# APPENDIX A

## CSUMB Off-Campus MRA Conceptual Site Model
## (Formerly CSUMB MRA)

# 6.0 CSUMB MRA CONCEPTUAL SITE MODEL

The CSUMB MRA CSM profiles are based on existing information and data provided by the Army and contained in the Fort Ord Administrative Record. Tables and figures associated with the CSUMB MRA are located at the end of Section 6.0.

## 6.1 CSUMB MRA Facility Profile

The facility profile provides information on location, physical boundaries, roadways and access, structures and utilities, historical military use, and administrative controls associated with the MRA.

### 6.1.1 Boundaries and Access

The CSUMB MRA is located in the north-central portion of the former Fort Ord, bordered by Inter-Garrison Road to the north, the Development North MRA to the east and southeast, Parker Flats MRA to the south, and CSUMB campus property to the west and southwest (Figure 6.1-1). The CSUMB MRA is wholly contained within the jurisdictional boundaries of Monterey County.

The CSUMB MRA encompasses approximately 333 acres and contains USACE property transfer parcel S1.3.2 (Table 6.1-1 and Figure 6.1-1).

Access to the CSUMB MRA is not restricted by fencing or road barricades. Inter-Garrison Road, located immediately north of the MRA, is an active roadway with daily vehicle traffic. This is a major roadway of the FORA transportation network. A number of unpaved roadways and dirt trails are located throughout the MRA (Figure 6.1-1). Detailed information on roadways and access is provided in Table 6.1-2.

### 6.1.2 Structure and Utilities

The CSUMB MRA contains two buildings (Figure 6.1-1; Army 2007). Detailed information concerning location, size, description of structures, presence of ACM and/or LBP, if evaluated, and year constructed is provided in Table 6.1-3.

The CSUMB MRA is not served by any utilities. However, a telephone line, electrical line, high-powered transmission line, storm-drain line, and natural gas line extend onto or cross a portion of the MRA in various locations (Figure 6.1-1). Three short storm-drain lines also extend onto the MRA from the CSUMB campus property located to the southwest. More detailed information on utilities within the MRA is provided in Table 6.1-2.

### 6.1.3 Historical Military Use

Initial use of the CSUMB MRA began in approximately 1917 when the U.S. government purchased more than 15,000 acres of land and designated it as an artillery range. No training maps from this time period have been found, and no pre-World War II-era military munitions have been removed during previous Army response actions within the CSUMB MRA. Because the area north of Gigling Road (prior to 1940) was privately owned agricultural land, it is unlikely that this area was used for military training until after this time.

Figure 6.1-2 shows the locations of known training areas within the MRA. Table 6.1-4 summarizes the historical military uses of these areas within the CSUMB MRA.

The Archives Search Report indicated that the type of training that occurred in the vicinity of the CSUMB MRA was unknown, but was probably related to troop maneuvers (USACE 1997a). This is consistent with historical maps that indicate the following activities in the area:

- Mine and Booby-Trap Training
- Mine Field Practice
- Chemical, Biological, Radiological Training
- Tactical Training
- Practice Mortar Range

Previously, to facilitate MEC investigations and removal activities, the area was divided into MRSs. The MRSs were identified through a review of Fort Ord records (USACE 1997a). The MRA is comprised of MRS-31, which encompasses MRS-04C, MRS-07, MRS-08, and MRS-18, and MRS-13C, which is located along the southern border of the MRA (Figure 6.1-3). The MRS boundaries generally correspond to the boundaries of Parcel S1.3.2.

### 6.1.4 Administrative Controls

A number of administrative controls have been and will be imposed on the CSUMB MRA, including land use covenants, county ordinances, FORA resolutions, an MOA between FORA and the DTSC, habitat-related requirements, and BOs. The applicable administrative controls are described in more detail in Table 6.1-5. These administrative controls are enforceable and place constraints on field-related activities and future development activities until such time that remediation has been completed and the regulatory agencies have made a determination as to the closure status of the MRA.

## 6.2 CSUMB MRA Physical Profile

The physical profile provides information on topography, geology, vegetation, surface water, and groundwater associated with the MRA that may affect the location, movement, detectability, and recovery of military munitions.

### 6.2.1 Topography and Geology

The terrain of the CSUMB MRA is primarily rolling hills. The elevation ranges from approximately 240 feet msl to approximately 375 feet msl with 2 to 15 percent slopes (Figure 6.2-1). The surface soils are characterized as eolian (sand dune) and terrace (river deposits), which consist of unconsolidated materials of the Aromas and Old Dune Sand formations. The primary soil type present in the CSUMB MRA is Oceano Loamy Sand (Figures 6.2-1). Soil conditions at the MRA consist predominantly of weathered dune sand, which provides a relatively good environment for conducting geophysical surveys, including electromagnetic and magnetic surveys. Table 6.2-1 provides more detailed information on the geology of the former Fort Ord and soils encountered within the MRA.

### 6.2.2 Vegetation

Vegetation in the CSUMB MRA consists primarily of coastal coast live oak woodland with smaller areas of maritime chaparral and grassland (Table 6.2-2 and Figure 6.2-2; USACE/Jones & Stokes 1992). Vegetation varies from sparsely vegetated areas to heavy brush. Past field activities have noted the presence of poison oak in the area.

### 6.2.3 Surface Water and Groundwater

Groundwater investigations associated with the Basewide RI/FS have resulted in the installation of a number of groundwater monitoring wells on former Fort Ord property near the CSUMB MRA. The Salinas Groundwater Basin is the main hydrogeologic unit that underlies the MRA. The depth to groundwater is estimated to be greater than 100 feet bgs. There are no known wells within the boundaries of the MRA; however, several monitoring wells are located to the southwest, west, and north of the MRA (Figure 6.2-1). The occurrence of groundwater beneath the MRA is not expected to influence geophysical surveys conducted for MEC remediation activities.

There are no surface-water features or delineated wetlands reported to be present on the CSUMB MRA; however, an aquatic feature (i.e., vernal pool, pond) is known to exist to the southeast of the MRA.

## 6.3 CSUMB MRA Release Profile

The release profile provides information on the MRA with respect to investigation and removal history, location and extent of military munitions, such as MEC, MPPEH, and MD, and history and conditions of HTW.

### 6.3.1 Investigation and Removal History

Numerous investigation and removal operations were performed by the Army in the CSUMB MRA, which included:

- Sampling at MRS-04C, MRS-07, MRS-08, and MRS-18 in 1994 (HFA 1994)
- 3-foot Removal Action in the western portion of MRS-31 in 1994 (HFA 1994)
- 4-foot Removal Action at MRS-31 in approximately 70 acres (Site CSU) in 1994 (UXB 1995d) and in approximately 6 acres (Site HFA/CSU) in 1995 (UXB 1995e)
- 4-foot Removal Action at MRS-13C in 1997 (USA 2000e)

These investigations and removal actions are summarized in Table 6.3-1. No burial pits were reported in the MMRP database. However, an after action report indicates that burial pits containing training devices were removed from this area (HFA 1994). The results of these investigations and removal actions with respect to the types of MEC recovered are summarized in Table 6.3-2, and MEC and MD are shown on Figures 6.3-1, 6.3-2, and 6.3-3.

The types of MEC and MD found in the CSUMB MRA are consistent with use as a training and maneuver area. There was no evidence of a mortar impact area associated with the Practice Mortar Range, and there was not evidence of tear gas or chemical agent identification sets associated with the CBR training area.

### 6.3.2 Types of MEC Recovered and Hazard Classification

Table 6.3-2 includes a summary of MEC recovered from the CSUMB MRA and associated hazard classification scores. All MEC removed from the MRA were identified and assigned a hazard classification. Hazard classification scores range from 0 to 3 according to the following descriptions:

| Hazard Classification Score | Description |
|---|---|
| 0 | Inert MEC that will cause no injury |
| 1 | MEC that will cause an injury or, in extreme cases, could cause major injury or death to an individual if functioned by an individual's activities |
| 2 | MEC that will cause major injury or, in extreme cases, could cause death to an individual if functioned by an individual's activities |
| 3 | MEC that will kill an individual if detonated by an individual's activities |

The hazard classification provides a qualitative assessment of risk for MEC. These classifications will be used as inputs in future risk assessments for the CSUMB MRA. It should be noted that SAA is not considered in the risk assessment because SAA poses no explosive risk.

### 6.3.3 Location of MEC and MD

Figures 6.3-1, 6.3-2, and 6.3-3 show the location of MEC and MD previously removed from the CSUMB MRA. A summary of the MEC and MD encountered during previous

investigations and removal actions in the CSUMB MRA is provided in Table 6.3-3 and included:

- 190 UXO items
- 1 DMM item
- 1,362 ISD items (MPPEH that could not be classified as UXO, DMM, or MD)
- 19,590 pounds of MD (includes MD-E and MD-F items if weights were documented)

The majority of munitions items listed in the MMRP database are classified as ISD. This term was created to identify munitions items that could not be definitively classified as MEC or MD. Where there was some uncertainty, the item was classified as ISD.

The majority of munitions items recovered from the MRA were in the low-lying areas (Figures 6.2-1 and 6.3-1). The majority of the items were related to mine and booby trap training with a scattering of items consistent with the types of training that occurred in the Parker Flats MRA Phase I to the south.

The majority of the MD reported during previous removal actions were in the easternmost portion of the MRA, with most grids containing 10 or more pounds of MD (Figure 6.3-3). MD was likely encountered in the western portion of the MRA, but not documented, during previous investigations. Nearly all of the grids in the western portion of MRS-31 indicate that no MD was encountered. The MD identified on Figures 6.3-1 and 6.3-3 includes SAS but not SAA.

All of the MEC removed from the MRA were located within 4 feet bgs. The majority of the MEC items were reportedly encountered on the surface; however, it is suspected that the exact depth of items was not documented. Figure 6.3-4 shows the distribution of MEC recovered at specified depth intervals.

### 6.3.4 HTW History and Conditions

A BRA was conducted by the Army to evaluate the potential presence of COCs related to HTW at known or suspected small arms ranges, and military munitions training sites within the former Fort Ord (Shaw/MACTEC 2006). The areas are identified as HAs. The objectives of the BRA investigation activities were to identify which HAs could be eliminated from consideration for potential remediation related to COCs, and to identify areas that require additional investigation for potential chemical contamination or should be considered for remediation/habitat mapping related to COCs.

Additionally, IRP Site 39B (Inter-Garrison Site) is located within the CSUMB MRA. The interim action at IRP Site 39B included the excavation and removal of approximately 164 cubic yards of soil mixed with debris from two locations. The soil contained semivolatile organic compounds and total petroleum hydrocarbons. Post-remediation evaluation indicated that no further threat to human health or the environment is expected and no further

investigation or remediation was recommended. The U.S. EPA and the DTSC concurred that no further action was necessary at Site 39B (Army 2007).

Table 6.3-5 summarizes the findings of the BRA with respect to HTW for each MRS. As stated in the draft FOSET, based on the BRA, no further action has been recommended for HAs within this MRA (Army 2007).

### 6.3.5 Regulatory Status

Work completed to date has been documented in after action reports, which have received regulatory reviews; however, the regulatory agencies have identified the following outstanding issues:

- The CERCLA process must be completed for the CSUMB MRA, including development of an RI/FS, development of a Proposed Plan, and completion of a ROD.
- Additional quality assurance and MEC removal, if necessary, must be completed in areas proposed for residential development within the MRA.

## 6.4 CSUMB MRA Land Use and Exposure Profile

The land use and exposure profile provides information on the MRA with respect to cultural resources, the current and reasonably foreseeable future uses of the land, and the potential human receptors that may be exposed to military munitions.

### 6.4.1 Cultural Resources

According to archaeological records, the greater Monterey Peninsula was occupied by Native American groups, including the Ohlone (Costanoan) Indians (EA 1991). Monterey County has designated the southeastern margin of the former Fort Ord as an archaeologically sensitive zone based on two known archaeological sites (EA 1991). The remaining portions of the former Fort Ord have been designated as having low or no archaeological sensitivity. The CSUMB MRA is located in the north-central portion of the former Fort Ord in an area designated as having low archaeological sensitivity.

Actions to be taken at the CSUMB MRA will be in compliance with the Programmatic Agreement Among the Department of the Army, the Advisory Council on Historic Preservation, and the California State Historic Preservation Officer Regarding the Base Closure and Realignment Actions at Fort Ord, California.

### 6.4.2 Current Land Use

The current use of the MRA includes habitat. There are residual structures that were in support of the training at the MRA, but these have been abandoned. Reportedly, the area is accessed by day recreational users, including hikers and mountain bikers. There is also evidence of trespasser activity and illegal dumping.

### 6.4.3 Reasonably Foreseeable Future Land Use

Table 6.4-1 and Figure 6.4-1 identify the proposed uses of the MRA by parcel. As indicated in the Base Reuse Plan, this area is planned for development and habitat reuse. It is important to note that the general development land use category encompasses infrastructure activities such as roadway and utility construction as well as commercial/retail, parks, and borderland activities.

### 6.4.4 Potential Receptors

A number of potential human receptors that could come in contact with residual MEC have been identified for current and future land use scenarios. The potential human receptors include:

- Construction Workers (persons conducting surface and subsurface construction activities) – current/future
- Utility Workers (persons installing and maintaining surface and subsurface utilities) - current/future
- Trespassers (persons not authorized to enter or use an area) – current/future
- Firefighters (may require installation of fire breaks) – current/future
- Emergency Response Workers (police and emergency medical technicians conducting surface activities) – current/future
- Ancillary Workers (biologist, archaeologists) – current/future
- Residents (persons residing in the area conducting surface and subsurface activities) – future
- Recreational Users (persons biking and on foot) – future

## 6.5 CSUMB MRA Ecological Profile

The ecological profile provides information on the MRA with respect to biological resources, plant communities and habitats, threatened and endangered species, and habitat management. This information is discussed below and provided in Table 6.5-1.

As discussed in Section 6.3.4, COCs related to HTW have been previously addressed and no further action was recommended. Therefore, potential exposure of ecological receptors to the primary risk factors has been mitigated to an acceptable level and ecological receptor exposure is not considered further in this CSM.

The HMP identifies the CSUMB MRA as development with borderland development areas along an NRMA interface (Figure 6.5-1). The NRMA separates the development category land from the adjacent habitat reserve area. The NRMA and habitat reserve areas support plant and animal species that require implementation of mitigation measures identified in the HMP to ensure compliance with the ESA and to minimize impacts to listed species.

FORA will implement the mitigation requirements identified in the HMP for MEC activities in accordance with the BOs developed during formal consultation between the Army and the USFWS under Section 7 of the ESA. For borderland areas, FORA will follow best management practices while conducting work to prevent the spread of exotic species, limit erosion, and limit access to the NRMA.

### 6.5.1 Major Plant Communities and Ecological Habitats

Vegetation in the CSUMB MRA consists primarily of coastal coast live oak woodland with smaller areas of maritime chaparral and grassland. Vegetation varies from sparsely vegetated areas to heavy brush. Past field activities have noted the presence of poison oak in the area.

### 6.5.2 Threatened and Endangered Species

Special-status biological resources are those resources, including plant, wildlife, and native biological communities, that receive various levels of protection under local, state, or federal laws, regulations, or policies. The closure and disposal of former Fort Ord is considered a major federal action that could affect several species proposed for listing or listed as threatened or endangered under the federal ESA.

The HMP for former Fort Ord complies with the USFWS BOs and establishes the guidelines for the conservation and management of wildlife and plant species and habitats that largely depend on former Fort Ord land for survival (USACE 1997b). The HMP incorporated conservation measures pursuant to USFWS BOs dated prior to issuance of the HMP in April 1997. Since April 1997, three additional BOs have been issued that are relevant to MEC removal activities (USFWS 1999, 2002, and 2005). Future MEC remediation is required to be consistent with the applicable conservation measures.

The Monterey spineflower is a threatened plant species and has been identified as having possible occurrence in the CSUMB MRA.

In 2004, the CTS was identified as a threatened species. CTS may be found as far as 2 km from aquatic breeding habitats. As shown on Figure 6.5-1, it is possible the CTS may be found in the CSUMB MRA as the MRA is within 2 km of aquatic features that may provide breeding habitat for the CTS.

### 6.5.3 Other Communities and Species of Concern

As identified in the HMP, a number of species could be found on the CSUMB MRA, which have been identified in Table 6.5-2 by parcel. The vegetation on the MRA consists primarily of native woodland oaks and grasslands. The following species are identified in the HMP as having possible occurrence in the CSUMB MRA: California black legless lizard and the Monterey ornate shrew.

## 6.6 CSUMB MRA Pathway Analysis

As discussed in Sections 6.3.4 and 6.5, potential exposure of human and ecological receptors to COCs related to the HTW program has been evaluated by the Army; based on the Army's evaluation in the FOSET, no further action relative to the COCs is required under the ESCA RP. Therefore, no further discussion of potential exposure to human or ecological receptors to COCs relative to the HTW program is presented in this pathway analysis. The primary focus of the exposure pathway analysis is for human health risk from MEC that are potentially present.

### 6.6.1 Exposure Pathways

An exposure pathway analysis was conducted for the CSUMB MRA using the information gathered in the CSM profiles. Exposure pathways include a source, access, receptor, and activity. The likelihood of exposure, however, has been significantly reduced as a result of previous removal actions by the Army. Exposure pathways for the CSUMB MRA are presented on Figure 6.6-1 and discussed below.

#### *Source*

Source areas within the CSUMB MRA were addressed during the Army's previous removal actions. The historical source areas within the CSUMB MRA are shown on Figure 6.1-3, and recovered MEC and MD from the MRA are shown on Figures 6.3-1, 6.3-2, and 6.3-3. The source areas include troop training and maneuver areas.

Figure 6.6-2 illustrates the most likely release mechanisms for MEC being found in the CSUMB MRA, which included:

- Firing, Intentional Placement, Mishandling/Loss, Abandonment, and Burial (Troop Training and Maneuvers)

#### *Access*

Access to the CSUMB MRA is not restricted by fencing or road barricades.

#### *Receptor / Activity*

Table 6.6-1 identifies the potential human receptors and exposure media as Ground Surface or Below Grade. The activities of all identified human receptors should not result in exposure to residual MEC during surface and intrusive activities, because a removal action was conducted in the entire area and the majority of the items removed from the MRA were not penetrating.

### 6.6.2 Exposure Pathway Analysis

As discussed above, Figure 6.6-1 graphically presents the exposure pathways analysis for the CSUMB MRA. The graphic shows that the current and future pathways for activities in the CSUMB MRA are all incomplete. Considering the historical use and variety of MEC encountered, it is likely that the MEC items previously removed from the MRA were intentionally placed, lost, or abandoned.

There remain uncertainties in the data regarding MD and MEC items encountered in the central and western portions of MRS-31. Items considered "live" at the time of data collection may have been DMM or MD, and the exact location and depth of items were not documented. As a result of this uncertainty, most of the MEC items in this area were identified as ISD. Also, MD data for this area may not be complete in the MMRP database or were not documented at the time of the removal actions conducted by the Army.

## 6.7 CSUMB MRA Conclusions and Recommendations

Potential exposure of human and ecological receptors to COCs related to the HTW program has been evaluated by the Army; based on the Army's evaluation in the FOSET, no further action relative to the COCs is required under the ESCA RP. The CSM has identified a potential for human health risk associated with residual (or potentially present) MEC in the CSUMB MRA.

As required by the AOC, the SEDR provides conclusions and recommendations for each MRA. Generally, the SEDR recommendations identify that a particular MRA falls into one or more of the following categories:

- No response action or no further response action is appropriate
- Response action is necessary
- Additional data are required to fill data gaps
- Proceed to RI

The MEC encountered within the CSUMB MRA are consistent with the historical use as a troop training area. However, data gaps, uncertainties, and/or open regulatory issues have been identified and must be addressed prior to receiving regulatory closure and implementing the planned reuse of the MRA. Therefore, the CSUMB MRA falls into the category of proceed to RI. Based on the information as presented in the CSM for CSUMB MRA, the recommendation is:

- Proceed with Documentation – Prepare RI/FS and subsequent ROD.

The proposed pathway to regulatory closure incorporating the above recommendations is presented in Section 13.0 of this SEDR.

Table 6.1-1
CSUMB MRA –Parcel Numbers, Acreage, and MRS Identifiers

| USACE Parcel Number (for land transfer) | Acreage (approximate) | MRS Identifier |
|---|---|---|
| S1.3.2 (western portion) | 50 | MRS-13C and MRS-31 (includes MRS-7) |
| S1.3.2 (eastern portion) | 283 | MRS-13C and MRS-31 (includes MRS-04C, MRS-08, and MRS-18) |
| **MRA TOTAL** | 333 | |

Table 6.1-2
CSUMB MRA – Site Features

| Feature | Description |
|---|---|
| Roadways | • Inter-Garrison Road, located immediately to the north of the MRA, is an active roadway with vehicle traffic on a daily basis. This is a major roadway of the FORA transportation network.<br>• A number of unpaved roadways and dirt trails are located throughout the MRA. |
| Structures and Utilities | • MRA is not served by any utilities.<br>• A telephone line, electrical line, high-powered transmission line, storm-drain line, and natural gas line extend onto or cross a portion of the MRA in various locations.<br>• Three short storm-drain lines also extend onto the MRA from the CSUMB campus property located to the southwest. |
| Fencing and Access | • No fencing or barriers are present on the MRA and, therefore, the MRA is accessible to day users.<br>• No trespassing and warning signs are posted intermittently along Inter-Garrison Road. |

Table 6.1-3
CSUMB MRA – Existing Structures and Buildings

| Parcel Number | Facility Number | Area (square feet) | Description | Asbestos-Containing Material | Lead-Based Paint | Year Built |
|---|---|---|---|---|---|---|
| S.1.3.2 | 4545 | 165 | Gas Station Building | rated 6 to 13 | YES | 1977 |
| S.1.3.2 | 4B13 | 175 | Field Latrines | rated 6 to 13 | Unknown | Unknown |

Table 6.1-4
CSUMB MRA – Historical Military Use

| Location | Description |
|---|---|
| MRS-31 (includes MRS-04C, MRS-07, MRS-08, and MRS-18) | • Historical maps indicate that this area was used for training and maneuvers including mine and booby trap training. troop training and maneuver area.<br>• A CBR training area appears on 1957 and 1958 maps (USACE 1997a).<br>• Mine and booby trap training areas appear on 1956 and 1957 maps (USACE 1997a).<br>• Mine training might have included the use of practice mines. Based on practices described in field manuals, it is likely that, during training, the trainees would learn to mark practice mine locations as well as perform practice mine removal operations. (Shaw/MACTEC 2006).<br>• Firing devices would be associated with Booby Trap training. These firing devices contain no energetic materials (e.g., pyrotechnic charges), unless the coupling base is attached (Shaw/MACTEC 2006).<br>• It is possible that CBR training may have included tear gas agents and hand grenades containing tear gas agents. It is possible that Chemical Agent Identification Sets were used at CBR training areas (Shaw/MACTEC 2006). |
| MRS-13C | • Historical maps indicate that this area was used for Tactical Training, Mortar Squares (Non-Firing Mortar Training), and Practice Mortar Training (USACE 1997a).<br>• Tactical Training areas are found within training and maneuver areas. A training and maneuver area may have included using the area for squad patrol. Combat patrols would include the use of blank SAA, and possibly pyrotechnics and smoke-producing items (e.g. signal, flares, and smoke grenades) (Shaw/MACTEC 2006).<br>• Fort Ord training facilities maps indicate that bleachers were present at the practice mortar range. Munitions found to the south (in the Parker Flats MRA Phase I) are consistent with mortar training (Shaw/MACTEC 2006). |

Table 6.1-5
CSUMB MRA – Administrative Controls

| Type | Description |
|---|---|
| Land Use Covenants | • To further ensure protection of human health and the environment, the Army has agreed to enter into CRUPs with the State of California. The CRUPs place additional use restrictions on all of the transferring property, as appropriate.<br>• Due to Fort Ord's former use as a military installation, the property may contain MEC and there remains a risk of encountering subsurface MEC. Any person conducting ground-disturbing or intrusive activities (e.g., digging or drilling) must comply with the applicable municipal code. Any alterations, additions, or improvements to the property in any way that may violate excavation restrictions are prohibited. No actual or potential hazard exists on the surface of the property from MEC that may be in the subsurface of the property provided the CRUPs are adhered to (Army 2007)<br>• The CRUPs are defined in the "Memorandum of Agreement Among the Fort Ord Reuse Authority, Monterey County and Cities of Seaside, Monterey, Del Rey Oaks and Marina, California State University Monterey Bay, University of California Santa Cruz, Monterey Peninsula College, and the Department of Toxics Substances Control Concerning the Monitoring and Reporting of Environmental Restrictions on the Former Fort Ord, Monterey County, California."<br>• These restrictions involve the enforcement of site review and reporting requirements and agency cost recovery/reimbursement requirements as imposed by the DTSC. |
| Restrictions to Digging / Excavation | • Monterey County Ordinance 16.10 prohibits excavation, digging, development, or ground disturbance of any type on the former Fort Ord that involves the displacement of 10 or more cubic yards of soil without approval. |
| FORA Resolution 98-1 | • An approved FORA resolution that contains proposed and suggested measures to avoid or minimize hazardous material impact. |
| ESCA MOA | • MOA between FORA and the jurisdictions for the purpose of defining terms of an agreement for holding and managing (ownership and responsibilities) property while remedial work is accomplished under an ESCA.<br>• MOA establishes FORA's ownership during the MEC remediation period; identifies that jurisdictions need to provide public safety response from police, fire, and other emergency personnel as needed; establishes control of access to ESCA properties during the MEC remediation period; and agreement that access to properties will be governed by the restrictions included in the Land Use Covenant accompanying the transfer of the property. |
| Habitat Management Plan | • The HMP incorporated conservation measures pursuant to USFWS BOs dated prior to issuance of the HMP in April 1997. Specific MEC activities were addressed in Chapter 3 of the HMP (USACE 1997b). |
| Biological Opinions | • Since the release of the HMP, three additional BOs have been issued that are relevant to the MEC remediation period (USFWS 1999, 2002, and 2005). Accordingly, some information has been updated and additions have been made to the sections that address MEC activities.<br>• Future MEC work is required to be consistent with the applicable conservation measures. |

Table 6.2-1
CSUMB MRA – Geology and Soils

| Type | Description |
|---|---|
| General Geology | • The former Fort Ord is located within the Coast Ranges Geomorphic Province, which consists of northwest-trending mountain ranges, broad basins, and elongated valleys generally paralleling the major geologic structures.<br>• The former Fort Ord is located at the transition between the mountains of the Santa Lucia Range and the Sierra de la Salinas to the south and southeast, respectively, and the lowlands of the Salinas River Valley to the north.<br>• The geology of the former Fort Ord generally reflects this transitional condition. Older, consolidated rocks are characteristically exposed in the mountains near the southern base boundary but are buried under a northward-thickening sequence of younger, unconsolidated alluvial fan and fluvial sediments in the valleys and lowlands to the north. In the coastal lowlands, these younger sediments commonly interfinger with marine deposits.<br>• The former Fort Ord and the adjacent areas are underlain, from depth to ground surface, by one or more of the following older, consolidated units: Mesozoic granite and metamorphic rocks; Miocene marine sedimentary rocks of the Monterey Formation; and upper Miocene to lower Pliocene marine sandstone of the Santa Margarita Formation (and possibly the Pancho Rico and/or Purisima Formations).<br>• Locally, these units are overlain and obscured by geologically younger sediments, including: Pliocene-Pleistocene alluvial fan, lake, and fluvial deposits of the Paso Robles Formation; Pleistocene eolian and fluvial sands of the Aromas Sand; Pleistocene to Holocene valley fill deposits consisting of poorly consolidated gravel, sand, silt, and clay; Pleistocene and Holocene dune sands; recent beach sand and alluvium.<br>• Depth to groundwater is likely to be more than 100 feet bgs. Layers of perched groundwater may be present. |
| Topography and Soils | • Terrain consists of rolling hills.<br>• Elevation ranges from approximately 240 to 370 feet msl with 2 to 15 percent slopes.<br>• The surface soils are characterized as eolian (sand dune) and terrace (river deposits); which consist of unconsolidated materials of the Aromas and Old Dune Sand formations.<br>• The primary soil type present in the MRA is Oceano Loamy Sand with 2 to 15 percent slopes. |

References: EA 1991, HLA 1995, and the Fort Ord MMRP Database

Table 6.2-2
CSUMB MRA – Vegetation

| USACE Parcel Number | MRS Identifier | Vegetation |
|---|---|---|
| S1.3.2 (western portion) | MRS-13C and MRS-31 (includes MRS-7) | Coastal coast live oak woodland |
| S1.3.2 (eastern portion) | MRS-13C and MRS-31 (includes MRS-04C, MRS-08, and MRS-18) | Coastal coast live oak woodland, maritime chaparral, and grassland |

Reference: USACE/Jones & Stokes 1992

Table 6.3-1
CSUMB MRA – Investigation, Sampling, and Removal Activities

| Activity | Summary |
|---|---|
| MRS-13C | • Based on the results of munitions response investigations conducted at adjacent locations in 1994, a munitions response removal to a depth of 4 feet was conducted over the entire MRS in 1997 (USA 2000e). |
| MRS-31 | • Initial investigations at MRS-04C, MRS-07, MRS-08, and MRS-18, within MRS-31, were conducted in 1994 (HFA 1994) .<br>• Based on the results, 3-foot and 4-foot removals were conducted throughout the MRS.<br>• The 3-foot removal action was conducted in the western three quarters of the MRS, identified as the CSU Footprint by HFA (HFA 1994).<br>• The 4-foot removal action was conducted in two areas: the eastern portion of the MRS (nearly 70 acres identified as Site CSU by UXB) (UXB 1995d) and the north-central portion of the MRS in CSU Footprint (approximately 6 acres identified as Site HFA/CSU) (UXB 1995e). |

Table 6.3-2
CSUMB MRA – Types of MEC Removed and Hazard Classification

| MEC ITEMS | UXO | DMM | ISD | Hazard Classification |
|---|---|---|---|---|
| 106mm Recoilless Training Round (Projectile, Fuze, and Canister) (Model Unknown) | 0 | 0 | 1 | 0 |
| 3.5-inch Rocket (Model Unknown) | 0 | 0 | 1 | 0 |
| 40mm Airburst Flare (Model Unknown) | 0 | 0 | 2 | 0 |
| 40mm Base Fuze (Model Unknown) | 0 | 0 | 1 | 0 |
| 40mm Flare (Model Unknown) | 0 | 0 | 3 | 0 |
| 40mm Flare Pistol (Model Unknown) | 0 | 0 | 3 | 0 |
| 40mm Illuminating (Model Unknown) | 0 | 0 | 5 | 0 |
| 40mm Illuminating M58 (Model Unknown) | 0 | 0 | 1 | 0 |
| 40mm Pistol Flare (Model Unknown) | 0 | 0 | 1 | 0 |
| 40mm Signal Ground Flare (Model Unknown) | 0 | 0 | 1 | 0 |
| 40mm Smoke (Model Unknown) | 0 | 0 | 2 | 0 |
| 40mm, Illuminating (Star only) (Model Unknown) | 0 | 0 | 1 | 0 |
| 60mm Illuminating (Model Unknown) | 0 | 0 | 12 | 0 |
| 81mm, M3, Prop Charge (Model Unknown) | 0 | 0 | 1 | 0 |
| Activator, mine, antitank, practice, M1 | 0 | 0 | 7 | 1 |
| Air Illuminating (Slap Flare) (Model Unknown) | 0 | 0 | 1 | 0 |
| Aircraft Signal (Model Unknown) | 0 | 0 | 1 | 0 |
| Base Compound (Model Unknown) | 0 | 0 | 1 | 0 |
| Base, coupling, firing device | 2 | 0 | 2 | 1 |
| Bulk, HE (model unknown) * | 0 | 0 | 0 | NS |
| Cap, blasting, electric, M6 | 19 | 0 | 25 | 1 |
| Cap, blasting, non-electric, M7 | 1 | 0 | 0 | 1 |
| Cart M3 (Model Unknown) | 0 | 0 | 60 | 0 |
| Cart M6 (Model Unknown) | 0 | 0 | 18 | 0 |
| Cart M7 (Model Unknown) | 0 | 0 | 50 | 0 |
| Charge, 0.25 pound, demolition, TNT | 1 | 0 | 0 | 2 |
| Charge, 0.5 pound, demolition, TNT | 77 | 0 | 26 | 2 |
| Compound Slag and OEW (Model Unknown) * | 0 | 0 | 0 | 0 |
| Dragon Simulators (Model Unknown) | 0 | 0 | 2 | 0 |
| Electrical, Booby Trap, Simulators (Model Unknown) | 0 | 0 | 1 | 0 |
| Firing Device, M10 (Model Unknown) | 0 | 0 | 5 | 0 |

Table 6.3-2
CSUMB MRA – Types of MEC Removed and Hazard Classification

| MEC ITEMS | UXO | DMM | ISD | Hazard Classification |
|---|---|---|---|---|
| Firing Device, M57 (Model Unknown) | 0 | 0 | 1 | 0 |
| Firing device, multi-option, M142 | 0 | 0 | 1 | 1 |
| Firing device, pull friction, M2 | 0 | 0 | 6 | 1 |
| Firing device, pull, M1 | 0 | 0 | 62 | 1 |
| Firing device, release, M1 | 0 | 0 | 2 | 1 |
| Firing device, release, M5 | 2 | 0 | 84 | 1 |
| Firing device, tension and release, M3 | 0 | 0 | 38 | 1 |
| Flare Motor (Model Unknown) | 0 | 0 | 8 | 0 |
| Flare Part (Model Unknown) | 0 | 0 | 1 | 0 |
| Flare Rocket Motor (Model Unknown) | 0 | 0 | 41 | 0 |
| Flare Signal (Model Unknown) | 0 | 0 | 1 | 0 |
| Flare, parachute, trip, M48 | 1 | 0 | 11 | 2 |
| Flare, Signal, M18A1 (Model Unknown) | 0 | 0 | 44 | 0 |
| Flare, surface, trip, M49 series | 3 | 0 | 31 | 1 |
| Flash Bang (Model Unknown) | 0 | 0 | 1 | 0 |
| Flash, Bang, M47 (Model Unknown) | 0 | 0 | 2 | 0 |
| Frag Bomb Fuze (Model Unknown) * | 0 | 0 | 0 | 0 |
| Fuze, grenade (model unknown) | 0 | 0 | 39 | 1 |
| Fuze, grenade, hand, M10 series | 2 | 0 | 10 | 1 |
| Fuze, grenade, hand, practice, M205 series | 0 | 0 | 74 | 1 |
| Fuze, grenade, hand, practice, M228 | 1 | 0 | 3 | 1 |
| Fuze, M12 (Model Unknown) | 0 | 0 | 3 | 0 |
| Fuze, mine, antitank, practice, M604 | 0 | 0 | 15 | 1 |
| Fuze, mine, combination, M10 series | 0 | 0 | 4 | 1 |
| Fuzes (Model Unknown) | 0 | 0 | 14 | 0 |
| Grenade, hand, fragmentation, MK II | 0 | 0 | 4 | 3 |
| Grenade, hand, Illumination, MK I | 2 | 0 | 21 | 1 |
| Grenade, hand, incendiary, TH3, AN-M14 | 0 | 0 | 1 | 1 |
| Grenade, Hand, Practice (Model Unknown) | 0 | 0 | 1 | 0 |
| Grenade, hand, practice, M21 | 0 | 0 | 1 | 1 |
| Grenade, hand, practice, M30 | 0 | 0 | 4 | 1 |

Table 6.3-2
CSUMB MRA – Types of MEC Removed and Hazard Classification

| MEC ITEMS | UXO | DMM | ISD | Hazard Classification |
|---|---|---|---|---|
| Grenade, hand, practice, MK II | 3 | 0 | 14 | 1 |
| Grenade, hand, riot, CS, M7A3 | 1 | 0 | 13 | 1 |
| Grenade, hand, riot, CS-1, ABC-M25A2 | 0 | 0 | 2 | 1 |
| Grenade, hand, smoke, HC, AN-M8 | 0 | 0 | 4 | 1 |
| Grenade, hand, smoke, M18 series | 4 | 0 | 36 | 1 |
| Grenade, hand, smoke, WP, M15 | 0 | 0 | 2 | 3 |
| Grenade, M33, Practice, WP (Model Unknown) | 0 | 0 | 1 | 0 |
| Grenade, rifle, antitank, practice, M11 series | 0 | 0 | 6 | 0 |
| Grenade, Rifle, Flare (Model Unknown) | 0 | 0 | 10 | 0 |
| Grenade, rifle, smoke (model unknown) | 0 | 0 | 3 | 3 |
| Grenade, rifle, smoke, M22 series | 18 | 0 | 0 | 1 |
| Grenade, rifle, smoke, M23 series | 1 | 0 | 3 | 1 |
| Grenade, rifle, smoke, WP, M19A1 | 1 | 0 | 3 | 3 |
| Grenades Simulator (Model Unknown) | 0 | 0 | 2 | 0 |
| HE (Model Unknown) * | 0 | 0 | 0 | 0 |
| Igniter, time fuse, blasting, M60 | 0 | 0 | 1 | 1 |
| Illuminating Grenade (Model Unknown) | 0 | 0 | 7 | 0 |
| Illuminating Material Flash Ground (Model Unknown) | 0 | 0 | 7 | 0 |
| M1 Rifle Smoke Partial (Model Unknown) | 0 | 0 | 1 | 0 |
| M2 Practice Mine (Model Unknown) | 0 | 0 | 2 | 0 |
| M8 Electric Cap (Model Unknown) | 0 | 0 | 1 | 0 |
| Material Flash Sound (Model Unknown) | 0 | 0 | 13 | 0 |
| Mine, antipersonnel, practice, M2A1B1 | 0 | 0 | 11 | 1 |
| Mine, antipersonnel, practice, M68 (claymore) | 0 | 0 | 6 | 0 |
| Mine, antipersonnel, practice, M8 series | 0 | 0 | 8 | 1 |
| Mine, antitank, practice (model unknown) | 0 | 0 | 9 | 1 |
| Mine, antitank, practice, M1 | 2 | 0 | 0 | 1 |
| Mine, antitank, practice, M10 | 0 | 0 | 1 | 1 |
| Mine, antitank, practice, M12 series | 0 | 0 | 9 | 1 |
| Mine, antitank, practice, M1A1 | 0 | 0 | 2 | 1 |
| Mine, antitank, practice, M20 | 0 | 0 | 11 | 1 |

Table 6.3-2
CSUMB MRA – Types of MEC Removed and Hazard Classification

| MEC ITEMS | UXO | DMM | ISD | Hazard Classification |
|---|---|---|---|---|
| MK2 Grenade (Model Unknown) | 0 | 0 | 1 | 0 |
| MK2 Hand Grenade (Model Unknown) | 0 | 0 | 1 | 0 |
| Ordnance Components | 4 | 0 | 1 | NS |
| Parachute Flare Rocket Motor (Model Unknown) | 0 | 0 | 105 | 0 |
| Pistol Flare (Model Unknown) | 0 | 0 | 1 | 0 |
| Pot, 2.5 pounds, smoke, HC, screening, M1 | 0 | 0 | 1 | 1 |
| Practice Grenade (Model Unknown) | 0 | 0 | 3 | 0 |
| Practice Grenade Red Filler (Model Unknown) | 0 | 0 | 1 | 0 |
| Primer (Model Unknown) * | 0 | 0 | 0 | 0 |
| Primer, Percussion (Model Unknown) | 0 | 0 | 7 | 0 |
| Projectile, 105mm, with Fuze (Model Unknown) | 0 | 0 | 1 | 0 |
| Projectile, 20mm, TPT (Model Unknown) | 0 | 0 | 1 | 0 |
| Projectile, 22mm, subcaliber, practice, M744 | 2 | 0 | 0 | 1 |
| Projectile, 37mm (Model Unknown) | 0 | 0 | 1 | 0 |
| Projectile, 37mm, armor piercing tracer, M80 | 1 | 0 | 1 | 0 |
| Projectile, 40mm, parachute, illumination, M583 series | 0 | 0 | 2 | 1 |
| Projectile, 40mm, parachute, star, M662 | 1 | 0 | 1 | 1 |
| Projectile, 40mm, practice, M382 | 2 | 0 | 0 | 1 |
| Projectile, with Fuze MK2/Mod12, 1.1-inch (Model Unknown) | 0 | 0 | 1 | 0 |
| Pull Flare Device (Model Unknown) | 0 | 0 | 2 | 0 |
| Pyrotechnic mixture, illumination | 0 | 0 | 3 | 1 |
| Pyrotechnic mixture, smoke | 1 | 0 | 9 | 1 |
| Rifle Flare (Model Unknown) | 0 | 0 | 2 | 0 |
| Rifle Grenade Detonation (Model Unknown) | 0 | 0 | 6 | 0 |
| Rifle Grenade Illumination (Model Unknown) | 0 | 0 | 1 | 0 |
| Rifle Grenade Red Smoke (Model Unknown) | 0 | 0 | 2 | 0 |
| Rifle Grenades (Model Unknown) | 0 | 0 | 16 | 0 |
| Rocket, 2.36-inch, high explosive antitank, M6 | 0 | 0 | 2 | 3 |
| Rocket, 2.36-inch, practice, M7 | 0 | 0 | 5 | 0 |
| Rocket, 3.5-inch, practice, M29 series | 0 | 0 | 5 | 0 |
| Rocket, 35mm, subcaliber, practice, M73 | 0 | 0 | 6 | 1 |

Table 6.3-2
CSUMB MRA – Types of MEC Removed and Hazard Classification

| MEC ITEMS | UXO | DMM | ISD | Hazard Classification |
|---|---|---|---|---|
| Signal Flash Sound (Model Unknown) | 0 | 0 | 10 | 0 |
| Signal, Illumination (Model Unknown) | 0 | 0 | 5 | 0 |
| Signal, illumination, aircraft, AN-M37 series | 2 | 0 | 0 | 1 |
| Signal, illumination, comet 1260 | 0 | 0 | 5 | 1 |
| Signal, illumination, ground, M125 series | 19 | 0 | 21 | 2 |
| Signal, illumination, ground, parachute, rifle, M19 series | 0 | 1 | 2 | 1 |
| Signal, smoke, ground, M62 series | 0 | 0 | 1 | 1 |
| Simulator, detonation, explosive, M80 | 0 | 0 | 2 | 1 |
| Simulator, explosive booby trap, flash, M117 | 0 | 0 | 1 | 1 |
| Simulator, flash artillery, M110 | 0 | 0 | 1 | 1 |
| Simulator, grenade, hand, M116A1 | 0 | 0 | 12 | 2 |
| Simulator, launching, antitank guided missile and rocket, M22 | 5 | 0 | 3 | 1 |
| Simulator, projectile, airburst, M74 series | 11 | 0 | 40 | 1 |
| Slap Flare Motors (Model Unknown) | 0 | 0 | 29 | 0 |
| Slap Flare Tail Assembly (Model Unknown) | 0 | 0 | 35 | 0 |
| Smoke Grenade (Model Unknown) | 0 | 0 | 10 | 0 |
| Smoke Grenade Fuze (Model Unknown) | 0 | 0 | 1 | 0 |
| Smoke Pot (Model Unknown) | 0 | 0 | 4 | 0 |
| Smoke Rifle (Model Unknown) | 0 | 0 | 1 | 0 |
| Smoke, Grenade, Incendiary (Model Unknown) | 0 | 0 | 1 | 0 |
| Squib, Electric | 1 | 0 | 31 | 1 |
| Tow Spotting Charge (Model Unknown) | 0 | 0 | 1 | 0 |
| Trip Flare (Model Unknown) | 0 | 0 | 8 | 0 |
| **MRA TOTAL** | **190** | **1** | **1,362** | |

Note: NS – Not Specified

* - MMRP database identified item as either UXO or ISD with a quantity of zero.

Reference: Fort Ord MMRP Database

*Please note: Munitions descriptions have been taken directly from the Army's MMRP Database and/or other historical documents. Any errors in terminology, filler type, and/or discrepancies between model number and caliber/size are a result of misinformation from the data sources.*

Table 6.3-3
CSUMB MRA – Summary of Recovered MEC and MD

| Type | Summary |
|---|---|
| UXO | 190 items |
| DMM | 1 item |
| ISD | 1,362 items (potential MEC that could not be classified as either MEC or MD) |
| MD | 19,590 pounds (includes MD-E and MD-F items if weights were documented) |
| Aerial Extent | • The majority of the MD reported during previous removal actions were in the easternmost portion of the MRA, with most grids containing 10 or more pounds of MD (Figure 6.3-3).<br>• MD was likely encountered in the western portion of the MRA, but not documented, during previous investigations.<br>• Nearly all of the grids in the western portion of MRS-31 indicate that no MD was encountered. The MD identified on Figures 6.3-1 and 6.3-3 includes SAS but not SAA. |
| Vertical Extent | • All of the MEC items removed from the MRA were located within 4 feet bgs, with the MMRP database indicating that a majority of the MEC items encountered on the surface. Figure 6.3-4 shows the distribution of MEC recovered at specified depth intervals.<br>• No burial pits were reported in the MMRP database. However, an after action report indicates that burial pits containing training devices were removed from this area (HFA 1994). |

Table 6.3-4
CSUMB MRA – HTW History and Conditions

| Type | Summary |
|---|---|
| HA-104 (MRS-13C) | • The evaluation of HA-104 (MRS-13C) included a literature search, review of the information gathered during the munitions response, and site reconnaissance. Blank SAA casings and two expended signal flares were found, but no evidence of targets or range features were observed. Based on the review of the historical information and site reconnaissance, no further action related to MC was recommended for HA-104 under the BRA (Army 2007). |
| HA-161 and HA-161A-D (MRS-31) | • The evaluation of HA-161 (MRS-13C) and HA-161 A-D (MRS-04C, MRS-07, MRS-08, and MRS-18) included a literature search, review of the information gathered during the munitions response, and site reconnaissance. Blank SAA casings, three MD items (expended pyrotechnics), several fighting positions, trash pits, and range-related debris were observed during the reconnaissance. HA-92 (MRS-03) located to the south showed similar concentrations of MEC and numbers of trash pits during munitions response. Soil samples collected from HA-92 showed that concentrations of metals, total petroleum hydrocarbons, and semivolatile organic compounds were below action levels. Based on the review of the historical information and site reconnaissance and sampling results at HA-92, no further action related to MC was recommended for HA-161 and HA-161 A-D under the BRA (Army 2007). |
| IRP 39B | • IRP Site 39B (Inter-Garrison Site) is located within the CSUMB MRA. The interim action at IRP Site 39B included the excavation and removal of approximately 164 cubic yards of soil mixed with debris from two locations. The soil contained semivolatile organic compounds and total petroleum hydrocarbons. Post-remediation evaluation indicated that no further threat to human health or the environment is expected and no further investigation or remediation was recommended. The U.S. EPA and the DTSC concurred that no further action was necessary at Site 39B (Army 2007). |

Table 6.4-1
CSUMB MRA - Future Land Use by Parcel

| USACE Parcel Number | MRS Number | Land Use Category | Description | Acreage |
|---|---|---|---|---|
| S1.3.2 (western portion) | MRS-7, MRS-13C, MRS-31 | Residential | Single Family | 50 |
| S1.3.2 (eastern portion) | MRS-04C, MRS-08, MRS-13C, MRS-18, MRS-31 | Habitat | Open Space – Natural Landscape/Oak Groves | 283 |
| **MRA - TOTAL** | | | | **333** |

Table 6.5-1
CSUMB – Ecological Information

| Type | Summary |
|---|---|
| Biological | • Dominant vegetation in the area is coastal coast live oak woodland with smaller areas of maritime chaparral and grassland. These biological communities are described below:<br>  • Coast Live Oak Woodland and Savanna - The live oak woodland is an open-canopied to nearly closed-canopied community with a grass or sparsely scattered shrub understory. Oaks provide nesting sites and cover for birds and cover for many mammals. Common wildlife species in coast live oak woodland include black-tailed deer, California mouse, raccoon, California quail, scrub jay, and Nuttall's woodpecker. Red-tailed hawks and great-horned owls nest and roost in the inland coast live oak woodland, but probably make little use of the coastal oak woodland because the tightly spaced branches discourage them from entering the tree canopies.<br>  • Maritime chaparral is one of the dominant vegetation types within former Fort Ord, characterized by a wide variety of evergreen, sclerophyllus (hard-leaved) shrubs occurring in moderate to high density on sandy, well-drained substrates within the zone of coastal fog. This community is primarily dominated by shaggy-barked manzanita. Other species found in the shrub layer include chamise, toro manzanita, sandmat manzanita, toyon, blue blossom ceanothus, and Monterey ceanothus. The greatest diversity of wildlife species at former Fort Ord occurs in the chaparral. Birds such as orange-crowned warbler, rufous-sided towhee, and California quail nest in the chaparral. Small mammals such as California mouse and brush rabbit forage in this habitat and serve as prey for gray fox, bobcat, spotted skunk, and western rattlesnake.<br>  • Grasslands - Annual grasslands dominated by introduced species such as slender wild oats, soft chess, and ripgut brome are the most common grassland community within the former Fort Ord. Perennial grasslands are of two types at former Fort Ord: valley needlegrass grassland and blue wildrye. Common wildlife species include California ground squirrel, Heerman's kangaroo rat, narrow-faced kangaroo rat, western meadowlark, and kestrel. |
| Habitat Management Plan / Biological Opinions | • The USFWS BO required that an HMP be developed and implemented to reduce the incidental take of listed species and loss of habitat that supports these species. The HMP for former Fort Ord complies with the BO and establishes the guidelines for the conservation and management of wildlife and plant species and habitats that largely depend on former Fort Ord land for survival. The HMP incorporated conservation measures pursuant to BOs dated prior to issuance of the HMP in April 1997.<br>• To maintain compliance with habitat management and monitoring requirements presented in the HMP, biological resources are monitored after MEC removal activities have been completed. The HMP specifies mitigation measures to monitor the successful regeneration of species and habitat following removal of MEC. Monitoring includes conducting follow-up monitoring for a period of 5 years after MEC removal to document habitat conditions. Since the inception of the MEC removal program, the Army has elected to augment the monitoring program, where feasible, to include the collection of baseline data prior to MEC removal. Baseline data have been collected to provide additional information on preexisting species composition and distribution of herbaceous annual sensitive species. Both baseline and follow-up data are used to compare community regeneration to HMP success criteria.<br>• The HMP identifies the area as development with borderland development areas along the western portion of the MRA designated for residential reuse, and along portions of the southern and eastern boundaries adjacent to the NRMA interface. The NRMA separates the development category land from the adjacent habitat reserve area. The NRMA and |

Table 6.5-1
CSUMB – Ecological Information

| Type | Summary |
|---|---|
| | habitat reserve areas support plant and animal species that require implementation of mitigation measures identified in the HMP to ensure compliance with the ESA and to minimize impacts to listed species.<br>• The HMP identified principal management categories. The CSUMB MRA is identified as development (including residential) and borderlands interface. These principal management categories are defined as:<br>  • Development - lands in which no management restrictions are contained under the HMP. Some plans for salvage of biological resources for these parcels may be specified.<br>  • Borderland Development Area – lands abutting the NRMA that are slated for development. Management of these lands includes no restrictions except along the development/reserve interface.<br>• FORA will implement the mitigation requirements for MEC activities identified in the HMP in accordance with the BO developed during formal consultation between the Army and the USFWS under Section 7 of the ESA.<br>• Since April 1997, three additional BOs have been issued that are relevant to the MEC remediation activities (USFWS 1999, 2002, and 2005). Future MEC remediation is required to be consistent with the applicable conservation measures. |
| Threatened and Endangered Species | • Special-status biological resources are those resources, including plant, wildlife, and native biological communities, that receive various levels of protection under local, state, or federal laws, regulations, or policies. The closure and disposal of former Fort Ord is considered a major federal action that could affect several species proposed for listing or listed as threatened or endangered under the federal ESA.<br>• The Monterey spineflower is a threatened plant species and has been identified as having possible occurrence in the CSUMB MRA.<br>• In 2004, the CTS was identified as a threatened species. CTS may be found as far as 2 km from aquatic breeding habitats. Most of the CSUMB MRA is located within 2 km of an aquatic feature in which CTS may be present. |

Table 6.5-2
CSUMB MRA – HMP Category by Parcel and Possible Occurrence of HMP Species

| USACE Parcel Number | HMP Designated Use | HMP Species |
|---|---|---|
| S1.3.2 (western portion) | MRS-7, MRS-13C, MRS-31 | Monterey spineflower; California black legless lizard; Monterey ornate shrew |
| S1.3.2 (eastern portion) | MRS-04C, MRS-08, MRS-13C, MRS-18, MRS-31 | Monterey spineflower; California black legless lizard; Monterey ornate shrew; California tiger salamander |

Reference: USACE 1997b

Table 6.6-1
CSUMB MRA – Potential Receptors and Exposure Media

| Potential Receptor | Exposure Media | | | Exposure Media | | |
|---|---|---|---|---|---|---|
| | Current | Ground Surface | Below Grade | Future | Ground Surface | Below Grade |
| Construction Workers | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Utility Workers | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Trespassers | ✓ | ✓ | | ✓ | ✓ | |
| Firefighters | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Emergency Response Workers | ✓ | ✓ | | ✓ | ✓ | |
| Ancillary Workers | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Residents | | | | ✓ | ✓ | ✓ |
| Recreational Users | | | | ✓ | ✓ | ✓ |

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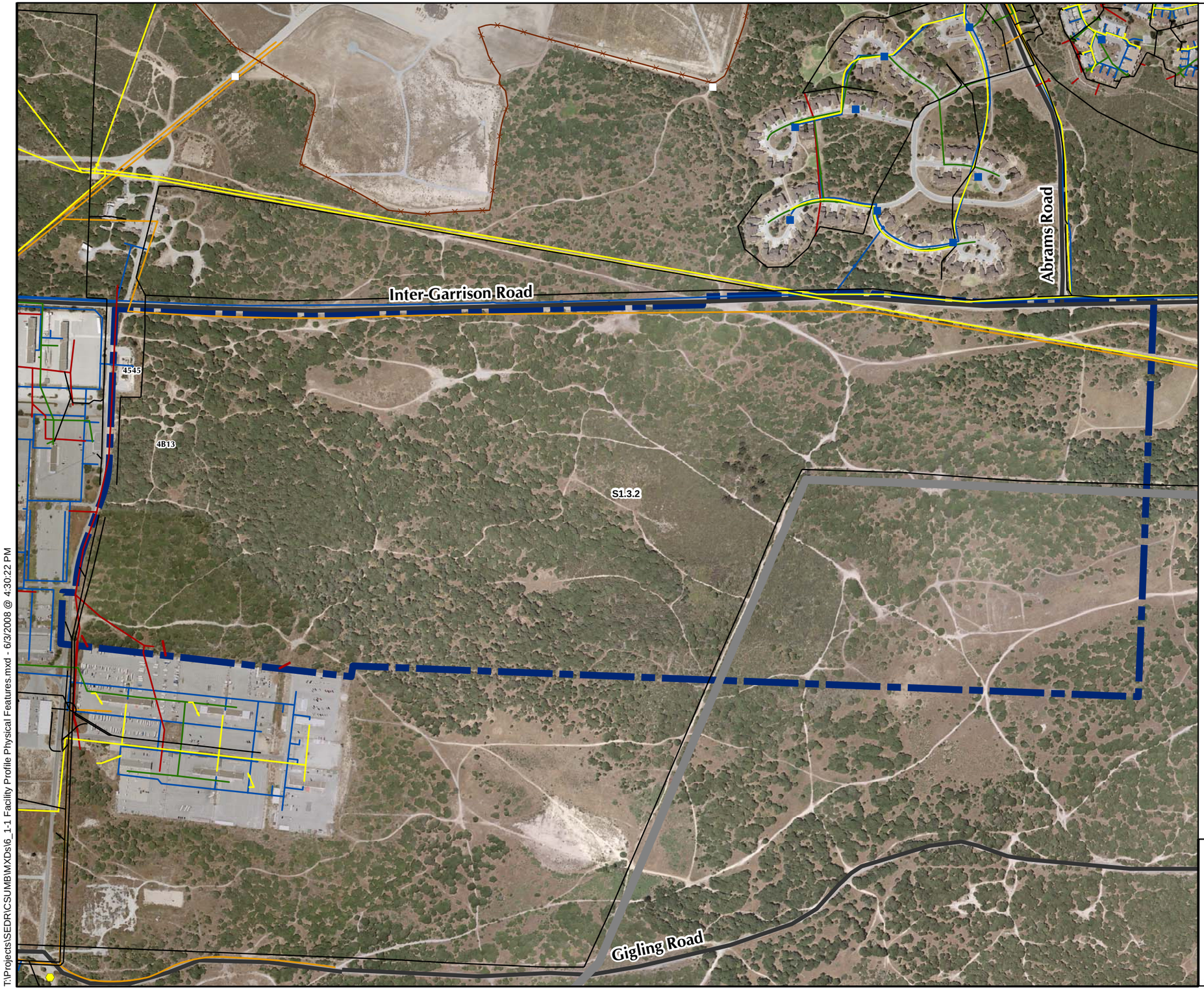
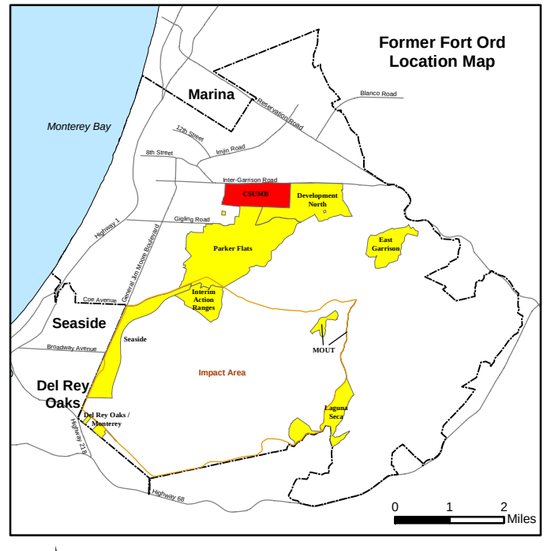



## Legend

- School
- Fire Station
- Gate
- Entry Forbidden Sign
- Sign
- Hydrant
- High-Power Transmission Line Tower
- Electrical Line Pole
- Munitions Response Area
- Major Road
- Electrical Line
- Fence
- Gas Line
- Storm Line
- Telephone Line
- Water Line
- Sewer Line
- High-Power Transmission Line and Right of Way
- R9211 Structure
- E23.1 USACE Parcel

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# CSUMB MRA Facility Profile Physical Features

FORA ESCA RP
Monterey County, California

**Figure 6.1-1**

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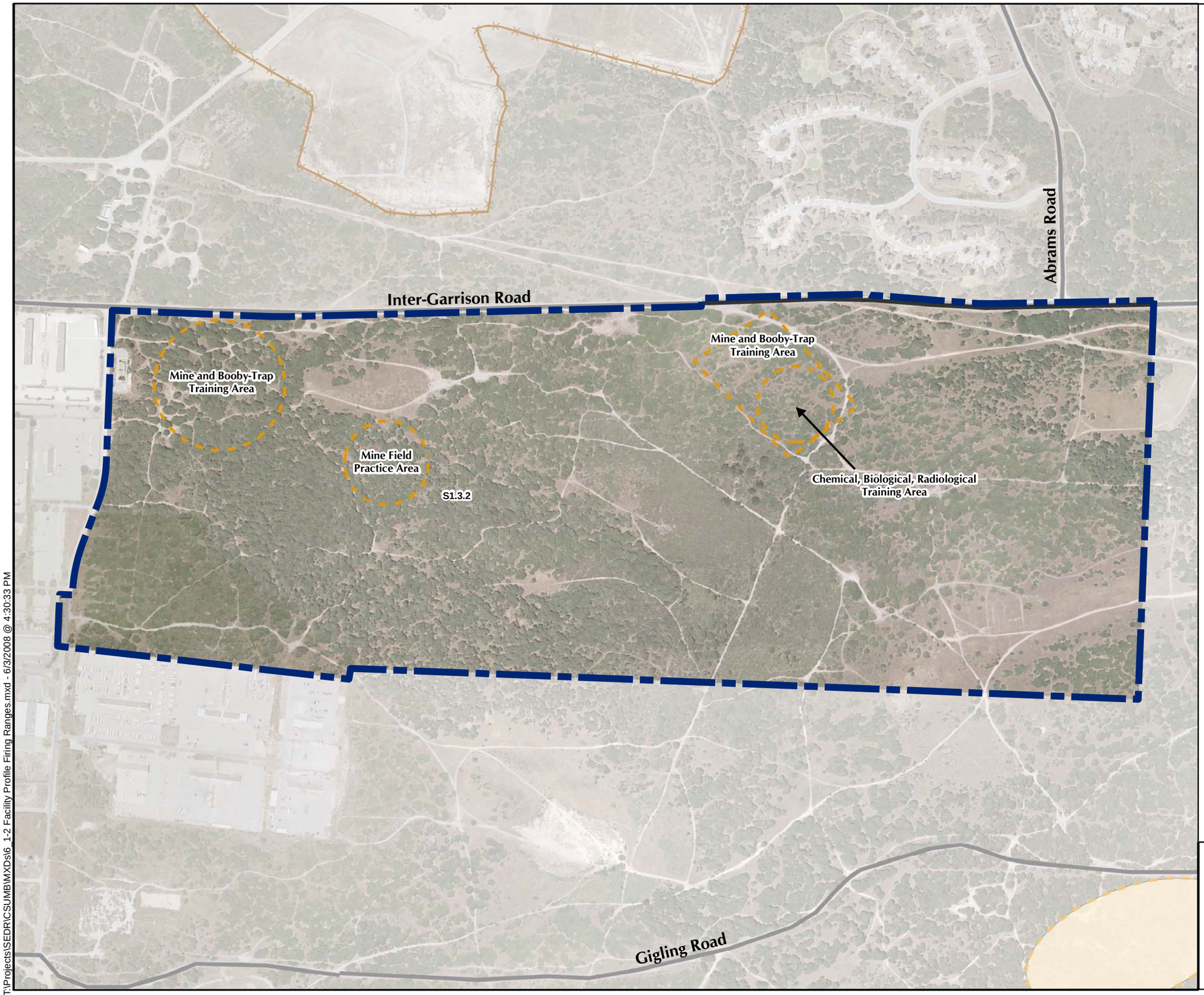
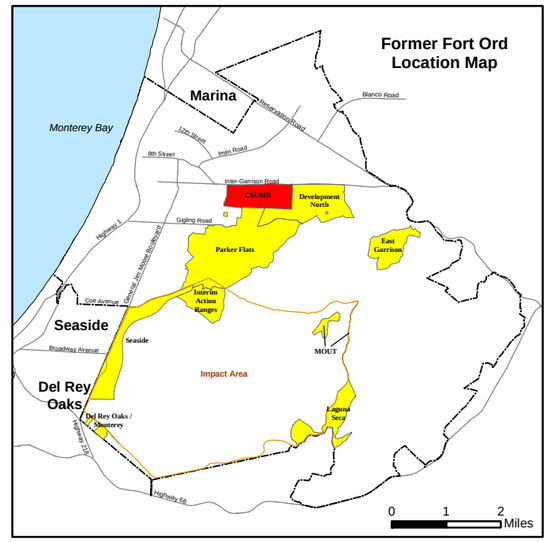
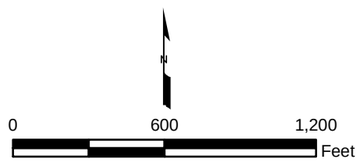



## Legend

- Training Site
- Munitions Response Area
- Historical Training Site
- Major Road
- Fence

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**CSUMB MRA Facility Profile Ranges and Training Sites**

FORA ESCA RP
Monterey County, California

**Figure 6.1-2**

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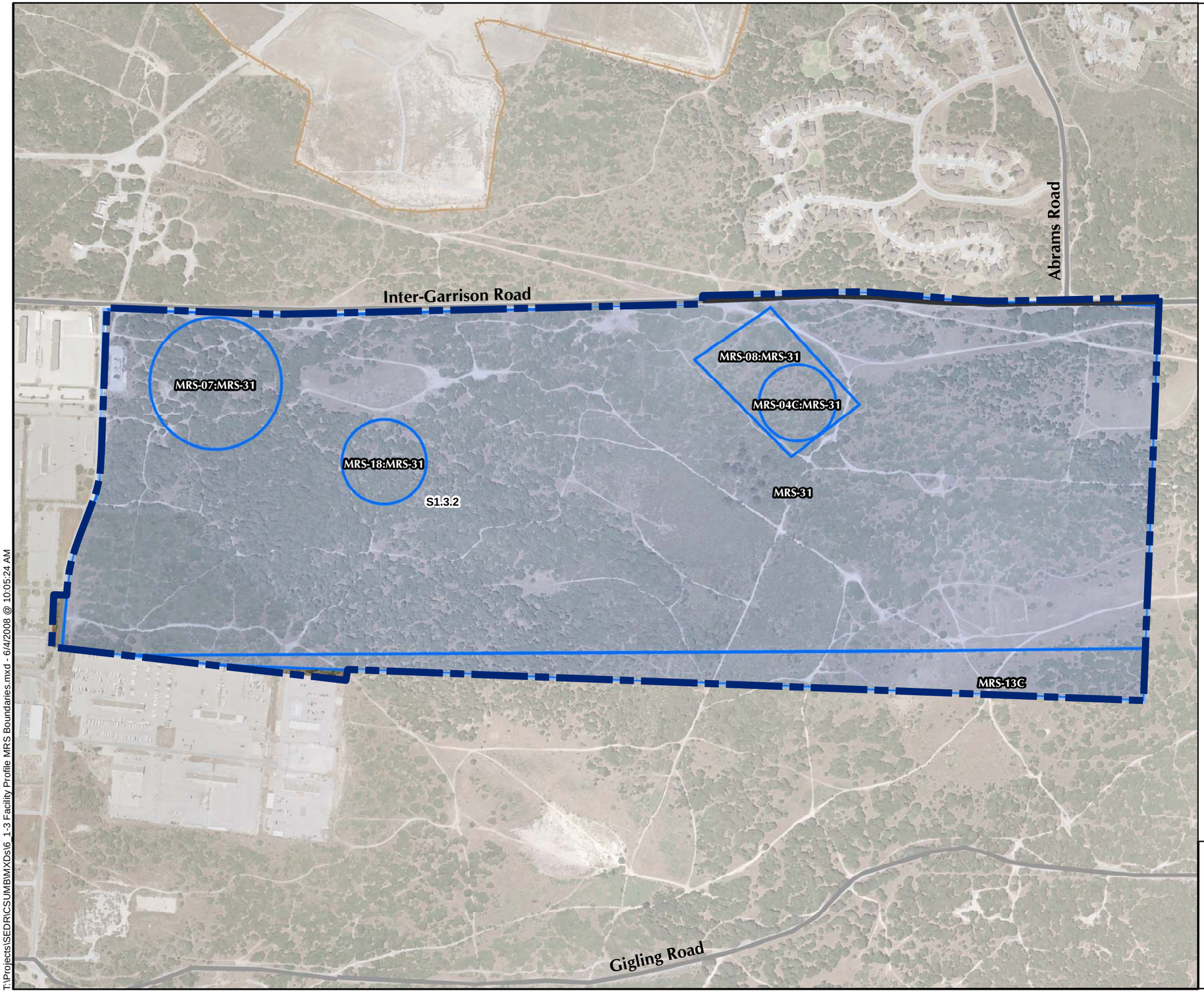
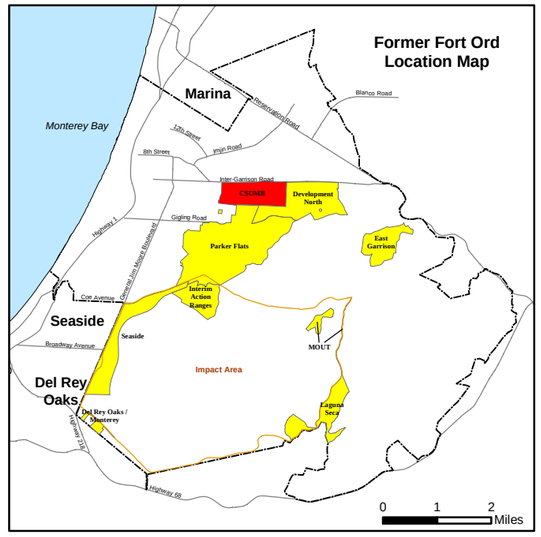



## Legend

- Munitions Response Area
- Major Road
- Fence
- MRS-31 — Munitions Response Site

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**CSUMB MRA Facility Profile**
**Munitions Response Site Boundaries**

FORA ESCA RP
Monterey County, California

**Figure 6.1-3**

Inter-Garrison Road

S1.3.2

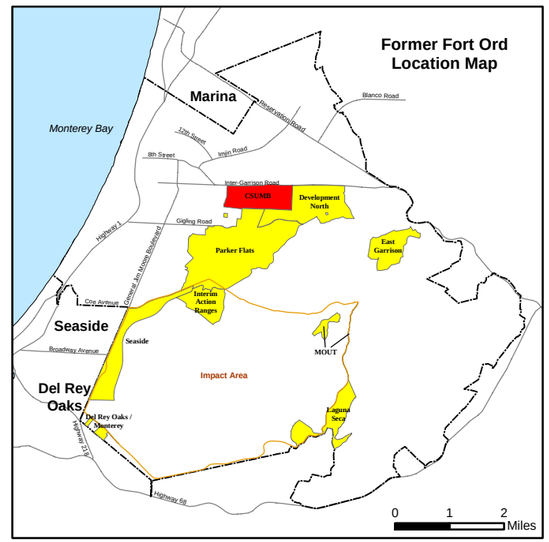
Gigling Road

## Legend

- Environmental Well
- Munitions Response Area
- Major Road
- Topography 5ft (540)

## Soil Type

- Arnold-Santa Ynez Complex
- Baywood Sand, 2 to 15 Percent Slopes
- Oceano Loamy Sand, 2 to 15 Percent Slopes




N

0 600 1,200 Feet

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# CSUMB MRA Physical Profile Topography and Soil Type

FORA ESCA RP
Monterey County, California

**Figure 6.2-1**

T:\Projects\SEDR\CSUMB\MXDs\6_2-1 Physical Profile Topography and Soil Type.mxd - 6/4/2008 @ 12:18:19 PM

Inter-Garrison Road

Abrams Road

S1.3.2

Gigling Road

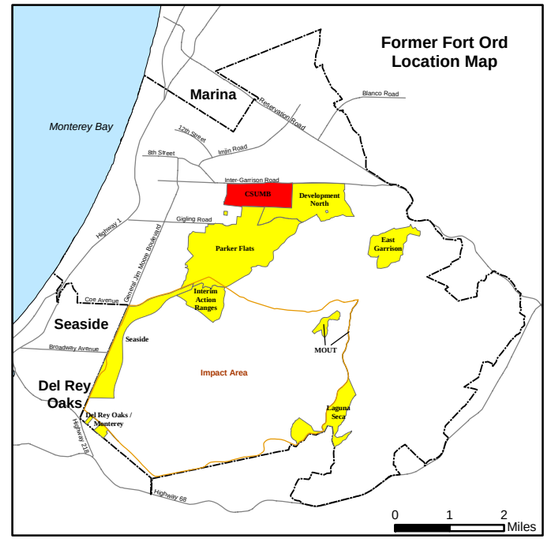
## Legend

- Munitions Response Area
- Major Road
- S1.3.2 — USACE Parcel

### Vegetation Type

- Grassland
- Maritime Chaparral
- Inland Coast Live Oak Woodland
- Coastal Coast Live Oak Woodland
- Developed / Disturbed

Source: Flora and Fauna Baseline Study of Fort Ord, California, Jones and Stokes Association Inc., December 1992.

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**CSUMB MRA Physical Profile**
**Generalized Vegetation Communities**

FORA ESCA RP
Monterey County, California

**Figure 6.2-2**

T:\Projects\SEDR\CSUMB\MXDs\6_2-2 Facility Profile Vegetation Communities.mxd - 6/3/2008 @ 4:36:57 PM

Inter-Garrison Road

Abrams Road

MRS-07:MRS-31

MRS-18:MRS-31

S1.3.2

MRS-08:MRS-31

MRS-04C:MRS-31

MRS-31

MRS-13C

Gigling Road

# Legend

Munitions Response Area

MRS-31 Munitions Response Site

Major Road

## MEC Type

Unexploded Ordnance (UXO)

Discarded Military Munition (DMM)

Insufficient Data (ISD)

Burial Pit Containing MEC

## Munitions Debris (MD) by Weight (total pounds per grid)

No Data

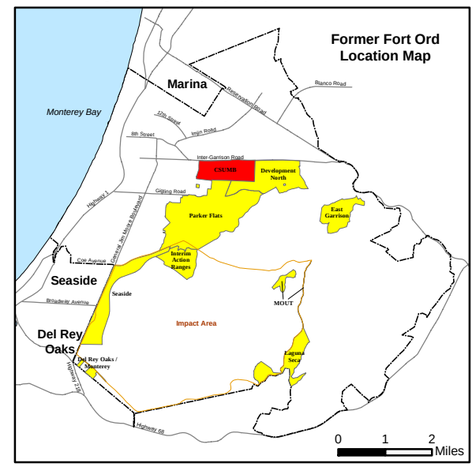
0

< 10

10 to 100

> 100

Notes: Munitions Debris (MD) includes scrap related to small arms ammunition.
Locations of items were assigned to the center of the grids, for display purposes.




N

0 600 1,200 Feet

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**CSUMB MRA Release Profile MEC and MD Locations**

FORA ESCA RP
Monterey County, California

**Figure 6.3-1**

T:\Projects\SEDR\CSUMB\MXDs\6_3-1 Release Profile MEC and MD Locations.mxd

Inter-Garrison Road

Abrams Road

MRS-07:MRS-31

MRS-18:MRS-31

MRS-08:MRS-31

MRS-04C:MRS-31

MRS-31

S1.3.2

MRS-13C

Gigling Road

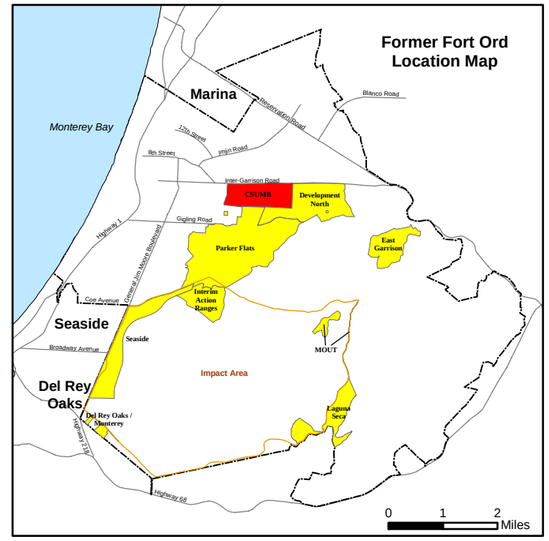
## Legend

- Munitions Response Area
- Munitions Response Site
- MRS-31
- Major Road

### MEC Type

- Unexploded Ordnance (UXO)
- Discarded Military Munition (DMM)
- Insufficient Data (ISD)
- Burial Pit Containing MEC

Notes: MEC locations may include more than one item. Locations of items were assigned to the center of the grids, for display purposes.




N

0 600 1,200 Feet

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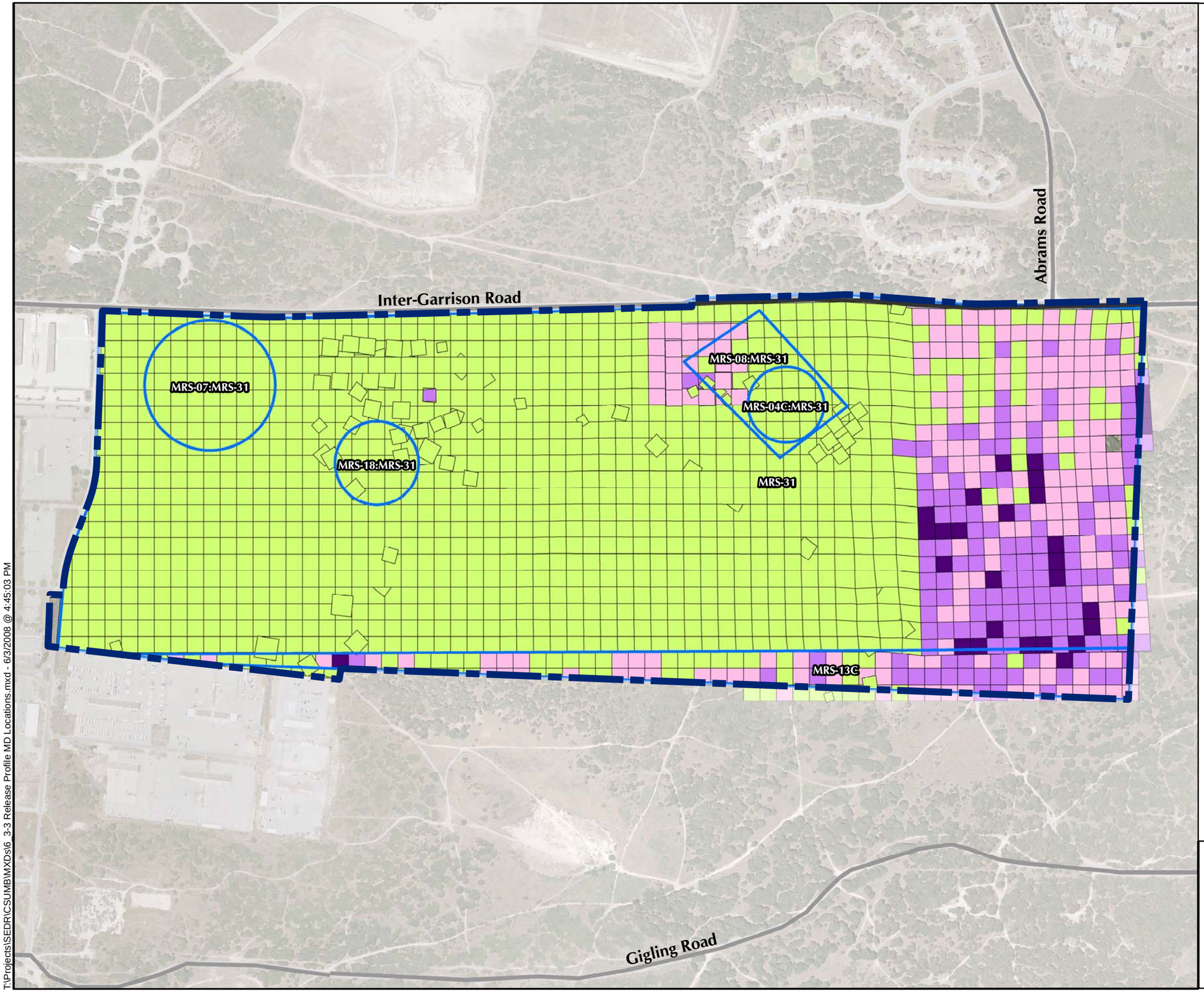
# CSUMB MRA Release Profile MEC Locations

FORA ESCA RP
Monterey County, California

**Figure 6.3-2**

T:\Projects\SEDR\CSUMB\MXDs\6_3-2 Release Profile MEC Locations.mxd - 6/3/2008 @ 4:40:11 PM



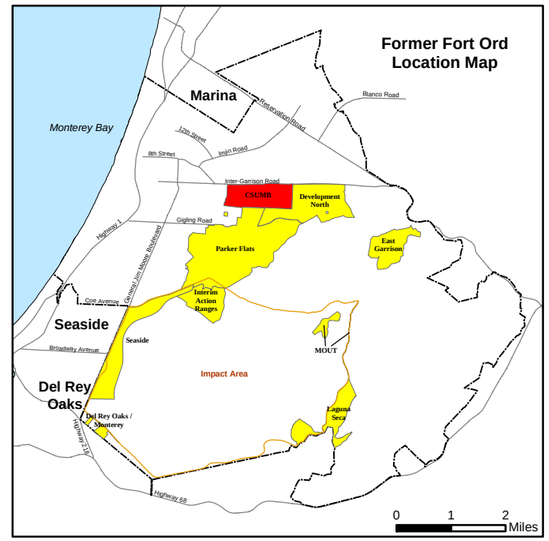

## Legend

- Munitions Response Area
- MRS-31 — Munitions Response Site
- Major Road

### Munitions Debris (MD) by Weight (total pounds per grid)

- No Data
- 0
- < 10
- 10 to 100
- > 100

Note: Munitions Debris (MD) includes scrap related to small arms ammunition.

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0 600 1,200
Feet

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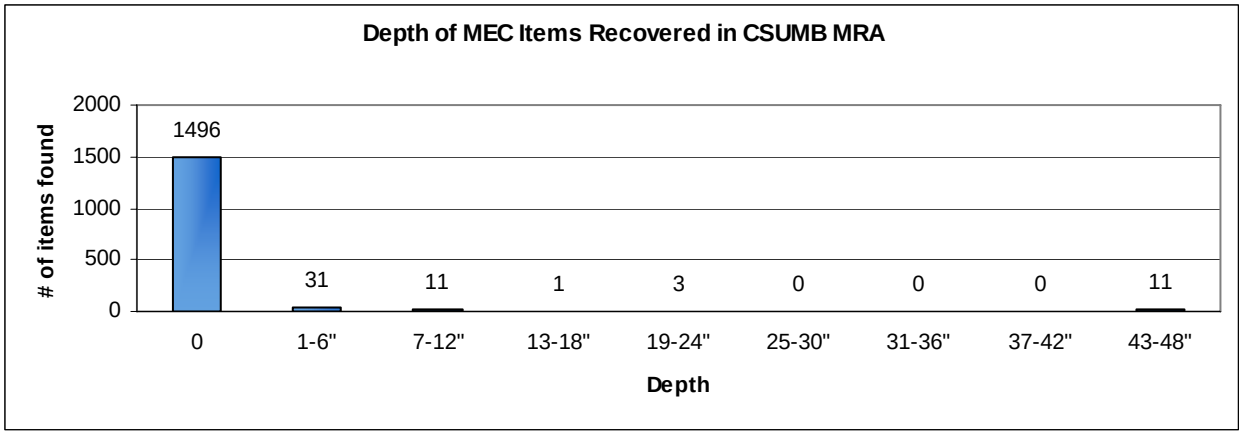
**CSUMB MRA Release Profile MD Locations**

FORA ESCA RP
Monterey County, California

**Figure 6.3-3**

T:\Projects\SEDR\CSUMB\MXDs\6_3-3 Release Profile MD Locations.mxd - 6/3/2008 @ 4:45:03 PM

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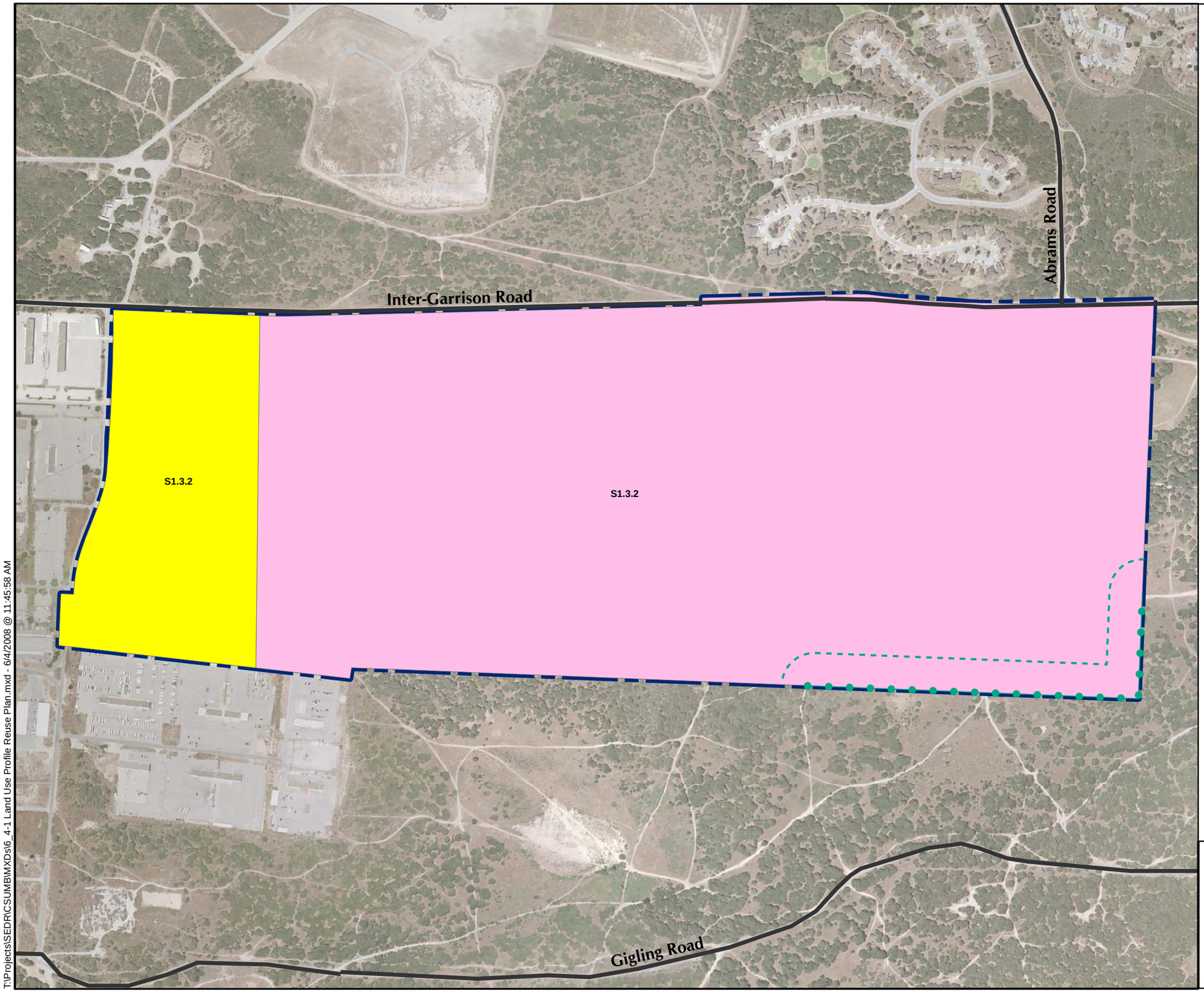
**CSUMB MRA**
**Distribution of MEC Recovered by Depth Interval**

FORA ESCA RP
Monterey County, California

**Figure 6.3-4**

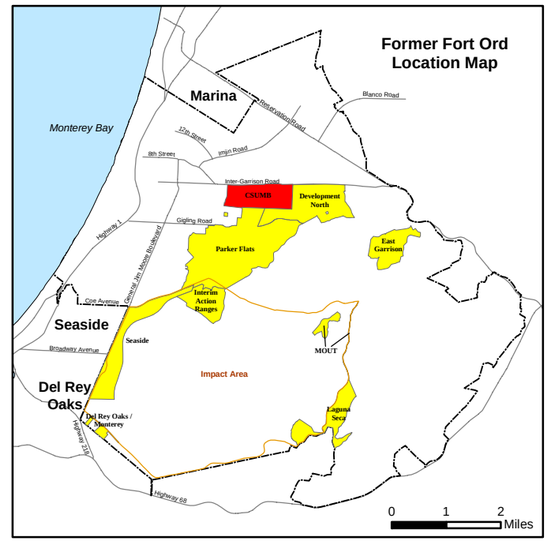



## Legend

- Munitions Response Area
- Major Road
- S1.3.2 — USACE Parcel

### Future Land Use

- Residential (CSUMB Campus Housing)
- Non-Residential (CSUMB Open Space Park)
- Borderland Interface
- 200-Foot Buffer from Borderland Interface

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0 600 1,200 Feet

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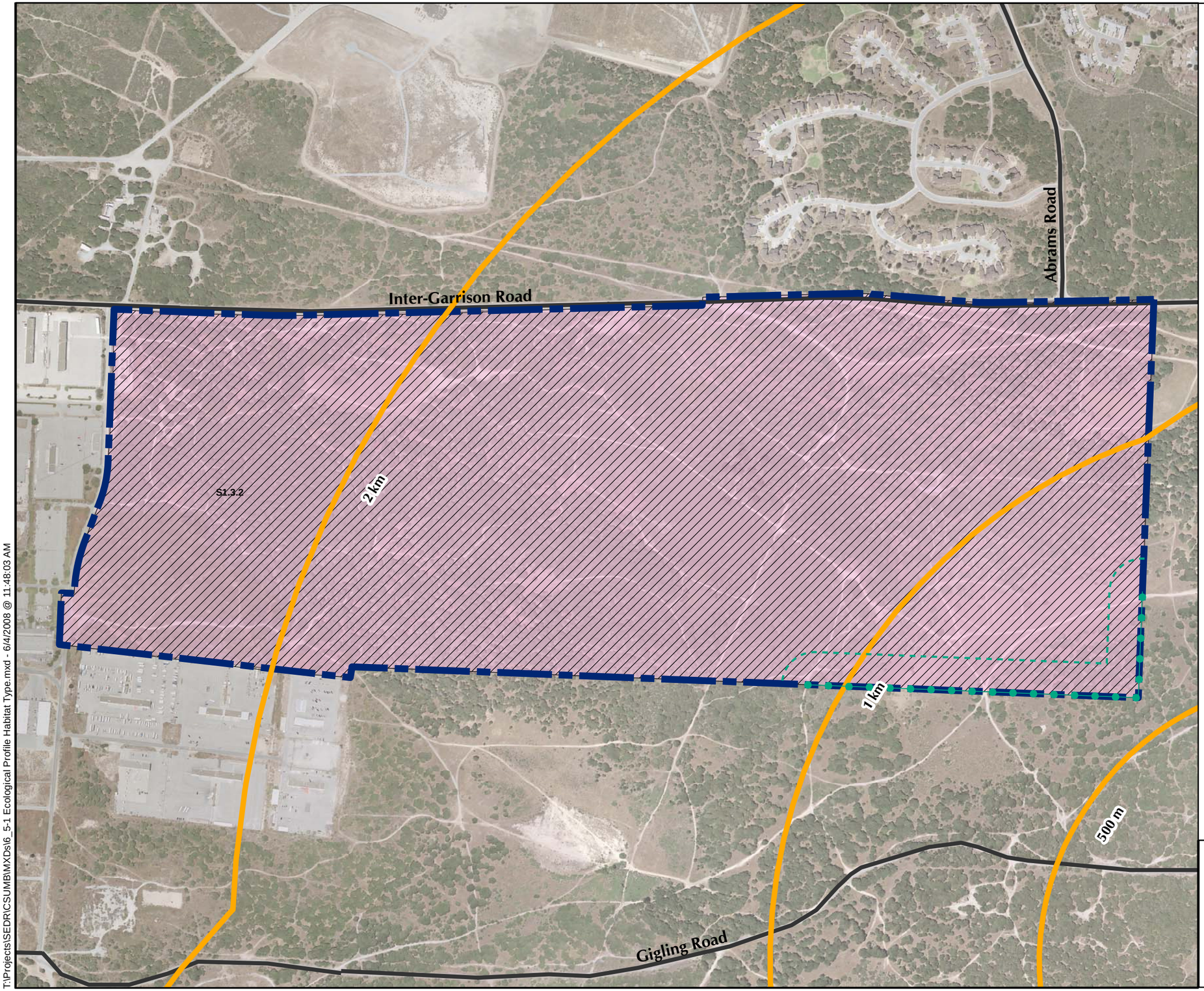
**CSUMB MRA**
**Land Use Profile Reuse Plan**

FORA ESCA RP
Monterey County, California

**Figure 6.4-1**

T:\Projects\SEDR\CSUMB\MXDs\6_4-1 Land Use Profile Reuse Plan.mxd - 6/4/2008 @ 11:45:58 AM

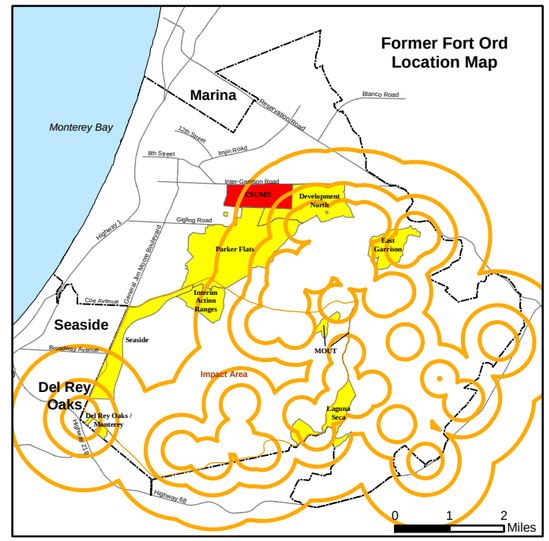



## Legend

- Munitions Response Area
- California Tiger Salamander Buffer
- Major Road
- Borderland Interface
- 200-Foot Buffer from Borderland Interface

## Habitat Management Plan Category

- Development (includes future Residential and Non-Residential areas)
- Development with Reserve or Restrictions
- Habitat Corridor
- Habitat Corridor with Development
- Habitat Reserve

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0 600 1,200 Feet

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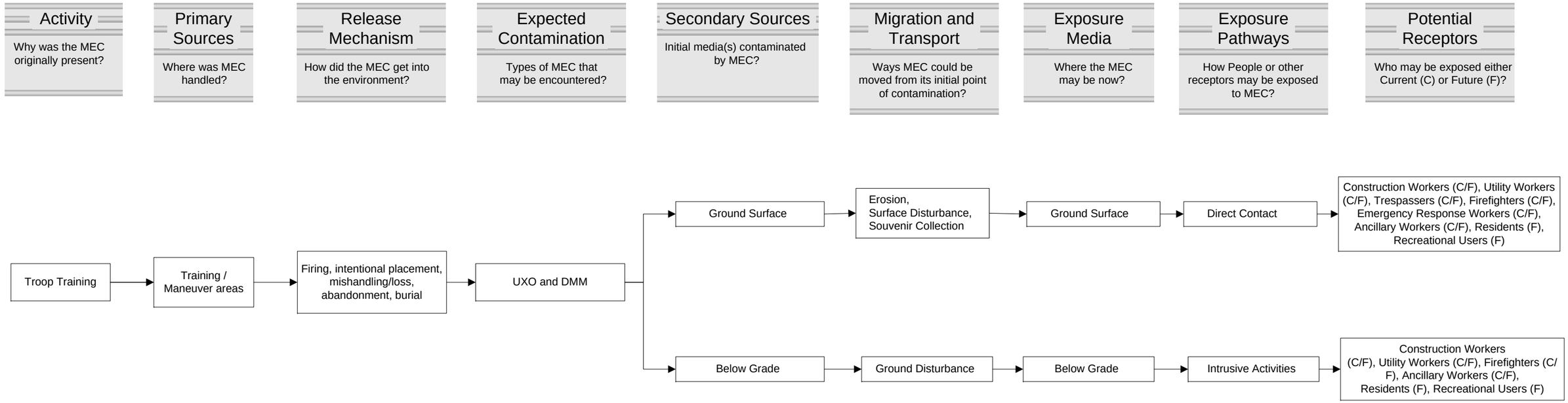
# CSUMB MRA Ecological Profile Habitat Type

FORA ESCA RP
Monterey County, California

**Figure 6.5-1**

T:\Projects\SEDR\CSUMB\MXDs\6_5-1 Ecological Profile Habitat Type.mxd - 6/4/2008 @ 11:48:03 AM

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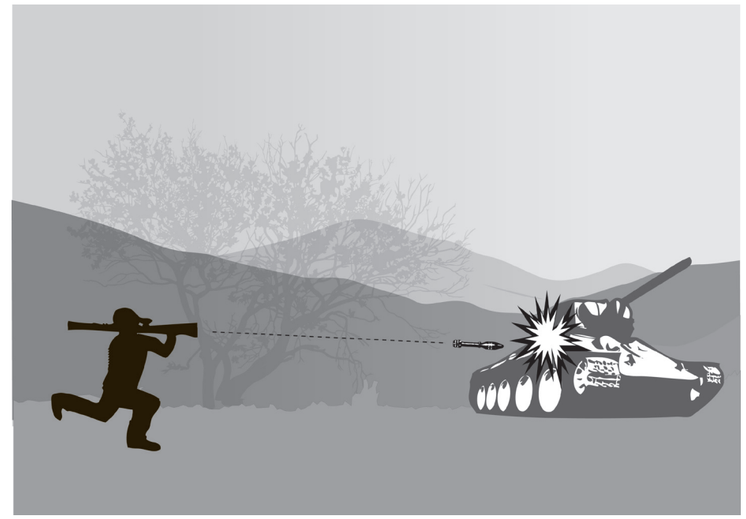
**CSUMB MRA**
**Pathway Analysis Flowchart**

FORA ESCA RP
Monterey County, California

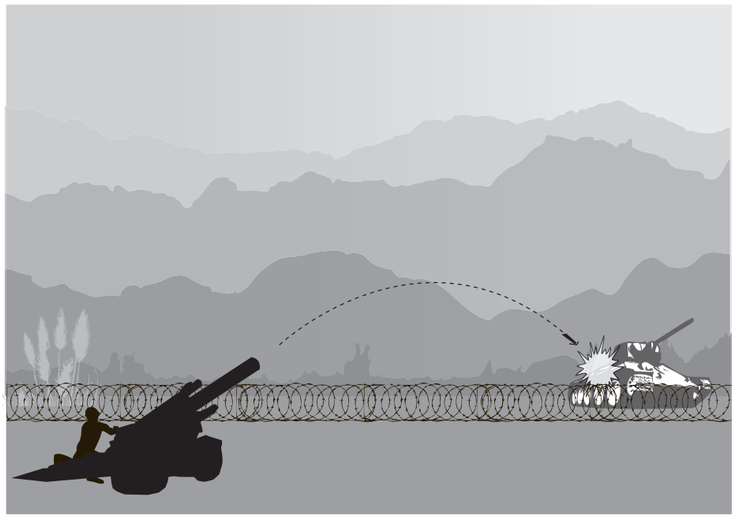
**Figure 6.6-1**

Burial / Mishandling / Loss

Troop Training



Direct Fire



Indirect Fire

**CSUMB MRA**
**Release Mechanism Illustrations**

FORA ESCA RP
Monterey County, California

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**Figure 6.6-2**