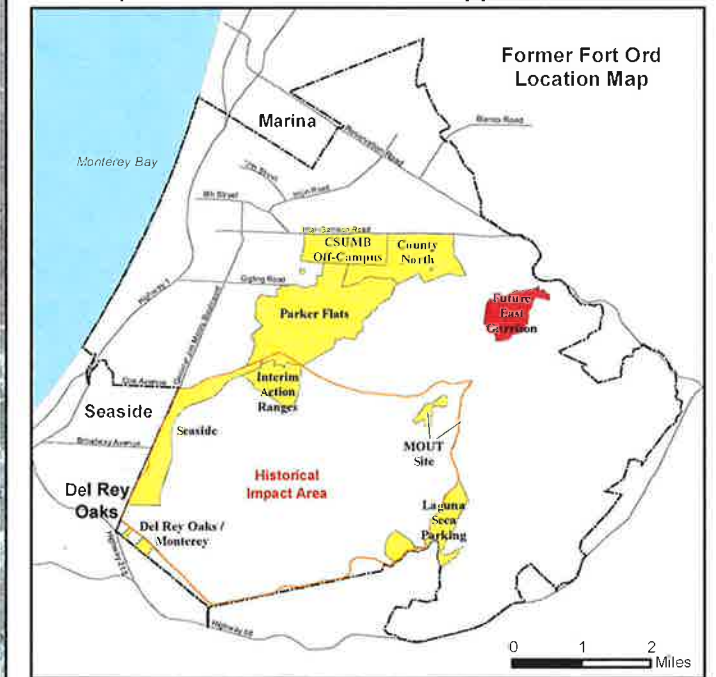
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Legend

- Maritime Chaparral Cut in Support of 210-Ft Fuel Break - Approx. 29.2 ac.
- Maximum Maritime Chaparral for Burn - Approx. 17.6 ac.
- Munitions Response Area
- E11b.8 USACE Parcel

Note:
 Future East Garrison MRA Total Area: Approx. 251.8 ac.
 Habitat Reserve Parcels Total Area: Approx. 177.7 ac.
 Development Parcels Total Area: Approx. 74.1 ac.



**Future East Garrison MRA
 Maximum Additional Maritime
 Chaparral for Burn
 Alternative 1**
 FORA ESCA RP
 Monterey County, California

Figure 5



March 12, 2010

Mike Doherty
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Mr. Doherty,

The prescribed fire unit evaluated is located in the Future East Garrison (FEG) area of the former Fort Ord (FFO) along Barloy Canyon Road and west of Reservation Road along the eastern boundary of Fort Ord (Figure 1). The area encompasses the former ammunition supply point (ASP) for the military facility. The vegetation is primarily chaparral with numerous intermixed stands of live oak primarily located in the canyons and on the north facing slopes. The terrain is very different from other areas of the FFO. The munitions response area (MRA) to the south and east of the ASP is made up of steep canyons with heavy vegetation growing on the canyon walls and live oak stands in the canyon bottoms. These steep canyons will pose a problem when trying to contain a fire to a small area as the canyons leave very little opportunities for the placement of control lines for a prescribed fire.

Historical Considerations for Prescribed Burns at FFO

Burning at FFO has been very tightly controlled as the result of several factors including;

1. The potential for unexploded ordnance,
2. Difficult weather, and smoke dispersal conditions ,
3. The close proximity of populated areas,
4. Public opposition to burning at FFO,
5. The U. S. Fish and Wildlife Service constraints on the burn window,
6. The high potential for an escape that could result in structure loses.

Any burning at East Garrison would need to be done in close coordination with the Fort Ord Base Realignment and Closure office (BRAC) and the Presidio of Monterey Fire Department (POMFD). Additionally, the ability to burn at Future East Garrison may be limited by the Army burn windows and schedules.

These restrictions have resulted in highly controlled conditions for burning at FFO. The U.S. Army Corps of Engineers (USACE) and POMFD through years of burning have established a very high standard for burning at Fort Ord. . It is this high standard that has become the standard of care for burns at the FFO and is the standard that has been accepted by the local public, the military and the Monterey Bay Unified Air Pollution Control District

(MBUAPCD) That current cost of implementing the Army's burn protocol can be more than \$20,000 per acre to do the burn and prepare the unit for burning.

SITE ISSUES AND CHARACTERISTICS

The burn prescription, vegetation and terrain of the area proposed for burning dictates the type of fire behavior that can be expected. The prescription and the burn plan that would be used in FEG prescribed fire unit was developed for successful burning of standing vegetation in the main burn units as performed by the USACE, hereafter, "USACE fire units". Although the vegetation within the FEG prescribed fire unit is the same as other USACE fire units the terrain is steeper and is in closer proximity to private homes and utilities which makes a burn at the future East Garrison much more difficult. The following considerations were evaluated when preparing the FEG burn prescription;

Vegetation: The vegetation in most of the FEG unit is very tall (> five feet high) and dense which can produce high rates of fire spread and difficulties in trying to control or suppress a prescribed fire. This vegetation's fire behavior is characterized with high flame lengths and rapid rates of spread making suppression with ground resources difficult without support from aircraft and earth moving equipment such as bulldozers.

Terrain: The topography of this particular site adds to suppression difficulties. Much of the area has steep narrow canyons which make direct attack on the fire almost impossible. The only reliable method of control in this topography is to use indirect attack with heavy equipment, aircraft and burn out operations in front of the fire. This approach would make the fire larger and would place suppression efforts on adjoining property which is close to the homes and communities to the east of the burns area as well as along Reservation Road and the abutting agricultural fields.

Close proximity of homes: there are multiple developments within close proximity of the fire unit. A large housing development is under construction one-half mile north of the burn unit, a farm development is located 1/3-mile east of the fire units, and a small development with large expensive homes and condominiums is located 3/4 - mile east of the burn unit. To the southeast of the burn unit there is a farm complex with several structures and homes that are within 6/10ths of a mile of the burn unit. Many of the homes in the area are not in compliance with the state standard for defensible space and hazard reduction found in California Public Resource Code §4291 and are therefore poorly prepared for an advancing wildfire that could impact the community. Many of these structures appear to be mostly wood construction, some with flammable roofs.

Exposed Natural Gas Line: The northeasterly portion of the burn unit includes an aboveground (exposed) natural gas line which would require significant offsets and engineering controls to prevent damage or disruption to the gas main.

Any prescribed fire applications in the East Garrison area carries with it a great deal of responsibility and liability that should be evaluated before any use of fire is considered. It also means that an examination of who will carry that responsibility and liability for the burn and any potential escape is important in the event the fire causes damage or injury. An

evaluation of potential liability should include discussions with potential responsible parties including the contractor performing the burn, the County of Monterey and Salinas Rural Fire Department who has jurisdiction over the area, and the Fort Ord Reuse Authority the property owner..

The U.S. Fish and Wildlife Service , by incorporating reference to the Habitat Management Plan (HMP) for FFO in its biological opinions relevant to MEC clearance of the ESCA RP, indicated that its preferred vegetation clearance method is burning (USFWS 1999, p. 14). As stated on p. 3-18 of the HMP: "... Clearance of OE [i.e., MEC] may involve selectively removing vegetation, possibly by burning to clear the ground surface. Burning may be infeasible in overly dense or high-moisture content vegetation in some portions of the inland range area, in which case, vegetation may be cut and chipped by a 'brush hog' or other mechanical means." Most of the vegetation within the Future East Garrison MRA appears to me to qualify as "overly dense" and therefore should be an exception to the habitat burn requirement associated with FFO.

FORT ORD BURN PRESCRIPTION

Fuel model chosen is from the Standard Fire Behavior Fuel Model Scott 2005.

FUEL MODEL:	Shrub 8	
Environmental Variables:	<i>HOT</i>	COLD
Relative Humidity %	20	60
Wind Speed (MFWS)	8	0
Temperature (Dry Bulb %)	80	60
Live Fuel Moisture %	60	100
Dead Fuel Moisture % 1hr. T/L	6	10
10hr. T/L	5	10
100hr. T/L	8	11
Soil / Duff Moisture %	50	50
Probability of Ignition	66%	28%
Season	<i>Summer</i>	<i>Winter</i>

PREDICTED FIRE BEHAVIOR

Fuel Model	SH 8		
Environmental Variables:	<i>HOT</i>	OPTIMUM	COLD
Flame Length (ft)	18	7	4.5
Effective Wind Speed (mph)	8	1.8	1.2
Scorch Height (ft)	N/A	N/A	N/A
Forward Spread Rate (chains/hour)	71	10	4.1
Backing Spread Rate (chains/hour)	2	1.6	1
Spotting Distance (miles)	0.6	0.2	0.1

BEHAVIOR OUTSIDE OF UNIT BOUNDARIES USING WORST CASE WEATHER

The wind was increased to determine escape potential. The other environmental factors remained the same as those used in the “Hot” side of the prescription.

20' Wind (mi/hr)	<i>Rate of Spread (ch/hr)</i> *	Flame Length (ft)	Eye Level Wind Speed (mi/hr)	Fire Area in .5 Hours (ac)	Spot Fire Distance (mi)
16	71	18	8	34	0.6
18	81	19	9	40	0.7
20	92	20	10	48	0.8
22	103	22	11	55	0.8
24	114	23	12	64	0.9
26	125	24	13	72	1

* “ch” refers to chains used in fire behavior modeling. A chain equals 66 feet.

With the use of the Fort Ord prescription as you can see from the fire behavior modeling the fire has the potential to threaten populated areas with spotting or rates of spread within an hour or less.

BURN UNIT PREPARATION

The burn unit will need to be bordered with control lines to mineral soil at a distance of 20 feet wide with a masticated vegetation border of 210 feet which will be cleared to depth of ordnance prior to burning. This will be necessary for the protection of the suppression equipment from unexploded ordnance as prescribed by the USACE and prevent potential fire escapes. This mastication of the vegetation will probably reduce the burn units to the point that there will be little if any standing vegetation left to burn.

Additionally to prepare the proposed unit for burning work would include road improvement on old existing roads and trails within the burn unit as well as access roads outside the burn unit to allow for equipment to be mobilized to any area where suppression efforts may be necessary. These roads will need to be buffered on both sides by a minimum of 50 feet of vegetation mastication or removal along the road sides as this will offer an aid in suppression

of any escapes during burning operations. This will provide secondary control lines for any escapes from the burn units. Fuel breaks will also need to be created on the edges of the farm structures and the community to the east or any community that is proposed near future East Garrison burn areas, specifically the east Garrison Residential Development to the north. Breaks and access roads will require cooperation of abutting landowners.

EVALUATION OF ALTERNATIVES TO VEGETATION TREATMENT FOR ORDNANCE REMOVAL

Alternatives

Alternative A: Do Nothing;

Alternative B: Prescribed burning of standing vegetation;

Alternative C: Mastication of the chaparral vegetation and clearing under and limbing up the oak trees in the entire area which will allow the removal of ordnance and then burn the mastication;

Alternative D: Mastication of the chaparral vegetation and clearing under and limbing up the oak trees in the entire area and removal of ordnance without burning.

Alternative E: Cut and pile brush and burn piles as the weather conditions permit. This can be done by hand or with machines

Evaluation

Alternative A is not acceptable to meet Munitions and Explosive of Concern removal requirements.

Alternative B has a very high cost with a high probability of an escape resulting in potential loss of life and structures. Potential liability is very high.

Alternative C has a very high cost and a lower probability of escape but the risk and liability if there is an escape is still very high.

Alternative D has a very high cost but little risk of fire because the vegetation would not be burned. This alternative would also greatly reduce the liability and potential for a future wildfire.

Alternative E Cut and pile brush and burn the piles would allow a reduction in the amount of material being burned and because the piles would be dead material and piled the burning window would be wider. There would still be a possibility of escape.

Recommendations

My recommendation after the site visit and discussions with the Chief of the Presidio of Monterey Fire Department, Fort Ord Reuse Authority(FORA), Bob Nunes of the MBUAPCD and members of the ESCA RP team, would be to select Alternative D as the safest method to treat the vegetation in Future East Garrison and would be the most cost effective with little

fire threat to the nearby communities. Any use of fire carries liability with it and would have to be carefully applied with sufficient suppression resources to confine the escape. I would assume that burning would still have to be carried out between July 1 and Dec 31 which is the season that fires are more likely to escape. That is also the season that air quality problems occur the most. The season of burn increases the likelihood that the fire could escape and it still creates a potential conflict with the Army burns but is more manageable. Total emissions from the burning would not be reduced but the amount could be spread out over a period of time. The technique of ignition would have to be discussed further due to the nature of the ordinance onsite aerial ignition may still need to be used to ignite the piles or a remote controlled ignition device used to limit human exposure to possible ordnance explosion.

References

U.S. Army Corps of Engineers 1997. Installation-wide multispecies habitat management plan for former Fort Ord, California. April. [HMP]

U.S. Fish and Wildlife Service 1999. Biological and conference opinion on the closure and reuse of Fort Ord, Monterey County, California. March 30.

Resume

Barry Callenberger has been involved with burning at the Former Fort Ord site for the US Army Corps of Engineers since 1998. He was the first burn boss to use helicopters for ignition and suppression. Barry has been the burn boss on all burns at Fort Ord since 1998 except for the 2003 escape burn. He has been involved with community meetings and presentations and was the key person involved in the prescription development for the Fort Ord burns. He has worked extensively with the Presidio of Monterey Fire Department, BRAC(Base Realignment and Closure), U.S. Army Corps of Engineers, Meteorologists from the Navy Post Graduate School and the Monterey Bay Unified Air Pollution Control District. He has 38 years of experience in wildfire management and prescribed burning throughout California.

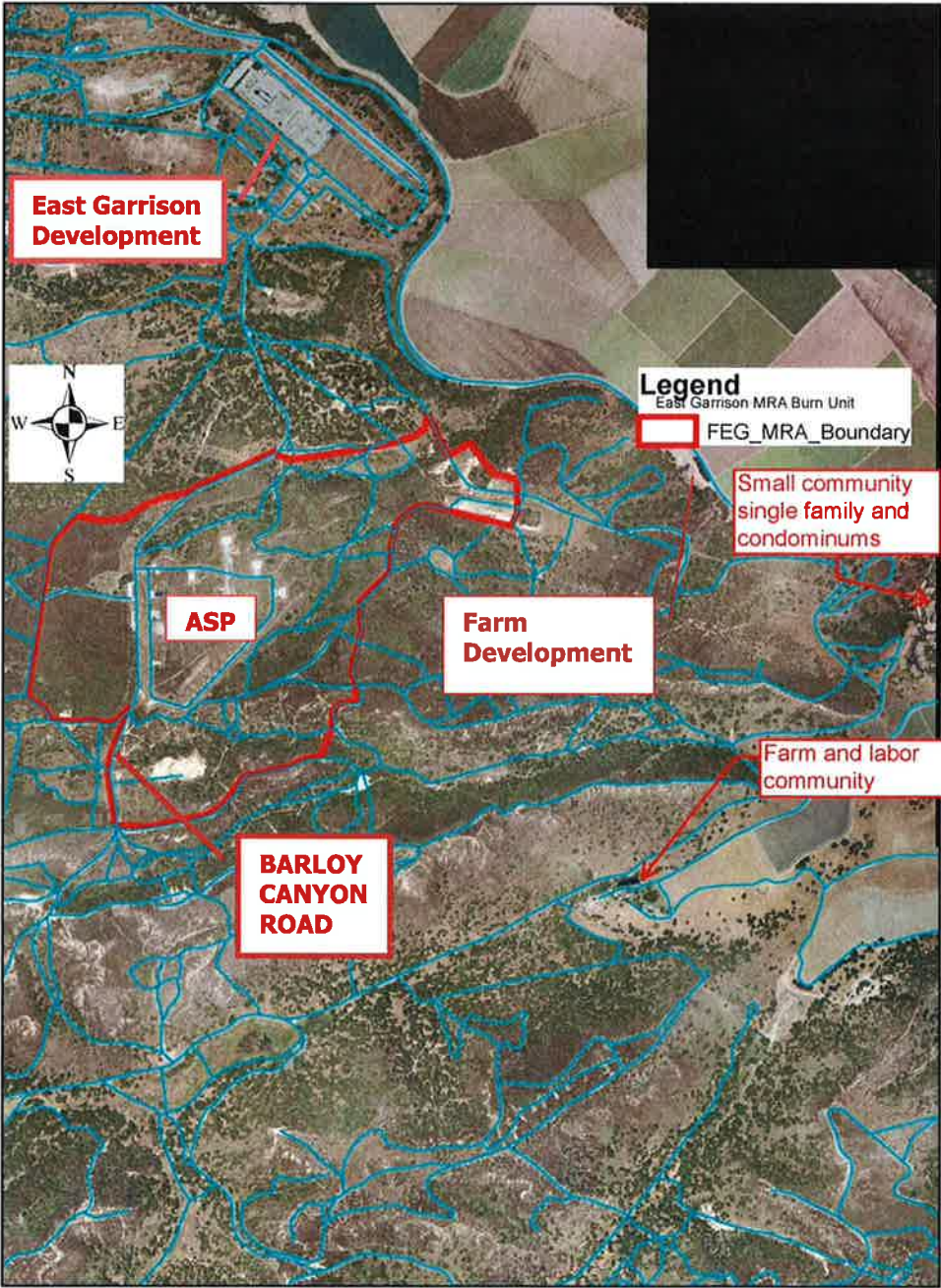
Sincerely,

Barry Callenberger

Wildland Rx Inc

Owner

FIGURE



ATTACHMENT B



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

IN REPLY REFER TO:
08EVEN00-2012-1-0199

April 24, 2012

Gail Youngblood, Environmental Coordinator
Department of the Army
Fort Ord Office, Base Realignment and Closure Office
P.O. Box 5008, Building #4463 Gigling Road
Monterey, California 93944-5008

Subject: Fort Ord 2012 Burn Preparation Informal Consultation, Former Fort Ord,
Monterey County, California

Dear Ms. Youngblood:

We have reviewed your letter, dated and received in our office on February 24, 2012, providing information on the proposed fuel break project which would be implemented in preparation for munitions response related 2012 prescribed burn at former Fort Ord, Monterey County, California. The Draft MRS-BLM Units 7 and 10 Prescribed Burn Plan (Burn Plan) (Presidio of Monterey Fire Department 2012) submitted with your letter describes the U.S. Department of the Army's (Army) determination that the proposed actions are consistent with the intent of the Fort Ord 1997 habitat management plan (HMP) and biological opinions that we have issued to the Army addressing the cleanup and transfer of former Fort Ord.

The Army's continued cleanup activities on former Fort Ord have been addressed in biological opinions 1-8-99-F/C-39R, 1-8-01-F-70R, 1-8-04-F-25R, and 8-8-11-F-39 (Service 1999, 2002, 2007, 2011). Listed species and critical habitat that may be affected by your proposed actions, and that are addressed in the biological opinions cited above, are the federally endangered Monterey gilia (*Gilia tenuiflora* ssp. *arenaria*), and the federally threatened Monterey spineflower (*Chorizanthe pungens* var. *pungens*) and California tiger salamander (*Ambystoma californiense*). In 2010, populations of the federally endangered Yadon's piperia (*Piperia yadonii*) were discovered within the Impact Area Munitions Response Area (Impact Area MRA). In years previous, only two populations of Yadon's piperia were identified in parcel E2a in the northwest corner of the former Fort Ord, and in parcel E29b.3.1 in the southwest. Effects of the cleanup and transfer of former Fort Ord on Yadon's piperia within Units 4, 5A, 9, and Parcel E29b.3.1 have been addressed in biological opinion 8-8-11-F-39. Yadon's piperia is listed as a covered species under the HMP and will be afforded the same protective measures outlined for other HMP plant species for the current proposed fuel break action and with additional avoidance and minimization measures proposed by the Army (Collins, pers. comm. 2012a). The Army has determined that the proposed action fuel break project may affect, but is not likely to adversely affect the Yadon's piperia (Collins, pers. comm. 2012b). In addition, the Army is requesting

approval for the Environmental Services Cooperative Agreement Remediation Program (ESCARP) team to mechanically cut up to an additional 50 acres of maritime chaparral in a munitions response area in a portion of the East Garrison Habitat Reserve (parcels E11b.7.1.1 and E11b.7.1.1). This area of former Fort Ord contains habitat for Monterey gilia, Monterey spineflower, and California tiger salamander.

Fuel Break Project

Although the draft Burn Plan outlines burn preparation for Units 7 and 10, only Unit 10 is scheduled for prescribed burning in the 2012 season. The proposed burn preparation for Unit 10 would occur within the western central portion of the Impact Area MRA of former Fort Ord. Conducting prescribed burns routinely each year is valuable to both habitat management and the unexploded ordnance cleanup program for many reasons, including: (1) supporting the continued cleanup of unexploded ordnance, which is necessary to protect the public; (2) allowing firefighters to maintain their wildland firefighting skills; (3) reducing the fuel load to help in wildfire prevention; and, (4) promoting the use of fire in managing the rare central maritime chaparral within the habitat reserves of the former Fort Ord.

The primary containment line width is based on burn holding requirements or the minimum separation distance of the most probable munitions (whichever is greater) for fire personnel safety. These distances vary unit by unit. The one-time cut for the primary containment line will not be maintained as a fuel break following the remedial action. The masticated areas will be burned and will be allowed to recover per the requirements of the HMP. Additionally, portions of Units 2, 3, and 6 will be masticated in support of the 2012 prescribed burn as a wildfire prevention measure. These units will be burned in the future for habitat recovery once there is enough vegetation to carry a fire.

Burn Unit 10

Burn Unit 10 comprises 327 acres. The fuel break will be established by mechanically cutting a 239-foot wide buffer around Unit 10 (87 acres) that will also be burned as part of the 327 acres. There are over 2 acres of grasslands, less than 1 acre of coastal scrub, over 7 acres of oak woodland, and 317 acres of central maritime chaparral within Burn Unit 10. Unit 10's central maritime chaparral ranges from 3 to 8 feet in height with an average height of 5 feet. Yadon's piperia has been identified adjacent to but not within the boundaries of Unit 10; however, it is possible that Yadon's piperia occurs there and has not yet been observed due to the dense and tall vegetation.

Additional Mastication in Units 2, 3, and 6

Due to slope, terrain and proximity to urban areas, the Burn Boss and Chief of Fire and Emergency Services (Fire Chief) identified sections of adjacent units that need to be masticated for firefighter protection and to increase control of escape. An additional 35 acres in Unit 2, 50 acres in Unit 3, and 8 acres in Unit 6 would be masticated (a total of 93 acres). Since the draft Burn Plan was developed, the Burn Boss and Fire Chief have expressed concern that 8 acres in Unit 6 may not create a sufficient fuel break due to its proximity to residential areas; therefore, it

has been proposed that up to 25 acres of Unit 6 could be masticated for safety reasons (Collins, pers. comm. 2012a). This could increase the total of additionally masticated acres from 93 acres to up to 110 acres. These additional areas will be cleared of surface munitions and eventually burned when it has been determined by the Burn Boss and the Fire Chief that there is enough regrowth to carry a fire. Yadon's piperia has not been identified within Units 2 and 3 but has been identified within Unit 6. It is possible that Yadon's piperia occurs in Units 2 and 3 and has not yet been observed due to the dense and tall vegetation.

The following conservation measures identified in the HMP and/or biological opinions will be implemented during the planning, preparation, and execution of the prescribed burns:

1. The prescribed burns will be conducted between July 1 and December 31 to minimize impacts to special-status species; however, under certain circumstances (low rainfall or early seed setting) a burn could be considered as early as June or as late as January with the concurrence of the Service.
2. Areas containing special-status species and areas of chaparral will be avoided during placement of all access roads, staging areas, and other associated facilities to the extent possible.
3. Existing roads will be used whenever possible and driving vehicles off of existing roads will be minimized to the greatest extent possible.
4. Vernal pools will not be disrupted or have any fire foam or retardant applied within 300 feet of their boundaries. Any grasslands or vernal pools that lie within a mastication line boundary will not be cut but can be burned during the burn operations of the prescribed burn. Because of the sensitive status of all vernal pools, personnel and crews will avoid these areas to the greatest extent possible. Vehicles and heavy equipment will be excluded from vernal pool areas to avoid collapsing California tiger salamander burrows which are crucial to their breeding grounds and habitat.
5. Areas known or with the potential to support Yadon's piperia will be surveyed. Any orchid species observed will be flagged and these areas will be avoided during vegetation clearance activities to the greatest extent feasible.

Mechanical Cutting of up to 50 Additional Acres, Future East Garrison Habitat Reserve (Parcels E11b.6.1 and E11b.7.1.1)

Biological opinion 1-8-04-F-25R states that although prescribed burning is the primary method of vegetation clearance in areas designated as habitat reserve, manual and mechanical vegetation clearance methods may be used under very restrictive circumstances and where they will not undermine the goals of species preservation described in the HMP. Manual or mechanical clearance of maritime chaparral within designated habitat reserve areas may be necessary when: prescribed burns cannot be done safely, burning cannot be used because the size of the area is too

small or lacks existing fuel breaks and access roads, areas have high vegetation moisture content or did not burn or burned incompletely during a prescribed burn, and areas require sampling before scheduled remedial actions and prescribed burns. Vegetation clearance using manual and mechanical methods in habitat reserves have been restricted to areas of 50 acres or less within each munitions response site. Biological opinion 1-8-04-F-25R addresses vegetation clearance-related impacts to listed species.

To date, 48.3 acres of the allowable 50-acre area has been cut in habitat parcels E11b.6.1 and E11b.7.1.1. The ESCA RP team and the Army have determined an additional (up to) 50 acres of maritime chaparral in these parcels need to be cleared of vegetation to enable completion of the munitions and explosives of concern remedial investigation activities. After evaluating a number of issues including the relatively small area(s) that would be burned and a number of specific fire safety issues, the ESCA RP team and the Army have determined mechanical removal is the safest and most feasible method for the needed vegetation clearance

No populations of Monterey gilia and Monterey spineflower have been observed in the parcels proposed to be cut and the Army does not anticipate adverse impacts to these species as a result of the proposed action. Potential upland habitat for California tiger salamander exists within dispersal distance to breeding sites in the northeastern portion of the Future East Garrison MRA. The analysis of effects and minimization and avoidance measures outlined in biological opinion 1-8-04-F-25R will continue to apply for any potential impacts to California tiger salamander (Collins, in litt. 2012b). In addition, most of the proposed work will be conducted during the dry season (April 15 through October 15). If work activities would need to extend beyond October 15, the Army will contact the Service to decide the best course of action for moving forward (Collins, pers. comm., 2012c).

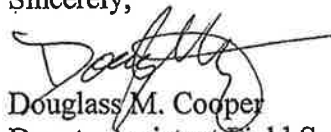
Based on the avoidance and minimization measures proposed by the Army and the Army's commitment to afford HMP measures to Yadon's piperia during and after cleanup activities, we concur with your determination that the proposed fuel break project in preparation for the 2012 prescribed burn may affect, but is not likely to adversely affect Yadon's piperia. In addition, based on the safety concerns identified by the Army in the Future East Garrison munitions response area, survey results, and implementation of minimization and avoidance measures already established in biological opinion 1-8-04-F-25R, we have concluded that the cutting of up to 50 additional acres of central maritime chaparral in habitat parcels E11b.6.1 and E11b.7.1.1 will not undermine the goals of species preservation described in the HMP and is necessary for the Army's continued munitions and explosives of concern remedial investigation activities in this particular munitions response area. We agree that the HMP and our biological opinions describe the Army's intent to clear vegetation primarily by burning. We have responded to past fuel break concurrence requests with letters dated August 28, 2002; June 14, 2005; March 13, 2006; May 3, 2007; May 30, 2008, June 16, 2009; and May 2, 2011. Due to the challenging burning conditions in the Fort Ord area, you have doubled your proposed fuel breaks in width from 100 to 200 feet since our 2002 letter; have added additional acres to cut for containment,

and your proposed burn areas have declined in a corresponding ratio. Therefore, the proportion of central maritime chaparral you are proposing to cut, rather than burn, is increasing substantially.

We conclude that this trajectory of increasing fuel break size and other mechanically cut areas and smaller burn areas was not anticipated under biological opinions 1-8-99-F/C-39R, 1-8-01-F/C-70R, and 1-8-04-F-25R. We note, however, that biological opinion 1-8-99-F/C-39R does not provide the level of detail on fire preparation activities found in more recent biological opinions. In our May 30, 2008, letter, we recommended that you reinitiate consultation with us regarding the effects of the burn plan, in addition to updating other potential impacts to listed species throughout the former Fort Ord. On June 5, 2009, we received your request for reinitiation of consultation, which will result in the issuance of a new biological opinion that will include an analysis of the effects of the current and future ESCA RP activities and Burn Plans. This consultation is currently underway; however, it would not be issued until after the start of the 2012 burn preparatory season. Therefore, we recommend that you proceed with the fuel break cutting of 180 acres (with a potential for up to 197 acres) you have proposed this year for Unit 10 which is necessary to conduct the 2012 prescribed burn, and the mechanical removal of up to an additional 50 acres of central maritime chaparral in the Future East Garrison Habitat Parcels for completion of munitions and explosives of concern remedial investigation activities.

We are committed to working with you to facilitate your need for flexibility and efficiency while ensuring that the effects of your actions on listed species are anticipated, analyzed, and minimized in keeping with your project goals and the requirements of the Endangered Species Act of 1973, as amended. We look forward to continuing to work with you on the biological issues at former Fort Ord. If you have any questions about this issue, please contact Lena Chang of my staff at (805) 644-1766, extension 302.

Sincerely,



Douglass M. Cooper
Deputy Assistant Field Supervisor

REFERENCES CITED

Presidio of Monterey Fire Department. 2012. Draft MRS-BLM Units 7 and 10 Prescribed Burn Plan. Presidio of Monterey Fire Department, Former Fort Ord, Monterey, California, February 2012.

[Service] U. S. Fish and Wildlife Service. 1999. Biological and conference opinion on the closure and reuse of Fort Ord, Monterey County, California (1-8-99-F/C-39R). U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office, Ventura, California.

[Service] U. S. Fish and Wildlife Service. 2002. Biological opinion on the closure and reuse of Fort Ord, as it affects Monterey spineflower critical habitat (1-8-01-F-70R). U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office, Ventura, California.

[Service] U. S. Fish and Wildlife Service. 2007a. Amendment to biological opinion 1-8-04-F-25R for the cleanup and reuse of former Fort Ord, Monterey County, California. U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office, Ventura, California.

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In litteris

Collins, W. 2012a. Wildlife Biologist, Base Realignment and Closure Office, Fort Ord, Department of the Army, Monterey, California. Electronic mail correspondence regarding Yadon's piperia at Fort Ord with Lena Chang, U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office, Ventura, California. March 2, 2012.

Collins, W. 2012b. Wildlife Biologist, Base Realignment and Closure Office, Fort Ord, Department of the Army, Monterey, California. Electronic mail correspondence regarding listed species in the Future East Garrison with Lena Chang, U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office, Ventura, California. March 14, 2012.

Personal Communications

Collins, W. 2012a. Phone conversation between William Collins, Fort Ord Base Realignment and Closure Office and Lena Chang, Ventura Fish and Wildlife Office, regarding fuel break cutting in preparation for the 2012 prescribed burn. March 2, 2012.

Collins, W. 2012b. Phone conversation between William Collins, Fort Ord Base Realignment and Closure Office and Lena Chang, Ventura Fish and Wildlife Office, regarding Yadon's piperia and preparation for the 2012 prescribed burn. March 12, 2012.

Collins, W. 2012c. Phone conversation between William Collins, Fort Ord Base Realignment and Closure Office and Lena Chang, Ventura Fish and Wildlife Office, regarding timing of activities in the Future East Garrison habitat parcels. April 3, 2012.