
Superfund Proposed Plan

Remedial Action is Proposed for BLM Area B and Munitions Response Site 16 Track 2 Munitions Response Remedial Investigation/Feasibility Study Former Fort Ord, California

United States Department of the Army

April 8, 2015

INTRODUCTION

The United States Department of the Army (Army) is presenting this **Proposed Plan**¹ for the public to review and comment on the proposed cleanup of an area called Bureau of Land Management (BLM) Area B, and **Munitions Response Site (MRS) 16**, which are Track 2 sites evaluated as part of the Munitions Response **Remedial Investigation/Feasibility Study (MR RI/FS)** program at the former Fort Ord Army base in Monterey County, California (**Figure 1**).

BLM Area B is located north and east of the former Impact Area and is comprised of several MRSs and areas located in-between the identified MRSs. MRS-16 is adjacent to BLM Area B (**Figure 1**). Before Fort Ord was closed in 1994, these areas were used for troop training that sometimes involved the use of **military munitions**. Investigations and removal actions were performed at these MRSs to address **Munitions and Explosives of Concern (MEC)**. The *Track 2 Remedial Investigation/Feasibility Study, BLM Area B and MRS-16, Former Fort Ord, California* (Gilbane, 2015) was prepared as part of the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)** (or

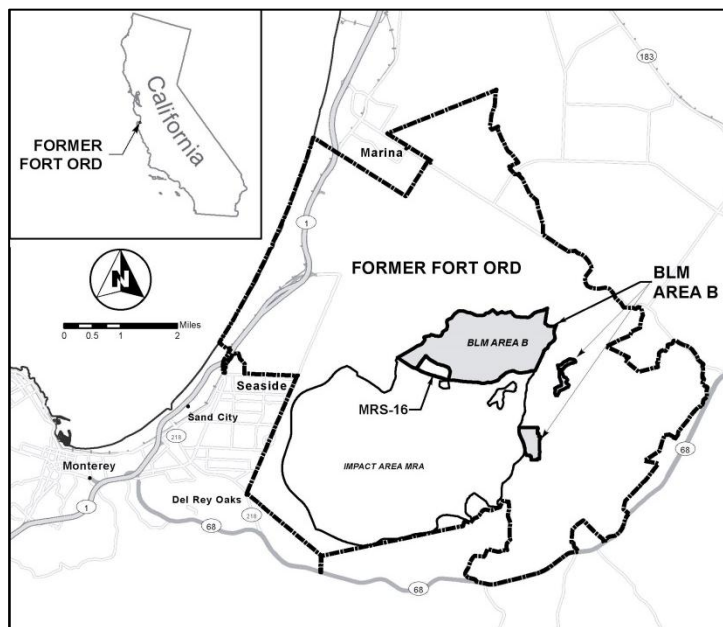


Figure . BLM Area B and MRS-16 Location

Dates to remember:
PUBLIC COMMENT PERIOD:
April 8, 2015 through May 8, 2015
Comments on the Proposed Plan

PUBLIC MEETING:
April 15, 2015 6-8 pm
at the Marina Library
190 Seaside Circle
Marina, California 93933

The Army will hold a public meeting to explain the Proposed Plan, receive comments, and answer questions. Oral and written comments will also be accepted at the meeting.

Written comments may be sent to:
Department of the Army
Fort Ord Base Realignment and Closure (BRAC) Office
Attn: William K. Collins
BRAC Environmental Coordinator
P.O. Box 5008, Monterey, CA
93944-5008

¹ The terminology used in this Proposed Plan that first appears in **bold letters** is defined in the **Glossary** found at the back of this document on **pages 19 and 20**. References to **Figures, Tables, and page numbers** also appear in **bold letters**.

Superfund) process for the site. Based on the potential presence of MEC remaining within the site and planned future site uses, the Army proposes **Technology-Aided Surface MEC Remediation, with Subsurface MEC Remediation in Selected Areas, and Land Use Controls (LUCs)** (Alternative 3) within a portion of BLM Area B. The Army recommends **LUCs** (Alternative 2) for the remainder of BLM Area B and MRS-16.

The majority of the property within BLM Area B was transferred to BLM in 1996 as a habitat reserve. The remainder of BLM Area B and MRS-16 is planned for future transfer to BLM. Established trails and roads in BLM Area B are currently accessible to the public for recreational use. These uses have been supported safely since 1996 with past and current measures, including MEC removal and investigations in MRSs, and public information and education. Both BLM Area B and MRS-16 are designated as a part of habitat reserve and are within the Fort Ord National Monument.

This Proposed Plan is based on information presented in the BLM Area B and MRS-16 RI/FS (Gilbane, 2015), as well as other documents in the Fort Ord **Administrative Record**. The Administrative Record contains documents used in making decisions for environmental cleanup projects at the former Fort Ord. The Army encourages members of the local community and other interested parties to review these documents and make comments on this Proposed Plan.

Public comments will be considered before any action is selected. Information on how to comment on this document and the location of the Administrative Record are provided on pages **16 and 17** of this Proposed Plan.

What is a Track 2 Site?

Track 2 sites are those sites where MEC was found and a MEC removal action was conducted. BLM Area B includes multiple MRSs where removal actions and investigations were performed. Based on investigation results described in the **Ordnance and Explosives (OE) RI/FS Work Plan** (USACE, 2000) and the *Final Remaining RI/FS Areas Management Plan* (MACTEC/Shaw, 2010), the sites located within BLM Area B were recommended for evaluation under the Track 2 process. An interim remedial action for MEC was conducted at MRS-16 in 2006-2008 based on the Interim Action **Record of Decision (ROD)**; Army, 2002).

The Decision-Making Process

The purposes of this Proposed Plan are to:

- Provide background information.
- Describe the remedial options considered.
- Identify the **Preferred Alternative** for the remedial action and explain the reasons for the preference.
- Solicit public review of and comment on the alternatives described.
- Provide information on how the public can be involved in the proposed remedy selection process.

The flow chart shown on **Figure 2** summarizes the BLM Area B and MRS-16 decision-making process that includes public and regulatory agency involvement.

The Army is the responsible party and lead agency for investigating, reporting, making cleanup decisions, and implementing cleanup actions at the former Fort Ord. This Proposed Plan for BLM Area B and MRS-16 is part of the Army's community relations program, a

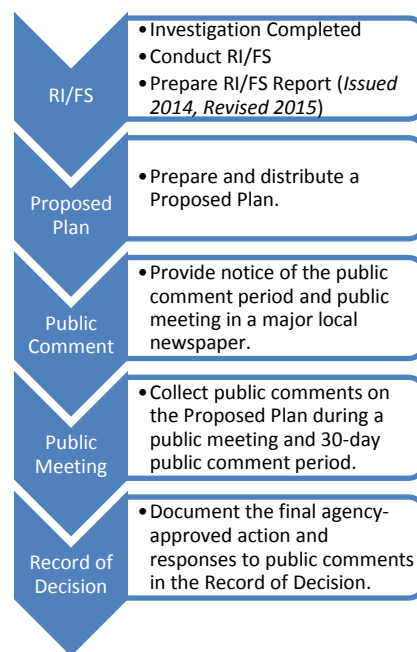


Figure 2. BLM Area B and MRS-16 Decision Process

component of the requirements of Section 117(a) of CERCLA, and follows U.S. Environmental Protection Agency (EPA) guidance (EPA, 1999).

Public comments on this Proposed Plan will be accepted during a public meeting and during the 30-day public review and comment period. These comments will be considered when the Army and the EPA, in consultation with the California Environmental Protection Agency Department of Toxic Substances Control (DTSC), make a final decision in a ROD. Army responses to public comments on this Proposed Plan will appear in the "Responsiveness Summary" section of the ROD. The flow chart shown on **Figure 2** summarizes the development and approval process for the BLM Area B and MRS-16 Track 2 ROD.

SITE BACKGROUND

The former Fort Ord is located in northwestern Monterey County, California, approximately 80 miles south of San Francisco (**Figure 1**). The former Army base is made up of approximately 28,000 acres of land next to Monterey Bay and adjacent to the cities of Seaside, Sand City, Monterey, and Del Rey Oaks to the south and Marina to the north. Laguna Seca Recreation Area, Toro Park, and Highway 68 border former Fort Ord to the south and southeast, respectively, as well as several small communities such as Toro Park Estates and San Benancio.

Since it was established in 1917, Fort Ord served primarily as a training and staging facility for infantry and cavalry troops. From 1947 to 1974, Fort Ord was a basic training center. The 7th Infantry Division was activated at Fort Ord in October 1974, and occupied Fort Ord until base closure in 1994. Fort Ord was selected for closure in 1991 and the majority of the soldiers were reassigned to other Army posts in 1993. The Army has retained a portion of former Fort Ord property as the Ord Military Community and U.S. Army Reserve Center. The remainder of Fort Ord was identified for transfer to federal, state, and local government agencies and other organizations for reuse.

Because cavalry, field artillery, and infantry units used portions of the installation for training, maneuvers, and other purposes, MEC may be present on lands at the former Fort Ord. Military munitions typically used during these activities include artillery and mortar projectiles, rockets and guided missiles, rifle and hand grenades, practice land mines, pyrotechnics, bombs, and explosives.

Fort Ord was placed on the National Priorities List of Superfund sites by the EPA on February 21, 1990, due to evidence of contaminated soil and groundwater. A Federal Facility Agreement (FFA) was signed in July 1990 by representatives of the Army, EPA, and agencies that are part of California EPA (the DTSC and Regional Water Quality Control Board). The FFA established schedules for conducting investigations and requires the cleanup process to be conducted as expeditiously as possible. The basewide RI/FS for soil and groundwater contamination began in 1991.

Since 1993, the Army has conducted MEC-related field investigations, sampling, and removal activities at many former Fort Ord sites. The initial effort involved archive searches that identified MRSs based on review of historical records and interviews. These investigation and removal activities focused on addressing explosives safety. During the investigations, MEC that was identified was removed and destroyed. The basewide OE RI/FS Work Plan was developed in 1999. In 2000, an agreement was signed between the Army, EPA, and DTSC to evaluate military munitions at the former Fort Ord subject to the provisions of the Fort Ord FFA. As part of the basewide OE RI/FS – now called the Munitions Response (MR) RI/FS – program, the Army reviewed available historical facility maps, range control files, aerial photographs, and real estate records for former Fort Ord lands, and interviewed former Fort Ord personnel with specific knowledge of historical site use. The purpose of this review was to identify information regarding past military munitions use at the former Fort Ord (HLA, 2000a). Based on this review, BLM Area B and MRS-16 were identified as areas where historical training included use of munitions.

BLM AREA B AND MRS-16 SITE CHARACTERISTICS

BLM Area B (Figures 1 and 3), located north and east of the former Impact Area, comprises 1,597 acres and includes several MRSs and areas located in-between the identified MRSs. MRS-16 is located along the southern boundary of BLM Area B and is approximately 81 acres. BLM Area B and MRS-16 are primarily undeveloped land in the inland portions of the former Fort Ord, with only minor development of support facilities associated with training that occurred while Fort Ord was an active installation (e.g., access roads, observation towers, targets, trenches, bunkers, fighting positions, bivouac areas, etc.). Developed areas near BLM Area B and MRS-16 include the BLM Headquarters.

The topography of BLM Area B and MRS-16 consists of low rolling hills dominated by Central Maritime Chaparral (CMC). The vegetation also includes oak woodland, grassland, and wetland areas. These areas support a diverse biological community that includes floral and faunal species considered rare, threatened, endangered, or of special concern or status. The floral and faunal species of concern are subject to various levels of protection under federal, state, and local laws and regulations.

Current and Future Land Use

The majority of the property within BLM Area B was transferred to BLM in 1996. The remainder of BLM Area B and MRS-16 is planned for future transfer to BLM.

The Fort Ord Reuse Plan, developed by the Fort Ord Reuse Authority (Fort Ord Reuse Authority, 1997), identified land use categories for various areas of the former Fort Ord that included development areas as well as open space, recreation, and habitat management areas. Designated development and habitat

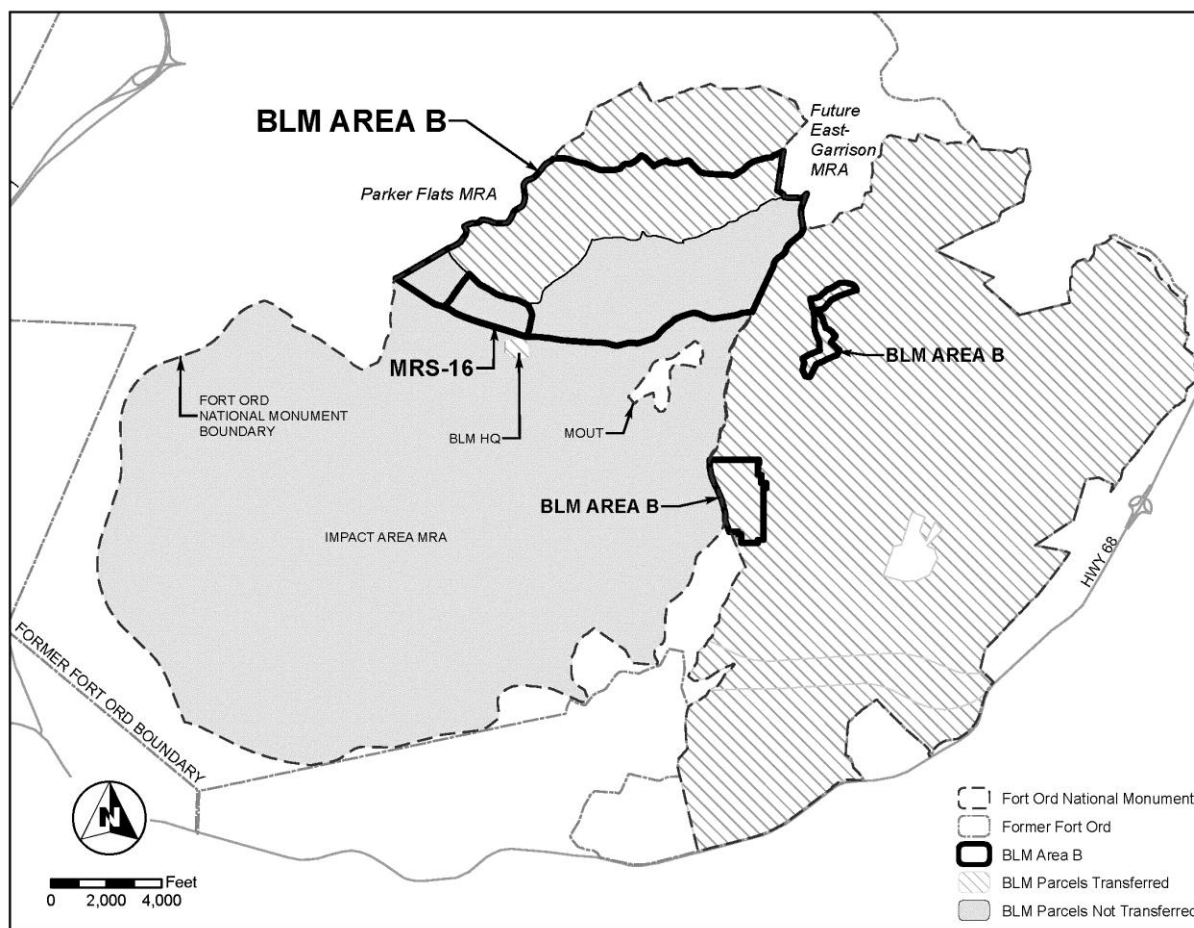


Figure3. Fort Ord National Monument and Property Transfer Status

reserve areas are also identified in the *Installation-Wide Habitat Management Plan (HMP) for Fort Ord* (USACE, 1997) and associated updates and revisions. The HMP, as modified or updated, describes special management measures and habitat monitoring requirements for species of concern within the habitat reserve and development areas that apply to the Army's environmental cleanup actions as well as future land management uses. The Army's environmental cleanup actions are also subject to the Biological Opinions issued by U.S. Fish and Wildlife Service (USFWS) to protect the special-status natural resources. Management guidelines for transferred properties, outlined in the HMP for the Natural Resource Management Area that includes BLM Area B and MRS-16 includes habitat restoration, enhancement and monitoring, access control, prescribed burning, and an allowance for development-oriented use in as much as 2 percent of the area. In addition, BLM has identified recreational access (non-motorized) on established routes to be an important component of the current and future uses of the Fort Ord public lands managed by BLM. In 2012, current and future BLM lands at the former Fort Ord, including BLM Area B and MRS-16, were designated as the Fort Ord National Monument.

The Army and BLM have been and will continue to coordinate actions to promote MEC safety, such as signs/notices, reporting procedures for discovered munitions items, and MEC recognition and safety training.

Munitions Responses Conducted to Date

Investigations and MEC removal actions performed to date have identified historical use of BLM Area B and MRS-16 for various close combat and weapons training purposes, including use of machine guns, mortars, grenades, and shoulder-launched projectiles. Depending on the types of known or suspected military training and associated military munitions uses, field investigations included visual site walks, sampling or transect investigations that included investigation of subsurface anomalies, and MEC removal actions (**Figure 4**). Hand-held magnetometers and/or digital geophysical instrument were used in these investigations.

To evaluate the potential presence of MEC, BLM Area B has been subdivided into eight sub-areas (**Figure 5**) based on historic training uses and the quality, types, and depth of previous munitions responses conducted in the respective areas.

Sub-area B-1 is approximately 110 acres in the northwestern portion of BLM Area B and includes the northern portion of MRS-56. Training in the MRS-56 portion may have included machine guns, rifle grenades, smoke grenades, and shoulder-launched projectiles. Sub-area B-1 has been traversed by visual and technology-aided site walk investigations and transects utilizing digital geophysical instruments. These site walks, while extensive, were largely limited to existing trails. Intrusive investigation of anomalies was conducted for transect data, and resulted in the recovery of primarily **munitions debris** (MD) items. Only one MEC item (a ground illumination signal) was found in sub-area B-1.

Sub-area B-2 is approximately 143 acres located in the southern portion of MRS-10B. Training activities in sub-area B-2 included bivouac and maneuver training. Interviews in the ASR indicated that firing points for shoulder launched projectiles and rifle grenades may have been located in sub-area B-2; however, no evidence of these types of training was found in sub-area B-2. Vegetation was removed via prescribed burning and SiteStats/GridStats sampling (one of the sampling methods) was conducted within sub-area B-2; two MEC items (one grenade fuze and one pyrotechnic item) were found during this sampling. No MEC item was found during site walks conducted within sub-area B-2. One incidental grenade fuze (UXO) was discovered by BLM in 2000. All three MEC items found in sub-area B-2 are pyrotechnic and practice items consistent with bivouac and maneuver training. In 2011 and 2012 BLM conducted habitat restoration in 12 acres with no incidental munitions reported.

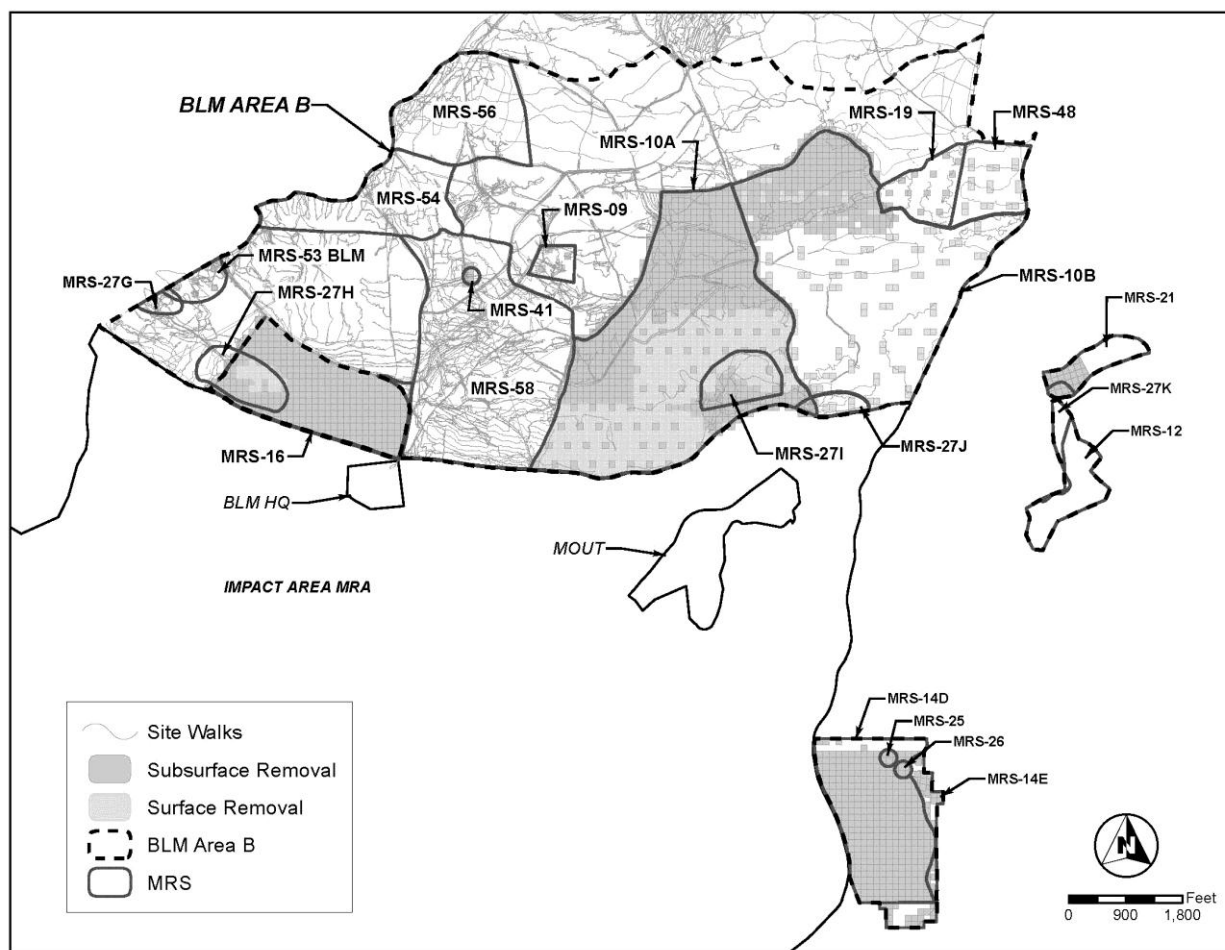


Figure 4. Munitions Response Activities Conducted to Date

Sub-area B-2A is approximately 74 acres and includes MRS-19, MRS-48, and a portion of MRS-10B. Hand grenade training was reported to have taken place in MRS-19, and hand grenade and rifle grenade training occurred in MRS-48. Ten MEC and Insufficient Data (ISD)² items (mostly grenade and illumination-related items) were found during random grid sampling conducted in MRS-19 and SiteStats/ GridStats sampling in MRS-48. Also, numerous MD items from 4.2-inch White Phosphorous mortars were found in MRS-48.

Sub-area B-3 is approximately 718 acres and includes MRS-09, MRSs-27G and 27H, MRS-53BLM, MRS-41, MRS-54, the southern portion of MRS-56, and the northern portion of MRS-58. MEC removed from adjacent areas west (in the Parker Flats **Munitions Response Area [MRA]**), east (in MRS-10A), and northeast (in the Future East Garrison MRA) of sub-area B-3 indicate potential presence of similar types of MEC in sub-area B-3; however, potential density of MEC is unknown because of limited data. Sampling was conducted in MRS-09 and MRS-53BLM. Visual and technology-aided site walks were conducted along trails, existing roads, and paths. The investigations in sub-area B-3 found two MEC items (60mm mortar high explosive [HE] and 81mm mortar practice) during sampling at MRS-09, one item (37mm projectile) during sampling in MRS-53BLM, and one 2.36-inch rocket, HEAT, M6 during the site assessment. Investigation activities conducted in sub-area B-3 were limited because of lack of historical evidence of training activities in the sub-area, and those conducted were limited to site walks in accessible areas due to dense vegetation. Thus, they do not represent statistically-based transects or grid

² Based on the review of the database, if sufficient data is unavailable to definitively confirm an item as explosive (MEC) or inert (MD), it is categorized as ISD. ISD items are conservatively evaluated as MEC in the RI/FS.

layouts, and the items found during these investigations may not necessarily represent the density of MEC potentially present.

Sub-area B-3A is approximately 62 acres and consists of the southern portion of MRS-58. Interviews conducted during preparation of the Archive Search Report indicated this area may have been used as a target area for shoulder-launched projectiles and rifle grenades, but no items of that type were found. This sub-area was traversed by visual and technology-aided site walk investigations. No MEC items were found within sub-area B-3A.

Sub-area B-4 is approximately 345 acres and consists of MRS-10A and the northern portion of MRS-10B where MEC removal was conducted. A 1945 training map identifies MRS-10A to be within “Combat Range 2.” The majority of sub-area B-4 is within the Known Distance Range that has been described as having an “advancement line” associated with the firing of mortars along with the advancement of troops. Surface MEC removal was conducted in the southern portion of MRS-10A. Subsurface MEC removal to one foot was conducted in the northern portions of MRS-10A and 10B, and the southeastern portion of MRS-10A. More than 400 MEC items were found (mostly 60mm, 81mm, and 3-inch Stokes mortar projectiles).

Sub-area B-5 is approximately 43 acres and consists of MRS-12 and MRS-21. According to interviews conducted during preparation of the Archive Search Report, MRS-12 was “used as a firing point and target area for mortar projectiles, rifle grenades, and shoulder-launched projectiles.” In addition to sampling, surface removal and subsurface removal to a depth of one-foot was conducted in MRS-12.

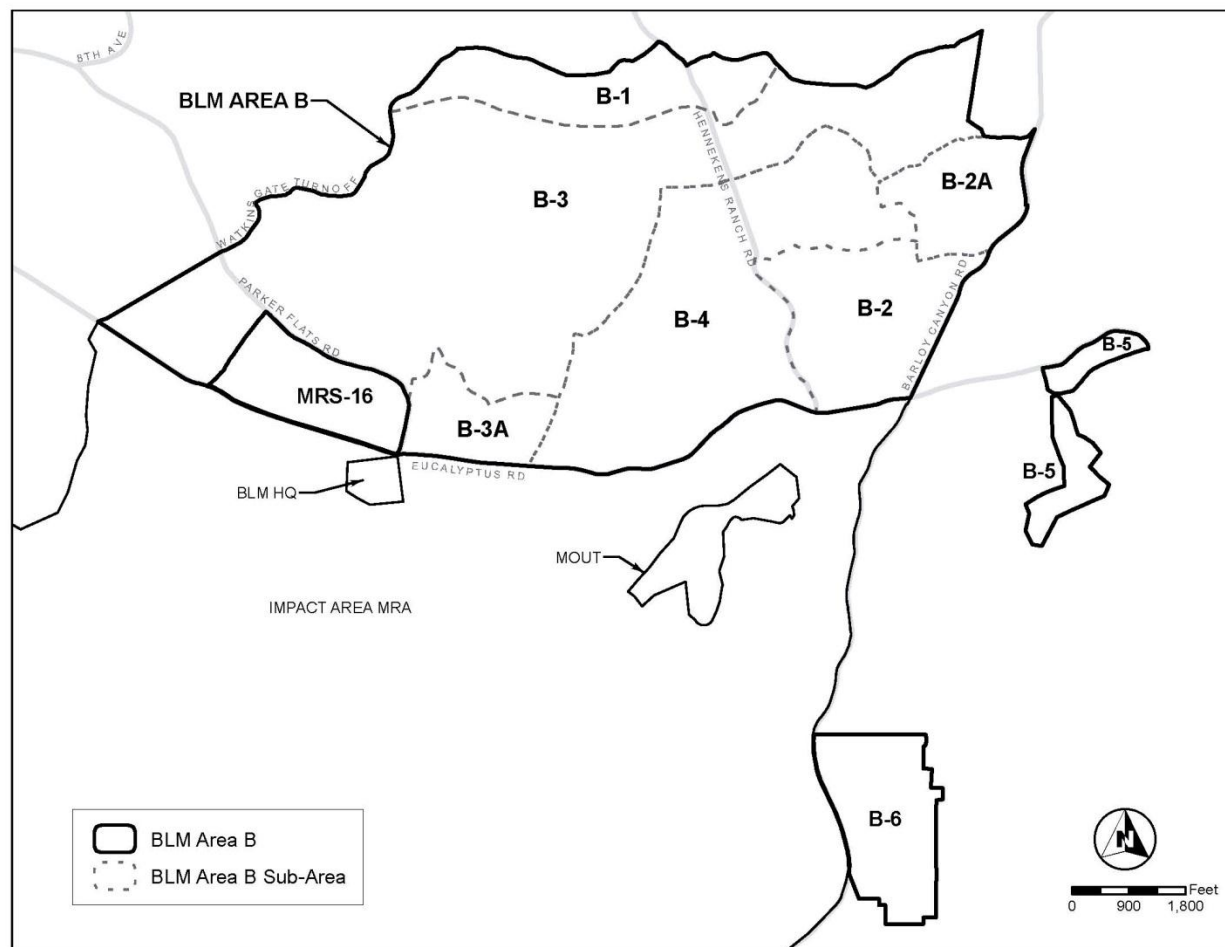


Figure 5. BLM Area B Sub-Areas

MRS-21 was identified in the Archive Search Report as potentially being a “dumping ground” for munitions. Subsurface removal to a depth of four feet was conducted over the western portion of MRS-21. Visual surface removal up to the edge of Mudhen Lake at its lowest level and removal to one-foot depth along trails was conducted over the eastern portion of MRS-21. 66 MEC items were found at MRS-21 (multiple items, such as flares and fuzes, were found at single locations on the surface). 27 MEC items were found at MRS-12 (primarily hand grenades, and flare and illumination items).

Sub-area B-6 is approximately 100 acres and consists of MRS-14D, which was used for 14.5mm and 22mm subcaliber training. Munitions response at MRS-14D included sampling and surface and subsurface MEC removal actions to a depth of four feet. The removal action included expansion grids to the south and east (within MRSs-14B and 14E), which are included in sub-area B-6. Approximately 24,000 MEC items were found and removed, the bulk of which were 14.5mm and 22mm subcaliber items. An additional 20,000 items were reported as ISD and conservatively are assumed to have been MEC.

MRS-16 is located south of and contiguous with BLM Area B. An interim remedial action was conducted at MRS-16 between December 2006 and June 2008 based on the Interim Action ROD (Army, 2002). The subsurface MEC removal to the depth of instrument detection was completed as planned, with the exception of an approximately 5-acre area in the western portion of MRS-16 referred to as the “saturated area.” Analog subsurface removal was conducted on a portion of this area, and several trenches were excavated to further investigate the area. Based on the findings of the work in the “saturated area,” subsurface MEC could remain and, at the completion of the interim action, LUCs were recommended for the “saturated area.”

SCOPE AND ROLE OF REMEDIAL ACTION

The goal is to support the designated use of the property as a habitat reserve with public access as a part of the Fort Ord National Monument. Munitions response actions have been conducted within the MRSs in BLM Area B. Designated trails are currently open to the public for recreational uses, such as hiking, bicycling, and horseback riding. Based on the history of previous military training and the review of munitions responses conducted, the potential for some remaining MEC risks were identified, and evaluated in the risk assessment. MRS-16 previously had an interim action to remove MEC from the surface and subsurface, and the proposed remedial action, if selected, will serve as the final remedy for MRS-16.

SUMMARY OF SITE RISKS

As part of the remedial investigation, a qualitative risk assessment was performed to evaluate the risk associated with current site conditions. Based on the current understanding of the site, it is not likely that people traversing on the roads and trails (those that are authorized for public use) would encounter a MEC item. The potential presence of MEC in the vegetated areas and associated risks is the focus of the risk assessment for BLM Area B. A summary of the risk assessment is presented here and is described in further detail in the RI/FS (Gilbane, 2015). The risk assessment was performed using the Fort Ord Ordnance and Explosives Risk Assessment Protocol (Malcolm Pirnie, 2002) that was developed to evaluate the risk to future land users of the property from MEC potentially remaining at the site in terms of an “Overall MEC Risk Score.” The Overall MEC Risk Scores are expressed in letters A through E, with A representing the lowest risk and E representing the highest risk.

Overall MEC Risk Score	A	B	C	D	E
	Lowest	Low	Medium	High	Highest

Overall MEC Risk Scores were developed based on the anticipated site uses and activities that could create potential MEC exposure. In general, undeveloped areas within BLM Area B and MRS-16 will be maintained in their natural state and types of activities that will be conducted include:

- route, road, and trail management and maintenance,
- habitat enhancement (including prescribed burns, control of noxious weeds, and restoration),
- fuel break construction and management,
- use of administrative areas,
- habitat monitoring and educational programs,
- species-specific monitoring, and
- recreational access on established routes.

The types of activities listed above include both “surface receptors,” such as recreational users, firefighters performing prescribed burns, and workers conducting habitat monitoring or invasive weed control; and “subsurface receptors” performing intrusive work such as habitat restoration, trail maintenance, and construction. The risk assessment identified an Overall MEC Risk Score of “D” to “E” for surface receptors and a score of “E” for subsurface receptors in sub-areas for which there was sufficient data to complete the evaluation.

The results of the risk assessment indicated that sufficient risk from potential MEC exposure is present in portions of BLM Area B to warrant remedial action. Based on these findings, the feasibility study was completed to identify appropriate **remedial alternatives**. The remedial alternatives developed are discussed and compared in detail in the RI/FS.

REMEDIAL ACTION OBJECTIVES

The primary **remedial action objectives** for BLM Area B and MRS-16, based on EPA’s RI/FS Guidance (EPA, 1989), are to achieve the EPA’s threshold criteria of “Overall Protection of Human Health and the Environment” and “Compliance with **Applicable or Relevant and Appropriate Requirements** (ARARs).” These remedial action objectives include supporting the reuse of the area as a habitat reserve in compliance with guidelines and requirements for habitat reserve management and monitoring set forth in the HMP and the Biological Opinions (USFWS, 1999, 2002, 2005, 2007, 2011, and 2014). Potential ARARs that may be pertinent to implementation of each of the remedial alternatives were identified in the RI/FS (Table 5.1; Gilbane, 2015).

SUMMARY OF REMEDIAL ALTERNATIVES

Four remedial alternatives were developed for BLM Area B and MRS-16.

- Alternative 1—No Further Action
- Alternative 2—Land Use Controls (LUCs)
- Alternative 3—Technology-Aided Surface MEC Remediation, with Subsurface MEC Remediation in Selected Areas, and LUCs
- Alternative 4—Subsurface MEC Remediation

MEC removals under Alternatives 3 and 4 require vegetation clearance to gain access to the ground surface as a first step. BLM Area B is designated as habitat reserve, largely covered by CMC that contains species that are subject to various levels of protection. Prescribed burning as the primary method of vegetation clearance in habitat reserve containing CMC is consistent with the HMP and the Biological Opinions issued by the USFWS on the closure and reuse of former Fort Ord. Mechanical and manual

vegetation cutting are allowed for other vegetation types, and only on a limited basis in habitat reserve containing CMC.

Under Alternatives 3 and 4, to protect the public during the duration of the field work (e.g. vegetation clearance and MEC removals), public access would be temporarily restricted according to Department of Defense requirements. Such access restrictions would be implemented in coordination with BLM, as well as LUCs under Alternatives 2 and 3.

Description of Remedial Alternatives

The four remedial alternatives developed for BLM Area B and MRS-16 in the RI/FS are described below.

Alternative 1—No Further Action

This alternative assumes no further action would be taken to address MEC risks for those receptors identified. This alternative is provided as a baseline for comparison to the other remedial alternatives, as required under CERCLA and the National Contingency Plan.

Alternative 2—Land Use Controls

This alternative includes:

- Public education (including safety information in brochures and kiosks, and providing safety information during public presentations and safety briefings);
- MEC recognition and safety training for people who conduct ground-disturbing or intrusive activities; and
- Construction support for ground-disturbing or intrusive activities and **unexploded ordnance** (UXO)-qualified personnel support.

Alternative 3—Technology-Aided Surface MEC Remediation, with Subsurface MEC Remediation in Selected Areas, and LUCs

This alternative includes:

- Vegetation clearance using prescribed burning, or manual and/or mechanical cutting, to provide access to conduct MEC removals, depending on vegetation type and removal requirements.
- Technology-aided surface MEC removal and detonation with engineering controls of MEC identified (not including areas where MEC removals were previously conducted).
- Digital geophysical mapping in surface removal areas to provide a record of remaining anomalies to assist BLM in planning future subsurface activities. Areas inaccessible to digital geophysical mapping equipment will be documented.
- Subsurface MEC remediation in selected areas to address specific reuse and risk, determined in coordination with BLM (assumes 10 percent of acreage).
- Implementation of LUCs (MEC recognition and safety training, construction support, and public education, as described in Alternative 2).
- Post-remediation habitat monitoring (collecting data on HMP species and habitats, and performing mapping, data management and evaluation, and reporting).

A safety exclusion zone would be established during vegetation clearance and MEC removal to protect the public. Subsurface MEC removal in selected areas would be conducted in portions of sub-areas to address specific concerns regarding MEC risk or reuse needs, such as proposed roads, fuel breaks, trails, and habitat restoration sites. The total area of subsurface MEC removals is assumed to be approximately 10 percent of the surface removal area.

Vegetation Clearance Methods Evaluated

To provide safe access for workers to conduct MEC removals, vegetation clearance would be required as a first step. BLM Area B is designated as habitat reserve, largely covered by CMC that contains species subject to various levels of protection. The Evaluation of Vegetation Clearance Methods Technical Memorandum, Ordnance and Explosives Remedial Investigation/Feasibility Study, Former Fort Ord, California (Harding ESE, 2002) evaluated several vegetation clearance methods that may be applicable in different plant communities, and identified prescribed burning as the only method that can be used on a large scale within habitat reserve containing CMC. Manual and/or mechanical cutting are allowed for up to 50 acres of unburned CMC within each sub-area. It has not been shown that cutting of CMC supports successful recovery of the rare habitat. Hence, in specific cases where prescribed burns cannot be done safely, cutting of areas larger than 50 acres must be coordinated with USFWS. Manual and/or mechanical cutting is allowed for other vegetation types.

Manual methods consist of clearing vegetation using hand tools and chain saws. Mechanical methods use larger equipment such as a brush hog or tractor accessorized zerriest. In most cases, standing vegetation is cut at the base or pruned sufficiently to allow for access and improved visibility under the canopies of trees and shrubs prior to munitions response actions. Grasses, small shrubs, and non-woody materials are typically cut off at the base, and larger shrubs are typically pruned and the main stems are cut to a height that allows access for operation of MEC detection equipment and crews. Trees are left in place with lower branches less than four inches in diameter removed to allow access. Cut material is typically chipped, and may be removed or left on the site.

The major elements of prescribed burning include:

- Coordination with the local air district;*
- Preparation of a burn prescription/burn plan outlining the objectives of the burn, burn area, and the range of environmental conditions under which the burn will be conducted; workforce and equipment resources required to ignite, manage and contain the fire; and communication procedures;*
- Site preparation, including establishment and maintenance of containment lines;*
- Conducting the burn within the range of environmental conditions established in the burn prescription; and*
- Follow-up operations to ensure that the fire is fully contained.*

Factors considered when establishing a burn area include current fuel breaks, topography, slope, aspect, fuel type, fuel loading, fire behavior, and the proximity of urban/wildland interface. The actual size and configuration of burn areas would be determined by the Army fire department in charge. The fire department would determine the best parameters to minimize the size and duration of each burn, to best maintain control of the burn, to minimize smoke impacts, to be able to execute the burn within the narrow meteorological window, minding also explosives safety and other technical and practical considerations. Proposed burn areas, containment lines, and supporting rationale would be described in site-specific implementation work plans that would be made available for regulatory and public review.

The Army will provide public notification of planned prescribed burns. A prescribed burn will be started only when optimum burn conditions are confirmed. Mobilization of fire management personnel and equipment, and public notification, will occur when optimum burn conditions are reasonably expected. Multiple burn events may be conducted over a period of several days with one or more days of no burning between burn events. Because a burn will be conducted only when optimum burn conditions are confirmed, it is not possible to schedule a burn on a specific date. Through community notification, the public will be advised of reasonable precautions they can take to minimize exposure to smoke from prescribed burns, such as staying indoors with doors and windows closed, and limiting outdoor activity when smoke is present.

After technology-aided surface MEC removals are completed for the removal area described in the site-specific work plan, digital geophysical mapping would be conducted. Following the geophysical mapping the Army would review the data and submit a Technical Memorandum to EPA and DTSC that would present an evaluation of the work completed to date and, if necessary, describe subsurface removals recommended based on the results of the work in the removal area. Factors that would be considered when determining whether additional actions are necessary include MEC types and amounts and reuse requirements. If no additional work was required, this also would be documented in the Technical Memorandum along with the rationale for no further removal actions.

The LUCs described in Alternative 2 would be implemented following MEC remedial actions.

Alternative 4—Subsurface MEC Remediation

This alternative assumes complete subsurface MEC remediation would be conducted throughout a sub-area. Subsurface MEC Remediation would include the following components:

- Vegetation clearance using prescribed burning, or manual and/or mechanical cutting, to provide access to conduct MEC removal, depending on vegetation type and removal requirements.
- Surface and subsurface MEC remediation using appropriate detection technologies. Additional technologies may be applied in selected areas if required to address specific risks.
- Post-remediation habitat monitoring and restoration as required (collecting data on HMP species and habitats, and perform mapping, data management and evaluation, and reporting).

EVALUATION OF REMEDIAL ALTERNATIVES

Remedial alternatives were evaluated and compared based on the nine evaluation criteria specified in EPA's RI/FS Guidance (EPA, 1989). The evaluation and comparison of each of the four remedial action alternatives based on these nine criteria is summarized below.

- Overall Protectiveness of Human Health and the Environment determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment. Alternative 1 would not be protective of human health in sub-areas without previous MEC removals. Alternative 2, 3 and 4 would be protective of human health, with Alternative 4 providing the greatest level of protection.
- Compliance with ARARs evaluates whether the alternative meets Federal and State environmental statutes, regulations, and other requirements that pertain to the site, or whether a waiver is justified. Alternatives 3 and 4 would be implemented in compliance with the potential ARARs. No ARAR was identified that relate to Alternative 1 or 2.
- Long-term Effectiveness and Permanence considers the ability of an alternative to maintain protection of human health and the environment over time. Alternative 1 would not provide long-term protection. Alternatives 2, 3 and 4 would provide long-term effectiveness and permanence. Alternative 4 would provide the greatest degree of long-term effectiveness.
- Reduction of Toxicity, Mobility, or Volume through Treatment evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants (in this case MEC), their ability to move in the environment, and the amount of contamination present. MEC removals have already been conducted in some MRSs; Alternative 1 and 2 would not provide further reduction of these parameters. Alternatives 3 and 4 would provide varying degrees of reduction of these parameters through MEC removals.
- Short-term Effectiveness considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation. Alternative 1 would not be effective in the short term because no further action would be taken to

mitigate the MEC risks. Alternative 2 would be protective in the short term by implementing LUCs. Alternatives 3 and 4 would be effective in the short term. Workers and the community would be protected during implementation of vegetation removal and MEC removal. Land use controls under Alternative 3 would further protect the public and site workers from MEC risks.

- Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services. Alternative 1 would not be administratively feasible to implement because the necessary approvals to take no further action are not expected. Alternatives 2, 3 and 4 would be administratively and technically feasible to implement. Alternative 4, subsurface MEC remediation, would require a higher level of effort to implement from the technical perspective.
- Cost includes estimated capital and long-term implementation costs. Net present value cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent. Table 1 shows the cost of each alternative evaluated for each sub-area and MRS-16. Alternative 1 has no cost. Alternative 2 has the lowest total estimated cost, Alternative 4 has the highest total estimated cost, and Alternative 3 has a total estimated cost in between Alternatives 2 and 4.
- State Acceptance evaluates technical and administrative issues and concerns that the state may have regarding each alternative. State acceptance will be addressed in the resulting ROD once comments on this Proposed Plan have been received.
- Community Acceptance evaluates technical and administrative issues and concerns that the public may have regarding each alternative. Community acceptance will be addressed in the resulting ROD once comments on this Proposed Plan have been received.

Table 1 summarizes the evaluation of the four remedial alternatives for each of the BLM Area B sub-areas and MRS-16.

SUMMARY OF THE PREFERRED ALTERNATIVES

Based on the evaluation and comparison of the four remedial alternatives described above, the Army proposes Alternative 2, Land Use Controls for MRS-16 and BLM Area B sub-areas B-1, B-2, B-3A, B-4, B-5, and B-6. The Army proposes Alternative 3, Technology-Aided Surface MEC Remediation, with Subsurface MEC Remediation in Selected Areas, and LUCs, for BLM Area B sub-areas B-2A and B-3.

Under Alternative 2 (LUCs) safety measures would be incorporated into reuse activities such as recreational use, firefighting, and outdoor maintenance or roadwork activities. This alternative includes MEC recognition and safety training, construction support during reuse activities, and public education. Limited evidence of MEC was found during previous investigations in BLM Area B sub-areas B-1, B-2 and B-3A. While unlikely, there is a possibility that MEC are present in the vegetated areas away from the roads and trails. In sub-area B-2, site walks and SiteStats/GridStats sampling investigation were conducted. BLM has also engaged in ground disturbance activities as part of habitat restoration and trail maintenance across sub-area B-2. The three MEC items found are consistent with bivouac and maneuver training known to have occurred in sub-area B-2. While projectile use was suggested based on an interview, no evidence was found to support such use in sub-area B-2. Surface and/or subsurface MEC removals have been conducted in MRS-16 and BLM Area B sub-areas B-4, B-5, and B-6, significantly reducing the MEC risks.

Alternative 3, Technology-Aided Surface MEC Remediation, with Subsurface MEC Remediation in Selected Areas, and LUCs includes technology-aided surface MEC remediation, and subsurface MEC remediation in selected areas to address specific concerns regarding MEC risk or reuse needs. Available data from previous investigations indicate the possibility that MEC are present in BLM Area B sub-areas

B-2A and B-3 in the vegetated areas away from the roads and trails. Vegetation clearance would be accomplished via prescribed burning in CMC vegetation whenever possible (majority of sub-area B-3), and manual and/or mechanical cutting where development of burn containment lines is considered impractical (sub-area B-2A and portions of sub-area B-3). A safety exclusion zone would be established during vegetation clearance and MEC removal to protect the public. Land use controls would be implemented after the MEC removals.

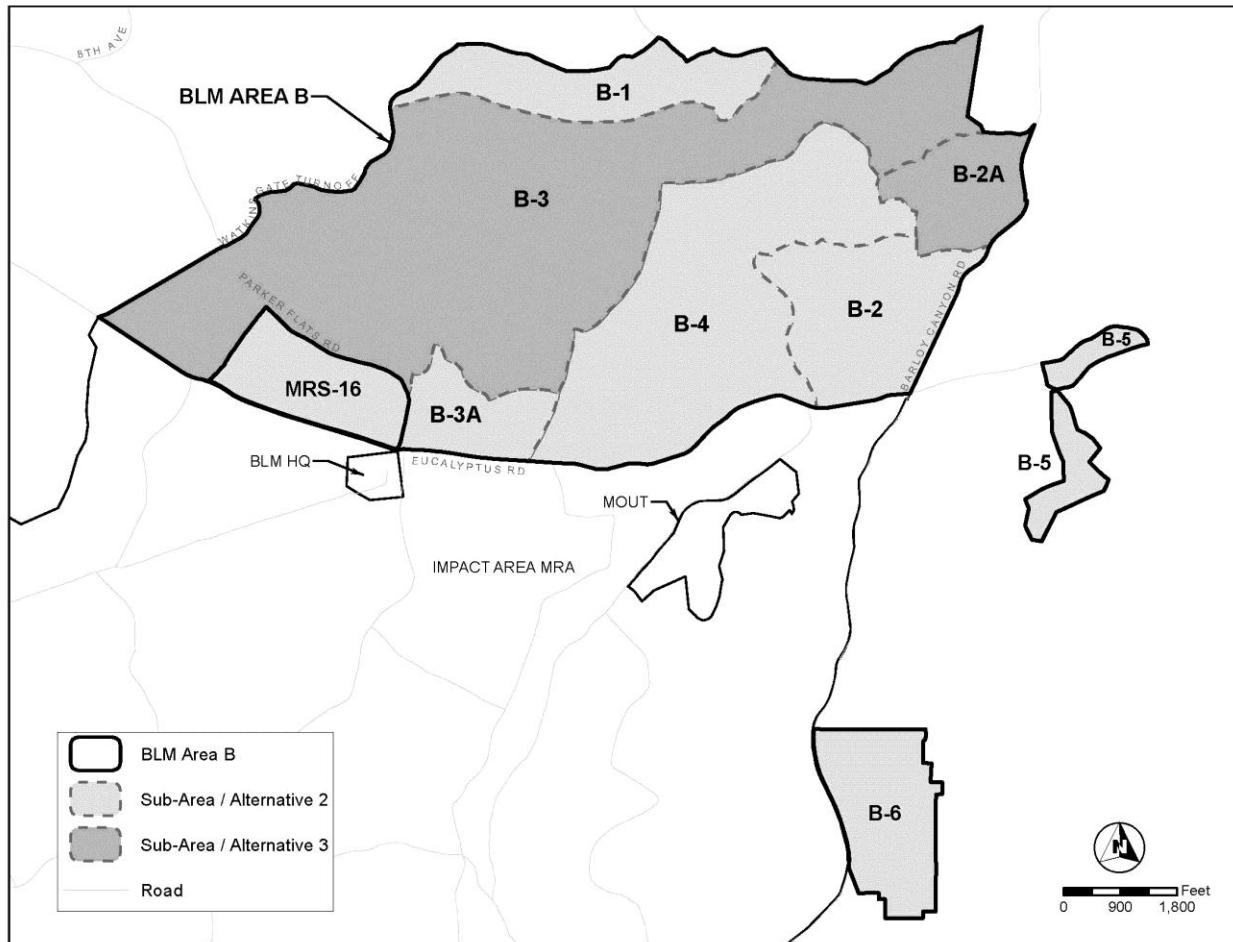


Figure 6. Preferred Alternatives

The Preferred Alternative for MRS-16 and BLM Area B Sub-Areas B-1, B-2, B-3A, B-4, B-5, and B-6

Alternative 2: Land Use Controls

The Preferred Alternative includes:

- *Public education;*
- *MEC recognition and safety training for people who conduct ground-disturbing or intrusive activities; and*
- *Construction support for ground-disturbing or intrusive activities and UXO-qualified personnel support.*

The Preferred Alternative for BLM Area B Sub-Areas B-2A and B-3

Alternative 3: Technology-Aided Surface MEC Remediation, with Subsurface MEC Remediation in Selected Areas, and Land Use Controls

The Preferred Alternative includes:

- *Vegetation clearance using prescribed burning, or manual and/or mechanical cutting, to provide access to conduct MEC removal, depending on vegetation type and removal requirements;*
- *Technology-aided surface MEC removal throughout the sub-areas;*
- *Digital geophysical mapping in surface removal areas to provide a record of remaining anomalies to assist BLM in future subsurface activities;*
- *Subsurface MEC removal in selected areas to address specific reuse and risk, determined in coordination with BLM (assumes 10 percent of acreage);*
- *Implementation of Land Use Controls (MEC recognition and safety training for people who conduct ground-disturbing or intrusive activities, construction support for ground-disturbing or intrusive activities and UXO-qualified personnel support, and public education); and*
- *Post-remediation habitat monitoring.*

Long Term Management Measures *that will also be implemented include:*

- *Land use restrictions documented in accordance with federal property management processes.*
- *Annual monitoring and reporting.*
- *Five-year review reporting.*

Based on information currently available, the lead agency believes the Preferred Alternatives for BLM Area B and MRS-16 described above meet the threshold criteria and provide the best approach among the remedial alternatives with respect to the balancing and modifying criteria. The lead agency expects the Preferred Alternatives to satisfy the following statutory requirements of CERCLA §121(b):

- 1) be protective of human health and the environment;*
- 2) comply with ARARs (or justify a waiver);*
- 3) be cost-effective;*
- 4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and*
- 5) satisfy the preference for treatment as a principal element (or justify not meeting the preference).*

HOW TO MAKE COMMENTS

The Army is the responsible party and lead agency for investigating, reporting, making cleanup decisions, and implementing cleanup actions at the former Fort Ord. The Army, as lead agency, is soliciting public comments on munitions response at BLM Area B and MRS-16 described in this Proposed Plan. The BLM Area B and MRS-16 RI/FS (Gilbane, 2015) provides a detailed site report that describes the information gathered during the site investigations and data evaluation, as well as a more detailed description of the reasons for the Army's recommendation for the proposed alternatives. These reports are available for inspection at the Administrative Record listed below.

Public comments will be considered before any action is selected and approved. Written and oral comments on this BLM Area B and MRS-16 Proposed Plan will be accepted at the public meeting scheduled on April 15, 2015, from 6:00 p.m. to 8:00 p.m. at the Marina Library, Marina, California. Representatives from the Army, EPA, and DTSC will be present at this meeting to explain the Proposed Plan, answer questions, and accept public comments.

Written comments will be accepted at the public meeting and throughout the 30-day public comment period from April 8, 2015 through May 8, 2015. Correspondence should be postmarked no later than May 8, 2015 and sent to the attention of the U.S. Army representative at the following address (*Please reference BLM Area B and MRS-16 Proposed Plan in your correspondence*):

**Department of the Army
Fort Ord Base Realignment and Closure (BRAC) Office
ATTN: William K. Collins
BRAC Environmental Coordinator
P.O. Box 5008
Monterey, California 93944-5008**

INFORMATION ACCESS

U.S. Army Representative

Department of the Army

Fort Ord Base Realignment and Closure (BRAC) Office

P.O. Box 5008

Monterey, California 93944-5008

Contact: William K. Collins, BRAC Environmental Coordinator

(831) 393-1284 FAX: (831) 393-9188 email: William.K.Collins.civ@mail.mil

Hours: 8:00 am - 5:00 pm

Regulatory Representatives

U.S. Environmental Protection Agency, Region IX

Superfund Federal Facilities Cleanup Branch

75 Hawthorne Street, Mail Code SFD-8-3

San Francisco, California 94105

Contact: Lewis Mitani, Remedial Project Manager

(415) 972-3032 email: Mitani.Lewis@epa.gov

Hours: 8:00 am - 5:00 pm

California EPA Department of Toxic Substances Control, Region 2

Brownfields and Environmental Restoration Program

8800 Cal Center Drive

Sacramento, California 95826

Contact: Ed Walker, Remedial Project Manager

(916) 255-4988 email: Ed.Walker@dtsc.ca.gov

Hours: 8:00 am - 5:00 pm

Administrative Record

Fort Ord Administrative Record (www.fortordcleanup.com)

Building 4463 Gigling Road, Room 101

Ord Military Community, California 93944-5008

(831) 393-9693 FAX: (831) 393-9188

Hours: Mon-Fri 9:00 am-4:00 pm. Other hours by appointment. Closed daily, 12:00 pm-1:30 pm and Federal holidays.

Information Repositories

California State University Monterey Bay (CSUMB) Tanimura and Antle Family Memorial Library

Divarty Street, CSUMB Campus (Please park in lot # 508)

Seaside, California 93955

(831) 582-3733

For current library hours, call or visit <http://csumb.edu/library>

Seaside Branch Library

550 Harcourt Avenue

Seaside, California 93955

(831) 899-2055

Hours: Mon-Thurs 10:00 am-8:00 pm; Fri/Sat 10:00 am-5:00 pm

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³ Administrative Record numbers are provided for those documents contained in the Administrative Record.

GLOSSARY

Administrative Record – A compilation of documents relied upon to select a remedial action pertaining to the investigation and cleanup of Fort Ord.

Applicable or Relevant and Appropriate Requirements (ARARs) – Federal and State laws and regulations pertaining to environmental cleanups that can be specific to the chemicals found at a site, the potential actions proposed to address contamination at a site, or the location of the site.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, otherwise known as Superfund) – A federal law that addresses the funding for and cleanup of abandoned or uncontrolled hazardous waste sites. This law also establishes criteria for the creation of key cleanup documents such as the Remedial Investigation (RI), Feasibility Study (FS), Proposed Plan, and Record of Decision (ROD).

Feasibility Study (FS) – An evaluation of potential remedial technologies and treatment options that can be used to clean up a site.

Land Use Controls (LUC) – Land use controls are physical, legal, or administrative mechanisms that restrict the use of, or limit access to, real property, to manage risks to human health and the environment. Physical mechanisms include fences, pavement, or signs. Legal mechanisms include deed restrictions that limit how the property is used. Administrative mechanisms include providing munitions recognition training for workers who do intrusive work.

Military Munitions Response Program (MMRP) – U.S. Department of Defense (DoD)-established program to manage the environmental, health and safety issues presented by MEC.

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

Munitions Debris – Remnants of munitions (e.g., fragments, penetrators, projectiles, shell casings, links, fins) remaining after munitions use, demilitarizations, or disposal.

Munitions and Explosives of Concern (MEC) – Distinguishes specific categories of military munitions that may pose unique explosives safety risks, such as: unexploded ordnance (UXO), as defined in 10 U.S.C. 101(e)(5); discarded military munitions (DMM), as defined in 10 U.S.C. 2710(e)(2); or munitions constituents (MC, e.g., TNT, Cyclotrimethylene trinitramine [RDX]), as defined in 10 U.S.C. 2710(e)(3), present in high enough concentrations to pose an explosive hazard. For the purposes of the Basewide Munitions Response Program being conducted for the former Fort Ord, MEC does not include small arms ammunition .50 caliber and below.

Munitions Response Area (MRA) – Any area on a defense site that is known or suspected to contain UXO, DMM, or MC. A munitions response area is made up of one or more munitions response sites.

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

Ordnance and Explosives (OE) – Consists of either (1) or (2) below:

(1) Ammunition, ammunition components, chemical or biological warfare materiel or explosives that are abandoned, expelled from demolition pits or burning pads, lost, discarded, buried, or fired. Such ammunition, ammunition components, and explosives are no longer under accountable record control of any Department of Defense organization or activity.

(2) Explosive soil, which refers to mixtures of explosives in soil, sand, clay, or other solid media at concentrations such that the mixture itself is explosive.

Preferred Alternative – The remedial alternative that, when compared to other potential alternatives, was determined to best meet the nine CERCLA evaluation criteria in the Feasibility Study, and is proposed for implementation at a site.

Proposed Plan – A plan that identifies the preferred alternative for a site cleanup, and is made available to the public for comment.

Record of Decision (ROD) – A report documenting the final action, approved by the regulatory agencies, that is required at Superfund sites.

Remedial Action Objectives (RAOs) – Specific goals to be met as part of a remedial action that are developed to protect human health and the environment.

Remedial Alternatives – Potential remedies to address contamination (in this case, MEC).

Remedial Investigation (RI) – Exploratory inspection conducted at a site to define the nature and extent of chemicals, and in this case, MEC present.

Superfund – See Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) above.

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

Unexploded Ordnance (UXO) – Military munitions that: (A) are primed, fuzed, armed, or otherwise prepared for action; (B) are fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or materials; and (C) remain unexploded either by malfunction, design, or any other cause. (10 U.S.C. 101(e)(5)).

Table 1. Summary of Remedial Alternatives Evaluation
Feasibility Study, BLM Area B and MRS-16 RI/FS, Former Fort Ord, California

Remedial Alternative	EPA's Nine CERCLA Evaluation Criteria								
	Threshold Criteria		Balancing Criteria					Modifying Criteria	
	Overall Protection of Human Health and the Environment	Compliance with ARARs	Short-Term Effectiveness	Long-Term Effectiveness and Permanence	Reduction of T, M, V Through Treatment	Implementability	Cost	State Acceptance	Community Acceptance
B-1 Alternative 1 No Further Action	NFA would be protective of human health for recreational users who stay on established roads and trails, but may not be protective of surface or subsurface receptors within sub-area B-1.	No ARARs were identified for this alternative.	Not effective in the short term because no further action is taken.	Not effective or permanent in the long term because no further action would be taken to address potential MEC risks.	Does not provide reduction of toxicity, mobility, or volume because no further action would be taken.	Not administratively feasible to implement. While the NFA alternative would be easy to implement, the necessary approvals are not expected.	No Cost	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.
B-1 Alternative 2 Land Use Controls	Protective of human health and the environment. Mitigates potential MEC risks remaining.	No ARARs were identified for this alternative.	Effective in the short term because potential MEC risks are mitigated by MEC recognition and safety training, construction support, and public education.	Effective and permanent in the long term because potential MEC risks are mitigated by MEC recognition and safety training, construction support, and public education.	Does not provide reduction of toxicity, mobility, or volume because no MEC removal would be conducted.	Administratively feasible. Moderate level of effort to implement from a technical perspective.	\$67,000	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.
B-1 Alternative 3 Technology-aided Surface MEC Removal, with Subsurface MEC Removal in Selected Areas, and LUCs	Protective of human health and the environment. Mitigates potential MEC risks remaining. Vegetation removal by prescribed burns would be beneficial for the environment.	MEC remediation would be implemented in compliance with ARARs.	Effective in the short term. Workers and the community would be protected during prescribed burning and MEC removal by safety protocols.	Effective and permanent in the long term because all MEC detected on the surface and the subsurface in select areas would be removed and LUCs would mitigate potentially remaining MEC risks.	Provides reduction through surface MEC and subsurface MEC removal in select areas.	Administratively feasible. High level of effort to implement from a technical perspective.	\$3,252,000	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.
B-1 Alternative 4 Subsurface MEC Remediation	Protective of human health and the environment. Mitigates potential MEC risks remaining. Vegetation removal by prescribed burns would be beneficial for the environment.	MEC remediation would be implemented in compliance with ARARs.	Effective in the short term. Workers and the community would be protected during vegetation and MEC removal by safety protocols.	Effective and permanent in the long term because all MEC detected on the surface and in the subsurface would be removed.	Provides reduction through surface MEC and subsurface MEC removal.	Administratively feasible. High level of effort to implement from a technical perspective.	\$4,633,000	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.
B-2 Alternative 1 No Further Action	NFA would be protective of human health for recreational users who stay on established roads and trails, but may not be protective of surface or subsurface receptors within sub-area B-2.	No ARARs were identified for this alternative.	Not effective in the short term because no further action is taken.	Not effective or permanent in the long term because no further action would be taken to address potential MEC risks.	Does not provide reduction of toxicity, mobility, or volume because no further action would be taken.	Not administratively feasible to implement. While the NFA alternative would be easy to implement, the necessary approvals are not expected.	No Cost	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.

Remedial Alternative	EPA's Nine CERCLA Evaluation Criteria								
	Threshold Criteria		Balancing Criteria					Modifying Criteria	
	Overall Protection of Human Health and the Environment	Compliance with ARARs	Short-Term Effectiveness	Long-Term Effectiveness and Permanence	Reduction of T, M, V Through Treatment	Implementability	Cost	State Acceptance	Community Acceptance
B-2 Alternative 2 Land Use Controls	Protective of human health and the environment. Mitigates potential MEC risks remaining.	No ARARs were identified for this alternative.	Effective in the short term because potential MEC risks are mitigated by MEC recognition and safety training, construction support, and public education.	Effective and permanent in the long term because potential MEC risks are mitigated by MEC recognition and safety training, construction support, and public education.	Does not provide reduction of toxicity, mobility, or volume because no MEC removal would be conducted.	Administratively feasible. Moderate level of effort to implement from a technical perspective.	\$86,000	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.
B-2 Alternative 3 Technology-aided Surface MEC Removal, with Subsurface MEC Removal in Selected Areas, and LUCs	Protective of human health and the environment. Mitigates potential MEC risks remaining. Vegetation removal by prescribed burns would be beneficial for the environment.	MEC remediation would be implemented in compliance with ARARs.	Effective in the short term. Workers and the community would be protected during prescribed burning and MEC removal by safety protocols.	Effective and permanent in the long term because all MEC detected on the surface and select areas of subsurface would be removed and LUCs would mitigate potentially remaining MEC risks.	Provides reduction through surface MEC and subsurface MEC removal in select areas.	Administratively feasible. High level of effort to implement from a technical perspective.	\$3,808,000	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.
B-2 Alternative 4 Subsurface MEC Remediation	Protective of human health and the environment. Mitigates potential MEC risks remaining. Vegetation removal by prescribed burns would be beneficial for the environment.	MEC remediation would be implemented in compliance with ARARs.	Effective in the short term. Workers and the community would be protected during prescribed burning and MEC removal by safety protocols.	Effective and permanent in the long term because all MEC detected on the surface and in the subsurface would be removed.	Provides reduction through surface MEC and subsurface MEC removal.	Administratively feasible. High level of effort to implement from a technical perspective.	\$5,497,000	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.
B-2A Alternative 1 No Further Action	NFA would be protective of human health for recreational users who stay on established roads and trails, but may not be protective of surface or subsurface receptors within sub-area B-2A.	No ARARs were identified for this alternative.	Not effective in the short term because no further action is taken.	Not effective or permanent in the long term because no further action would be taken to address potential MEC risks.	Does not provide reduction of toxicity, mobility, or volume because no further action would be taken.	Not administratively feasible to implement. While the NFA alternative would be easy to implement, the necessary approvals are not expected.	No Cost	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.
B-2A Alternative 2 Land Use Controls	Protective of human health and the environment. Mitigates potential MEC risks remaining.	No ARARs were identified for this alternative.	Effective in the short term because potential MEC risks are mitigated by MEC recognition and safety training, construction support, and public education.	Effective and permanent in the long term because potential MEC risks are mitigated by MEC recognition and safety training, construction support, and public education.	Does not provide reduction of toxicity, mobility, or volume because no MEC removal would be conducted.	Administratively feasible. Moderate level of effort to implement from a technical perspective.	\$45,000	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.
B-2A Alternative 3 Technology-aided Surface MEC Removal, with Subsurface MEC Removal in Selected Areas, and LUCs	Protective of human health and the environment. Mitigates potential MEC risks remaining.	MEC remediation would be implemented in compliance with ARARs.	Effective in the short term. Workers and the community would be protected during vegetation and MEC removal via safety protocols.	Effective and permanent in the long term because all MEC detected on the surface and select areas of the subsurface would be removed and LUCs would mitigate potentially remaining MEC risks.	Provides reduction through surface MEC and subsurface MEC removal in select areas.	Administratively feasible. High level of effort to implement from a technical perspective.	\$1,709,000	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.

Remedial Alternative	EPA's Nine CERCLA Evaluation Criteria								
	Threshold Criteria		Balancing Criteria					Modifying Criteria	
	Overall Protection of Human Health and the Environment	Compliance with ARARs	Short-Term Effectiveness	Long-Term Effectiveness and Permanence	Reduction of T, M, V Through Treatment	Implementability	Cost	State Acceptance	Community Acceptance
B-2A Alternative 4 Subsurface MEC Remediation	Protective of human health and the environment. Mitigates potential MEC risks remaining.	MEC remediation would be implemented in compliance with ARARs.	Effective in the short term. Workers and the community would be protected during vegetation and MEC removal and by safety protocols.	Effective and permanent in the long term because all MEC detected on the surface and in the subsurface would be removed.	Provides reduction through surface MEC and subsurface MEC removal.	Administratively feasible. High level of effort to implement from a technical perspective.	\$4,503,000	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.
B-3 Alternative 1 No Further Action	NFA would be protective of human health for recreational users who stay on established roads and trails, but may not be protective of surface or subsurface receptors within sub-area B-3.	No ARARs were identified for this alternative.	Not effective in the short term because no further action is taken.	Not effective or permanent in the long term because no further action would be taken to address potential MEC risks.	Does not provide reduction of toxicity, mobility, or volume because no further action would be taken.	Not administratively feasible to implement. While the NFA alternative would be easy to implement, the necessary approvals are not expected.	No Cost	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.
B-3 Alternative 2 Land Use Controls	Protective of human health and the environment. Mitigates potential MEC risks remaining.	No ARARs were identified for this alternative.	Effective in the short term because potential MEC risks are mitigated by MEC recognition and safety training, construction support, and public education.	Effective and permanent in the long term because potential MEC risks are mitigated by MEC recognition and safety training, construction support, and public education.	Does not provide reduction of toxicity, mobility, or volume because no MEC removal would be conducted.	Administratively feasible. Moderate level of effort to implement from a technical perspective.	\$435,000	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.
B-3 Alternative 3 Technology-aided Surface MEC Removal, with Subsurface MEC Removal in Selected Areas, and LUCs	Protective of human health and the environment. Mitigates potential MEC risks remaining. Vegetation removal by prescribed burns would be beneficial for the environment.	MEC remediation would be implemented in compliance with ARARs.	Effective in the short term. Workers and the community would be protected during prescribed burning and MEC removal by safety protocols.	Effective and permanent in the long term because all MEC detected on the surface and select portions of the subsurface would be removed and LUCs would mitigate potentially remaining MEC risks.	Provides reduction through surface MEC and subsurface MEC removal in select areas.	Administratively feasible. High level of effort to implement from a technical perspective.	\$21,922,000	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.
B-3 Alternative 4 Subsurface MEC Remediation	Protective of human health and the environment. Mitigates potential MEC risks remaining. Vegetation removal by prescribed burns would be beneficial for the environment.	MEC remediation would be implemented in compliance with ARARs.	Effective in the short term. Workers and the community would be protected during prescribed burning and MEC removal by safety protocols.	Effective and permanent in the long term because all MEC detected on the surface and in the subsurface would be removed.	Provides reduction through surface MEC and subsurface MEC removal.	Administratively feasible. High level of effort to implement from a technical perspective.	\$37,127,000	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.
B-3A Alternative 1 No Further Action	NFA would be protective of human health for recreational users who stay on established roads and trails, but may not be protective of surface or subsurface receptors within sub-area B-3A.	No ARARs were identified for this alternative.	Not effective in the short term because no further action is taken.	Not effective or permanent in the long term because no further action would be taken to address potential MEC risks.	Does not provide reduction of toxicity, mobility, or volume because no further action would be taken.	Not administratively feasible to implement. While the NFA alternative would be easy to implement, the necessary approvals are not expected.	No Cost	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.

Remedial Alternative	EPA's Nine CERCLA Evaluation Criteria								
	Threshold Criteria		Balancing Criteria					Modifying Criteria	
	Overall Protection of Human Health and the Environment	Compliance with ARARs	Short-Term Effectiveness	Long-Term Effectiveness and Permanence	Reduction of T, M, V Through Treatment	Implementability	Cost	State Acceptance	Community Acceptance
B-3A Alternative 2 Land Use Controls	Protective of human health and the environment. Mitigates potential MEC risks remaining.	No ARARs were identified for this alternative.	Effective in the short term because potential MEC risks are mitigated by MEC recognition and safety training, construction support, and public education.	Effective and permanent in the long term because potential MEC risks are mitigated by MEC recognition and safety training, construction support, and public education.	Does not provide reduction of toxicity, mobility, or volume because no MEC removal would be conducted.	Administratively feasible. Moderate level of effort to implement from a technical perspective.	\$38,000	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.
B-3A Alternative 3 Technology-aided Surface MEC Removal, with Subsurface MEC Removal in Selected Areas, and LUCs	Protective of human health and the environment. Mitigates potential MEC risks remaining. Vegetation removal by prescribed burns would be beneficial for the environment.	MEC remediation would be implemented in compliance with ARARs.	Effective in the short term. Workers and the community would be protected during prescribed burning and MEC removal by safety protocols.	Effective and permanent in the long term because all MEC detected on the surface and select portions of the subsurface would be removed and LUCs would mitigate potentially remaining MEC risks.	Provides reduction through surface MEC and subsurface MEC removal in select areas.	Administratively feasible. High level of effort to implement from a technical perspective.	\$2,442,000	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.
B-3A Alternative 4 Subsurface MEC Remediation	Protective of human health and the environment. Mitigates potential MEC risks remaining. Vegetation removal by prescribed burns would be beneficial for the environment.	MEC remediation would be implemented in compliance with ARARs.	Effective in the short term. Workers and the community would be protected during vegetation and MEC removal by safety protocols.	Effective and permanent in the long term because all MEC detected on the surface and in the subsurface would be removed.	Provides reduction through surface MEC and subsurface MEC removal.	Administratively feasible. High level of effort to implement from a technical perspective.	\$3,167,000	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.
B-4 Alternative 1 No Further Action	NFA would be protective of human health for recreational users who stay on established roads and trails, but may not be protective of subsurface receptors within sub-area B-4.	No ARARs were identified for this alternative.	Not effective in the short term because no further action is taken.	Not effective or permanent in the long term because no further action would be taken to address potential MEC risks.	Does not provide reduction of toxicity, mobility, or volume because no further action would be taken.	Not administratively feasible to implement. While the NFA alternative would be easy to implement, the necessary approvals are not expected.	No Cost	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.
B-4 Alternative 2 Land Use Controls	Protective of human health and the environment. Mitigates potential MEC risks remaining.	No ARARs were identified for this alternative.	Effective in the short term because potential MEC risks are mitigated by MEC recognition and safety training, construction support, and public education.	Effective and permanent in the long term because potential MEC risks are mitigated by MEC recognition and safety training, construction support, and public education.	Does not provide reduction of toxicity, mobility, or volume because no additional MEC removal would be conducted.	Administratively feasible. Moderate level of effort to implement from a technical perspective.	\$209,000	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.
B-4 Alternative 3 Technology-aided Surface MEC Removal, with Subsurface MEC Removal in Selected Areas, and LUCs	Protective of human health and the environment. Mitigates potential MEC risks remaining.	MEC remediation would be implemented in compliance with ARARs.	Effective in the short term. Workers and the community would be protected during vegetation cutting and MEC removal by safety protocols.	Effective and permanent in the long term because all MEC detected in a select portion of the subsurface would be removed and LUCs would mitigate potentially remaining MEC risks.	Provides reduction through surface MEC and subsurface MEC removal in select areas.	Administratively feasible. Moderate level of effort to implement from a technical perspective.	\$2,397,000	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.

Remedial Alternative	EPA's Nine CERCLA Evaluation Criteria								
	Threshold Criteria		Balancing Criteria					Modifying Criteria	
	Overall Protection of Human Health and the Environment	Compliance with ARARs	Short-Term Effectiveness	Long-Term Effectiveness and Permanence	Reduction of T, M, V Through Treatment	Implementability	Cost	State Acceptance	Community Acceptance
B-4 Alternative 4 Subsurface MEC Remediation	Protective of human health and the environment. Mitigates potential MEC risks remaining. Vegetation removal by prescribed burns would be beneficial for the environment.	MEC remediation would be implemented in compliance with ARARs.	Effective in the short term. Workers and the community would be protected during prescribed burning and MEC removal by safety protocols.	Effective and permanent in the long term because all MEC detected on the surface and in the subsurface would be removed.	Provides reduction through surface MEC and subsurface MEC removal.	Administratively feasible. High level of effort to implement from a technical perspective.	\$10,321,000	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.
B-5 Alternative 1 No Further Action	NFA would be protective of human health for recreational users who stay on established roads and trails, but may not be protective of surface or subsurface receptors within sub-area B-5.	No ARARs were identified for this alternative.	Not effective in the short term because no further action is taken.	Not effective or permanent in the long term because no further action would be taken to address potential MEC risks.	Does not provide reduction of toxicity, mobility, or volume because no further action would be taken.	Not administratively feasible to implement. While the NFA alternative would be easy to implement, the necessary approvals are not expected.	No Cost	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.
B-5 Alternative 2 Land Use Controls	Protective of human health and the environment. Mitigates potential MEC risks remaining.	No ARARs were identified for this alternative.	Effective in the short term because potential MEC risks are mitigated by MEC recognition and safety training, construction support, and public education.	Effective and permanent in the long term because potential MEC risks are mitigated by MEC recognition and safety training, construction support, and public education.	Does not provide reduction of toxicity, mobility, or volume because no MEC removal would be conducted.	Administratively feasible. Moderate level of effort to implement from a technical perspective.	\$26,000	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.
B-5 Alternative 3 Technology-aided Surface MEC Removal, with Subsurface MEC Removal in Selected Areas, and LUCs	Protective of human health. Mitigates potential MEC risks remaining.	MEC remediation would be implemented in compliance with ARARs.	Effective in the short term. Workers and the community would be protected during the implementation of vegetation and MEC removal via safety protocols.	Effective and permanent in the long term because all MEC detected on the surface and a portion of the subsurface would be removed and LUCs would mitigate potentially remaining MEC risks.	Provides reduction through surface MEC and subsurface MEC removal in select areas.	Administratively feasible. High level of effort to implement from a technical perspective.	\$1,849,000	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.
B-5 Alternative 4 Subsurface MEC Remediation	Protective of human health and the environment. Mitigates potential MEC risks remaining. Dewatering of Mudhen Lake and subsurface MEC removal would be conducted with appropriate mitigation measures to minimize habitat impact.	MEC remediation would be implemented in compliance with ARARs.	Effective in the short term. Workers and the community would be protected during vegetation and MEC removal by safety protocols.	Effective and permanent in the long term because all MEC detected on the surface and in the subsurface would be removed.	Provides reduction through surface MEC and subsurface MEC removal.	Administratively feasible. High level of effort to implement from a technical perspective.	\$3,134,000	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.
B-6 Alternative 1 No Further Action	NFA would be protective of human health for recreational users who stay on established roads and trails, but may not be protective of surface or subsurface receptors within sub-area B-6.	No ARARs were identified for this alternative.	Not effective in the short term because no further action is taken.	Not effective or permanent in the long term because no further action would be taken to address potential MEC risks.	Does not provide reduction of toxicity, mobility, or volume because no further action would be taken.	Not administratively feasible to implement. While the NFA alternative would be easy to implement, the necessary approvals are not expected.	No Cost	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.

Remedial Alternative	EPA's Nine CERCLA Evaluation Criteria								
	Threshold Criteria		Balancing Criteria					Modifying Criteria	
	Overall Protection of Human Health and the Environment	Compliance with ARARs	Short-Term Effectiveness	Long-Term Effectiveness and Permanence	Reduction of T, M, V Through Treatment	Implementability	Cost	State Acceptance	Community Acceptance
B-6 Alternative 2 Land Use Controls	Protective of human health and the environment. Mitigates potential MEC risks remaining.	No ARARs were identified for this alternative.	Effective in the short term because potential MEC risks are mitigated by MEC recognition and safety training, construction support, and public education.	Effective and permanent in the long term because potential MEC risks are mitigated by MEC recognition and safety training, construction support, and public education.	Does not provide reduction of toxicity, mobility, or volume because no additional MEC removal would be conducted.	Administratively feasible. Moderate level of effort to implement from a technical perspective.	\$61,000	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.
B-6 Alternative 3	Not Applicable								
B-6 Alternative 4 Subsurface MEC Remediation	Protective of human health and the environment. Mitigates potential MEC risks remaining.	MEC remediation would be implemented in compliance with ARARs.	Effective in the short term. Workers and the community would be protected during the implementation of vegetation and MEC removal via safety protocols.	Effective and permanent in the long term because all MEC detected on the surface and in the subsurface would be removed.	Provides reduction through surface and subsurface MEC removal.	Administratively feasible. High level of effort to implement from a technical perspective.	\$2,527,000	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.
MRS-16 Alternative 1 No Further Action	NFA would be protective of human health for recreational users who stay on established roads and trails, but may not be protective of surface or subsurface receptors within the “saturated area” of MRS-16.	No ARARs were identified for this alternative.	May be effective in the short term because all detected MEC items have been removed from the site.	Not effective or permanent in the long term because no further action would be taken to address potential MEC risks.	Does not provide reduction of toxicity, mobility, or volume because no further action would be taken.	May not be administratively feasible to implement. While the NFA alternative would be easy to implement, the necessary approvals are not expected.	No Cost	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.
MRS-16 Alternative 2 Land Use Controls	Protective of human health and the environment. Mitigates potential MEC risks remaining.	No ARARs were identified for this alternative.	Effective in the short term because potential MEC risks are mitigated by MEC recognition and safety training, construction support, and public education.	Effective and permanent in the long term because potential MEC risks are mitigated by MEC recognition and safety training, construction support, and public education.	Does not provide reduction of toxicity, mobility, or volume because no additional MEC removal would be conducted.	Administratively feasible. Moderate level of effort to implement from a technical perspective.	\$49,000	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.
MRS-16 Alternative 3	Not Applicable								
MRS-16 Alternative 4 Subsurface MEC Remediation	Protective of human health and the environment. Mitigates potential MEC risks remaining. Subsurface MEC removal that involves excavation and sifting would be conducted with appropriate mitigation measures to minimize habitat impact.	MEC remediation would be implemented in compliance with ARARs.	Effective in the short term. Workers and the community would be protected during MEC removal by safety protocols.	Effective and permanent in the long term because the subsurface MEC removal would be conducted in the “saturated area.”	Provides reduction through subsurface MEC removal in the “saturated area.”	Administratively feasible. High level of effort to implement from a technical perspective.	\$817,000	Addressed in the resulting ROD once comments on the Proposed Plan have been received.	Addressed in the resulting ROD once comments on the Proposed Plan have been received.