

**Final  
Track 2 Munitions Response  
Remedial Investigation/Feasibility Study  
Parker Flats Munitions Response Area  
Former Fort Ord, California**

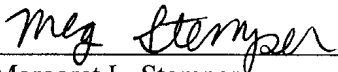
**Volume 3 of 3**

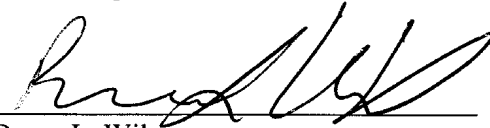
**Feasibility Study**

Prepared for

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Volume 3 of 3

Feasibility Study

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DISTRIBUTION

## 1.0 INTRODUCTION

This volume of the Parker Flats Munitions Response Area, Munitions Response Remedial Investigation / Feasibility (Parker Flats MRA RI/FS) report presents the Feasibility Study that identifies and selects preferred remedial alternatives to address potential after-action Munitions and Explosives of Concern (MEC) risks at the Parker Flats MRA. The results of this Feasibility Study will be used to support the Parker Flats MRA RI/FS Proposed Plan and Record of Decision (ROD) that will document the results of the Remedial Investigation (RI; Volume I), Risk Assessment (RA; Volume II) and this Feasibility Study (FS; Volume III) as illustrated on Figure 1.

### 1.1 Purpose and Objectives

The purpose of this FS is to develop and select remedial alternatives to address any potential MEC risks remaining at the Parker Flats MRA reuse areas. The objectives of this FS are to describe the process used to develop, evaluate, compare and select preferred alternatives that will meet the Remedial Action Objectives (RAOs) based on the results of the RI and RA for these areas.

### 1.2 Report Organization

This FS report is organized as follows:

**Section 1.0: Introduction**—Provides background information on the Parker Flats MRA RI/FS process and describes the purpose and objectives of this FS.

**Section 2.0: Remedial Approach**—Defines the reuse areas for which remedial alternatives will be developed in the FS, and describes the Remedial Action Objectives (RAOs); the application of risk assessment results; Applicable or Relevant and Appropriate Requirements (ARARs); land use control guidelines that will be applied in the development of remedial alternatives; and ongoing and future MEC-related activities at the former Fort Ord that are components of the Army's basewide efforts under the Army's Munitions Response (MR) Site Security Program to promote MEC safety because of Fort Ord's history as a military base.

**Section 3.0: Identification of Applicable Response Actions**—Identifies the range of applicable response actions for MEC risk management at these areas—no further action; land use controls; and additional MEC remediation.

**Section 4.0: Development of Remedial Alternatives**—Presents the Long Term Management Measures specific to implementation and management of the remedial alternatives selected for the Parker Flats MRA; and a screening of response action components and development of remedial alternatives, and identifies potential ARARs associated with their implementation.

**Section 5.0: Evaluation and Comparison of Remedial Alternatives**—Presents the evaluation and comparison of potential remedial alternatives for each of the Parker Flats MRA reuse areas.

**Section 6.0: Selection of Preferred Remedial Alternatives**—Presents and summarizes the preferred remedial alternative for each reuse area.

**Section 7.0: Approval Process**—Describes the approval process for documenting the preferred alternatives for implementation at each of the Parker Flats MRA reuse areas in the RI/FS Proposed Plan and ROD.

**Section 8.0: References**—Provides a list of references to pertinent documents cited in this report.

## 2.0 REMEDIAL APPROACH

This section describes the general remedial approach applied at the Parker Flats MRA reuse areas, including (1) how the results of the RI and RA are used to define the eight reuse areas for which remedial alternatives are developed; (2) the Remedial Action Objectives (RAOs), potentially Applicable or Relevant and Appropriate Requirements (ARARs), and land use control guidelines that will be considered in the development and analysis of remedial alternatives; and (3) Long Term Management Measures that will be applied to implement and manage the remedial alternatives selected for the Parker Flats MRA.

The RI/FS process as outlined in the U.S. Environmental Protection Agency's (EPA's) *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (EPA, 1989)* (EPA's RI/FS Guidance) represents the methodology that the Superfund program has established for characterizing the nature and extent of risk posed by contaminated sites and for evaluating potential remedial options. This FS was prepared based on the process outlined in the Guidance; however, it was adapted to fit the unique circumstances of the Parker Flats MRA as described below.

### **Remedial Investigation**

The general premise of the RI process is that contamination exists at a site for which an initial investigation is required to define the nature and extent of the contamination. For the Parker Flats MRA reuse areas being evaluated in this RI/FS, however, MEC was known to be present in these areas and MEC removal actions have already been completed according to contractual and/or work plan requirements in place at the time the work was conducted as described in the RI. Therefore, the purpose of the RI in this case was to evaluate the completeness of the MEC removal actions already conducted and verify adequate MEC-related data was available to perform the subsequent RA and FS. The RI determined adequate MEC-related data was available to perform the subsequent RA and FS for the thirteen munitions response sites (MRSs) that comprise the Parker Flats MRA.

### **Risk Assessment**

The general premise of the RA process is that contamination exists at a site at concentrations that can be compared to risk-based levels considered protective of human health and the environment. In order to quantify potentially remaining risks, protective risk-based levels are typically translated into site-wide cleanup levels. A range of remedial alternatives are then developed and compared in the FS based on their ability to achieve the site-wide cleanup levels and other RAOs. For the Parker Flats MRA reuse areas being evaluated in this RI/FS, site-wide cleanup levels cannot be developed to quantify potentially remaining MEC risks. In this case, a unique Fort Ord Ordnance and Explosives Risk Assessment Protocol (Protocol; *Malcolm Pirnie, 2002*) was developed to estimate potentially remaining MEC risks (Overall MEC Risk Scores) for each receptor expected to be present during development and reuse of an area. However, at some of the Parker Flats MRA reuse areas, even though a MEC removal was conducted, Overall MEC Risk Scores could not be estimated because the Protocol can only be applied at sites where there is MEC data. Examples include areas within Parker Flats MRA where MEC investigations (1) were conducted and no MEC was found, and (2) could not be performed in portions of the site because of ground surface obstructions such as pavement, roadways, or building structures. For these areas where no RA was conducted because MEC data was not available, the following section describes the process used to determine whether the area would be carried forward for further analysis in the FS, or would be addressed in the future under the MR RI/FS.



## **Feasibility Study**

The general premise of the FS process is that a range of remedial alternatives can be developed, evaluated, and compared based on their ability to achieve site-wide cleanup levels and other RAOs. For the Parker Flats MRA reuse areas being evaluated in this RI/FS, potentially remaining MEC risks (Overall MEC Risks Scores) were estimated in the RA for each of five or six specific reuse receptors, rather than on a site-wide basis. Therefore, the remedial alternatives evaluated in this FS were developed to provide overlapping management of potentially remaining MEC risks for the range of reuse receptors anticipated at each reuse area.

### 2.1 Assessment and Definition of Reuse Areas for FS Analysis

The following sections describe the assessment of reuse areas presented in the RI and RA for eligibility to be considered in the FS, and definition of areas retained for the analysis of remedial alternatives in Sections 3.0 through 5.0.

#### 2.1.1 Assessment of Reuse Areas for FS Analysis

This section describes the process used to assess each of the Parker Flats MRA reuse areas to determine their eligibility to be considered in the FS for development and analysis of remedial alternatives. The results of this assessment are summarized in Table 1; the reuse areas that were retained or eliminated from analysis in the FS are shown on Plate 1; and the definition of the reuse areas that will be analyzed in the FS are presented in Section 2.1.2. For completeness, Plate 2 shows an overlay of the individual MRS boundaries to help identify which MRS falls within each reuse area.

The reuse area must meet one or more of the following criteria in order to be considered eligible for analysis of remedial alternatives in the FS:

- Size, Location, and Reuse Characteristics—The reuse area is of sufficient size (approximately 3 acres) or is co-located (abuts or is directly adjacent to) with other reuse areas of sufficient size with the same (1) MEC-related characteristics, (2) planned reuse, and (3) Overall MEC Risk Scores.
- Potentially Remaining MEC Risks Were Estimated in the RA—An After-Action Overall MEC Risk Score was estimated for the reuse area.
- Potentially Remaining MEC Risks Are Mitigated Through Containment—MEC investigations could not be conducted in portions of the area due to the presence of ground surface containment structures (e.g., pavement, roads, buildings) that will be maintained under the planned reuse.

The following discussion summarizes the characteristics of the Parker Flats MRA presented in the RI and RA, and presents the rationale for retaining, combining, or eliminating each of the thirteen reuse areas from analysis in the FS.

The Parker Flats MRA is approximately 758 acres in size (Plate 1) and is composed of portions of all of thirteen munitions response sites (MRSs; namely, MRS-3, MRS-4B, MRS-13B, MRS-27A, MRS-27B, MRS-27G, MRS-37, MRS-40, MRS-50, MRS-52, MRS-53, MRS-54EDC, and MRS-55) where MEC-related field investigations, sampling, and removal activities were completed by the Army's Munitions Response contractors according to contractual and/or work plan requirements in place at the time the work was conducted as described in the RI.

The RI defined the following thirteen reuse areas within the Parker Flats MRA that are composed of portions of the MRSs named above:

1. **Monterey Peninsula College Emergency Vehicle Operations Center (EVOC)**—A college for training of law enforcement personnel.
2. **Parker Flats MRA Monterey Horse Park**—A stable and horse riding facility including a recreational vehicle (RV) camping area.
3. **MRS-13B Monterey Horse Park**—A stable and horse riding facility including a recreational vehicle (RV) camping area.
4. **Parker Flats MRA Habitat Reserve Area**—An oak woodland and maritime chaparral habitat reserve.
5. **MRS-13B Habitat Reserve Area**—An oak woodland and maritime chaparral habitat reserve.
6. **Central Coast State Veterans Cemetery**—A cemetery for interment of veterans from central coast counties.
7. **Parker Flats MRA Monterey County Development Reserve**—An area reserved for development by Monterey County, which could include residential development.
8. **MRS-13B Monterey County Development Reserve**—An area reserved for development by Monterey County, which could include residential development.
9. **California State University at Monterey Bay (CSUMB) Expansion**—An area planned for expanded development by CSUMB.
10. **Monterey County Public Facilities**—An area planned for development by Monterey County, which would include public facilities.
11. **Army Maintenance Center**—A paved area with buildings that is currently in use and will be retained by the Army for facilities maintenance.
12. **Monterey-Salinas Transit (MST) Park & Ride**—An area proposed for development as a commuter parking facility.
13. **MST Maintenance Center**—An area proposed for development as a commuter parking facility maintenance center.

Overall MEC Risk Scores could not be estimated in the RA for the following reuse areas because no MEC data was available as follows:

- **MRS-13B Habitat Reserve Area**—A 1.1-acre area that is not co-located with the other Habitat Reserve Area; no MEC was found during the investigation.
- **CSUMB Expansion**—A 0.66-acre area that is not co-located with other similar areas; no MEC was found during the investigation.
- **Monterey County Public Facilities**—A 3.0-acre area that is co-located with other similar facilities maintenance reuse areas; no MEC was found during the investigation.

- **Army Maintenance Center**—A 35.5-acre area where no MEC was found during investigation of the portion of the reuse areas unobstructed by pavement or buildings; MEC investigations could not be conducted in the remainder of the area due to the presence of ground surface containment structures (i.e., pavement, buildings).

As summarized on Table 1, the first two reuse areas listed above (MRS-13B Habitat Reserve Area and CSUMB Expansion) do not meet the FS assessment criteria and were eliminated from analysis in the FS because they are not of sufficient size (approximately 3 acres) or are not co-located with an adjacent area of sufficient size with the same (1) MEC-related RI characteristics, (2) planned reuse, and (3) Overall MEC Risk Scores. These two small reuse areas will be evaluated within larger co-located reuse parcels in the future under the basewide MR RI/FS.

The other two reuse areas (Monterey County Public Facilities and Army Maintenance Center) listed above for which Overall MEC Risk Scores could not be estimated in the RA are retained for analysis in the FS for the following reasons:

- **Monterey County Public Facilities**—A 3.0-acre area that is co-located with other similar facilities maintenance reuse areas; no MEC was found during the investigation.
- **Army Maintenance Center**—At 35.5 acres, this reuse area is of sufficient size (greater than 3 acres) for analysis in the FS. The majority of the area is paved with buildings; no MEC was found in the approximate 1.0-acre unpaved portion of the area; and the entire area is currently in use and is planned to be occupied in its current condition and retained by the Army for continuing facilities maintenance. The RI indicated this area was not used as an impact area or for training involving military munitions. Significant ground-disturbing activities occurred during development of this area, including grading, installation of utilities, paving the majority of the area, and construction of buildings. No records were found during the RI to indicate military munitions were found during development of this area.

In several reuse areas where MEC removals were not conducted in a portion of the site due to the presence of ground surface containment structures (pavement, buildings, and roads), the remedial alternatives will address the differences in potentially remaining MEC risks. These six areas include:

- **Monterey Peninsula College EVOC**—Approximately 4.5 acres of roads the RI interpreted as being within a former impact area where no data was available to determine whether the subsurface was investigated for MEC prior to construction of the roads;
- **Monterey Horse Park**—Approximately 2.2 acres of roads in the southern portion of area the RI interpreted as being within a former impact area where no data was available to determine whether the subsurface was investigated for MEC prior to construction of the roads;
- **Habitat Reserve Area**—Approximately 0.9 acres of roads the RI interpreted as being within a former impact area where no data was available to determine whether the subsurface was investigated for MEC prior to construction of the roads;
- **Central Coast Veterans Cemetery**—Approximately 4.1 acres of roads the RI interpreted as being within a former impact area where no data was available to determine whether the subsurface was investigated for MEC prior to construction of the roads;
- **Army Maintenance Center**—Approximately 34.5 acres of paved areas and buildings (MEC removal was conducted in an approximately 1.0-acre unpaved area) the RI interpreted as having not been used

as an impact or former military munitions training area where the subsurface was not investigated for MEC prior to construction of pavement and buildings; and

- **Monterey-Salinas Park & Ride**—Approximately 1.0 acres of paved areas the RI interpreted as being within a former training area where the subsurface was not investigated for MEC prior to construction of pavement.

The following reuse areas were combined for analysis in the FS because they also met the criteria of being co-located with an adjacent area of sufficient size with the same (1) MEC-related RI characteristics, (2) planned reuse, and (3) Overall MEC Risk Scores:

- **Parker Flats MRA Monterey Horse Park / MRS-13B Monterey Horse Park**—Analyzed in the FS as a single Horse Park reuse area with a total combined acreage of 182.9 acres.
- **Parker Flats MRA Monterey County Development Reserve / MRS-13B Monterey County Development Reserve**—Analyzed in the FS as a single Development Reserve reuse area with a total combined acreage of 36.2 acres.
- **Monterey-Salinas Transit (MST) Park & Ride / MST Maintenance Center**—Analyzed in the FS as a single MST Facility reuse area with a total combined acreage of 27 acres.

### 2.1.2 Definition of Reuse Areas Retained for FS Analysis

For the purposes of conducting this FS and evaluating, comparing, and selecting remedial alternatives, the following eight reuse areas were retained as described in Section 2.1.2 above and shown in Table 1 and on Plate 1:

1. **Monterey Peninsula College EVOG**—221.5 acres
2. **Horse Park**—182.9 combined acres
3. **Habitat Reserve**—147.8 acres
4. **Veterans Cemetery**—102.1 acres
5. **Monterey County Development Reserve**—36.2 acres
6. **Monterey County Public Facilities**—3.0 acres
7. **Army Maintenance Center**—35.5 acres
8. **Monterey-Salinas Transit Facility**—27.0 combined acres

## 2.2 Definition of Remedial Action Objectives

The primary remedial action objectives (RAOs) for the Parker Flats MRA reuse areas 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)". In order to achieve these RAOs, based on the results of the RI and RA, a reuse area:

- Must already be in a state that is protective of human health and the environment and complies with ARARs, or
- Risk management measures must be implemented to mitigate potentially remaining MEC risks and comply with ARARs.

As described in EPA's Land Use in the CERCLA Remedy Selection Process (EPA, 2000), "Remedial action objectives provide the foundation upon which remedial cleanup alternatives are developed. In general, remedial action objectives should be developed in order to develop alternatives that would achieve cleanup levels associated with the reasonably anticipated future land use over as much of the site as possible. EPA's remedy selection expectations described in section 300.43.0 (a) (1) (iii) of the NCP should also be considered when developing remedial action objectives. Where practicable, EPA expects to treat principal threats, to use engineering controls such as containment for low-level threats, to use institutional controls to supplement engineering controls...."

In keeping with EPA's expectations above, (1) the principal threats at the Parker Flats MRA reuse areas have already been treated (i.e., MEC removal actions have been completed), and (2) institutional controls (herein referred to as Land Use Controls) will be considered in the development of alternatives for managing any potentially remaining MEC risks.

These RAOs will be achieved through development of alternatives for the Parker Flats MRA reuse areas that (1) apply the results of the risk assessment to guide selection of risk management measures to mitigate potentially remaining MEC risks, and (2) comply with ARARs and other guidelines. A discussion of these components and their consideration in the development of remedial alternatives for the Parker Flats MRA reuse areas is presented below.

### 2.2.1 Application of Risk Assessment Results

As part of the basewide MR RI/FS process for the former Fort Ord, the Army is required to conduct a MEC risk assessment. According to CERCLA, the results of the risk assessment should help establish acceptable remediation levels for use in developing remedial alternatives during the FS.

As described in the EPA guidance *Handbook on the Management of Ordnance and Explosives at Closed, Transferring, and Transferred Ranges and Other Sites* (EPA, 2002), the evaluation of risk from contact with potentially remaining MEC cannot be quantitatively estimated based on current information and scientific practices. However, a qualitative estimate of overall MEC risks can serve as a valuable tool in guiding the evaluation of risk management measures to achieve RAOs during reuse.

A risk assessment is used, in this case, to describe the qualitative and quantitative factors leading to an encounter between a potential reuse receptor and a MEC item. Several methods exist for performing risk assessments on MRSs; however, no MEC risk assessment methodology has been widely accepted, evaluated, and fully implemented for a variety of MRSs. For the basewide MR RI/FS being conducted at the former Fort Ord, the project team (the Army, EPA, and DTSC; a part of Cal/EPA) developed a unique risk assessment protocol to qualitatively estimate MEC risks for sites including the Parker Flats MRA (*Malcolm-Pirnie, 2002*). For the Parker Flats RA, because MEC removals have been completed, both "Baseline" (prior to MEC removal) and "After-Action" (after MEC removal) reuse conditions were evaluated. "Overall MEC Risk Scores" were developed for each reuse area for the baseline scenarios and after-action reuse scenarios and multiple anticipated "receptors" assumed to be present at these areas. The MEC risk assessment does not establish acceptable remediation levels, but is used to develop and evaluate remedial alternatives during the FS.

The RA results are based on the following three key factors that are assigned reuse-specific values and are weighted in importance: (1) MEC Hazard Type, (2) Accessibility, (3) Exposure. These factors were used according to the RA protocol to develop an Overall MEC Risk Score for each potential receptor at a given reuse area as follows:

|                               |        |     |        |      |         |
|-------------------------------|--------|-----|--------|------|---------|
| <b>Overall MEC Risk Score</b> | A      | B   | C      | D    | E       |
|                               | Lowest | Low | Medium | High | Highest |

These qualitative Overall MEC Risk Scores are used in this FS to guide the development and evaluation of alternatives as described in Sections 4.0 and 5.0.

In general, the results of the RA for the Parker Flats MRA reuse areas indicated the MEC sampling and removal actions completed decreased the Overall MEC risks for the majority of the reuse-specific receptors evaluated. For the majority of the reuse receptors, Overall MEC Risk Scores were estimated as low (B) or the lowest (A). For the remaining receptors, Overall MEC Risk Scores were estimated as high (D) or the highest (E) only for those receptors that were assumed to perform intrusive activities such as hand digging and excavation.

As described in the EPA's guidance *Handbook on the Management of Ordnance and Explosives at Closed, Transferring, and Transferred Ranges and Other Sites (EPA, 2002)*, if MEC is potentially present at a site or area, a response action is necessary, and may involve the use of (1) institutional controls; (2) MEC-related monitoring; (3) containment of MEC; or (4) MEC removal or treatment. Although additional MEC removal or treatment is included for consideration at these reuse areas, the primary focus of this FS is on the development and evaluation of alternatives for managing potentially remaining MEC risks at these reuse areas via the response actions (1), (2), and (3) above—herein referred to as Land Use Controls—for the following reasons:

- The purpose of the RI was to evaluate the completeness of the MEC removal actions already conducted, and verify MEC 'contamination' had been adequately addressed by the MEC removal actions. The RI determined MEC-related field investigations, sampling, and removal activities were completed at the Parker Flats MRSs by the Army's Munitions Response contractors according to contractual and/or work plan requirements in place at the time the work was conducted. These MEC removal actions were designed to address MEC to depths of four feet below ground surface (bgs). In addition, if anomalies were detected at depths greater than four feet bgs, the anomalies were investigated, and MEC removals were conducted if MEC was found. Therefore, MEC is not expected at these MRSs. In the event MEC is discovered by a future Parker Flats MRA reuser, a process has been developed for reporting such finds to an appropriate local law enforcement agency. The local law enforcement agency will arrange a response by competent MEC personnel, who will promptly be dispatched to dispose of any discovered MEC.
- The majority of potential reuse receptors were estimated in the RA as having low or lowest Overall MEC Risk Scores during reuse of these areas after development has been completed (e.g., indoor workers, visitors to facilities that are paved and have site access controls). The remaining reuse receptors that were estimated in the RA as having high or highest Overall MEC Risk Scores are limited to receptors conducting intrusive activities during development or reuse of these areas. These potentially remaining high MEC risks can be managed through implementation of Land Use Controls

such as MEC recognition and safety training, construction monitoring by qualified MEC personnel during intrusive activities, etc.

## 2.2.2 Potential Applicable or Relevant and Appropriate Requirements (ARARs)

This section presents a general description and analysis of ARARs. Potential federal and state ARARs that may be pertinent to implementation of the remedial alternatives developed and retained for analysis for the Parker Flats MRA reuse areas are described in Section 4.4.

Section 121 of CERCLA requires that site cleanups comply with federal and state laws that are “applicable or relevant and appropriate requirements” (ARARs). Under CERCLA Section 121(d)(2), the federal ARARs for a remedial action could include requirements under any of the federal environmental laws. State ARARs include promulgated requirements under state environmental or facility siting laws that are more stringent than federal ARARs, and that have been identified in a timely manner, pursuant to 40 Code of Federal Regulations (CFR) Part 300.400(g)(4). A requirement may be either “applicable” or “relevant and appropriate”.

### 2.2.2.1 Types of ARARs

In general, ARARs that govern actions at CERCLA sites fall into three broad categories based upon the chemical contamination present, site characteristics, and alternatives proposed for cleanup (*EPA, 1993*). These three categories (chemical-specific, location-specific, and action-specific) and additional “To-Be-Considered” requirements are described below.

#### *Chemical-Specific ARARs*

Chemical-specific ARARs include those environmental laws and regulations that regulate the release to the environment of materials with certain chemical or physical characteristics or that contain specified chemical compounds. These requirements generally set health or risk-based concentration limits or discharge limits for specific hazardous substances by media. Chemical-specific ARARs are triggered by the specific chemical contaminants found at a particular site. Examples of potential chemical-specific ARARs are effluent limitations, emission limitations, drinking water standards, and hazardous waste characteristics identified for specific chemicals and compounds. A more stringent standard, requirement, criterion, or limitation promulgated pursuant to a state environmental statute and identified in a timely manner is also a potential ARAR.

#### *Location-Specific ARARs*

Location-specific ARARs govern activities in certain environmentally sensitive areas. These requirements are triggered by the particular location and the proposed activity at the site. An example of a location-specific ARAR is compliance with the Endangered Species Act of 1973, as amended, to avoid sensitive ecosystems or habitats. Location-specific ARARs also focus on wetland or floodplain protection areas, or archaeologically significant areas.

#### *Action-Specific ARARs*

Action-specific ARARs are restrictions that define acceptable treatment and disposal procedures for hazardous substances. These ARARs generally set performance, design, or other similar action-specific controls or restrictions on particular kinds of activities. An example might be a state Air Quality

Management Authority that sets limitations on fugitive dust generated during grading and excavation activities during clearance action.

### *To Be Considered Requirements (TBCs)*

To Be Considered Requirements (TBCs), the final class of requirements considered by EPA during the development of ARARs, are non-promulgated advisories or guidance documents issued by federal or state governments. They do not have the status of ARARs, and are not legally binding, but may be considered in determining the necessary cleanup levels or actions to protect human health and the environment.

#### 2.2.2.2 Definition of ARARs

“Applicable” requirements are defined as those cleanup or control standards, or other substantive environmental protection requirements, criteria, or limitations, promulgated under federal or state laws. Applicable requirements are identified on a site-specific basis by determination of whether the jurisdictional prerequisite of a requirement fully addresses the circumstances at the site or the proposed remedial activity. All pertinent jurisdictional prerequisites must be met for the requirement to be applicable. These jurisdictional prerequisites are as follows:

- The party must be subject to the law;
- The substances or activities must fall under the authority of the law;
- The law must be in effect at the time the activities occur;
- The statute or regulation requires, limits, or protects the types of activities; and
- A requirement is applicable if the specific terms (or jurisdictional prerequisites) of the statute or regulation directly addresses the circumstances at the site.

“Relevant and appropriate” requirements refer to those cleanup standards, or other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law, that while not necessarily applicable, address problems or situations sufficiently similar to those encountered at the CERCLA site, and whose use is well suited to the particular site (*EPA, 1993*). The relevance and appropriateness of a requirement can be judged by comparing a number of factors including the characteristics of the remedial action, the items in question, or the physical circumstances of the site, with those addressed in the requirement. If there is sufficient similarity between the requirements and the circumstances at the site, determination of the requirement as relevant and appropriate may be made.

Determining whether a requirement is both relevant and appropriate is a two-step process. First, to determine relevance, a comparison is made between the response action, location, or chemicals covered by the requirement and related conditions at the site, release, or potential remedy. A requirement is relevant if it generally pertains to these conditions. Second, to determine whether the requirement is appropriate, the comparison is further refined by focusing on the nature of the items, the characteristics of the site, the circumstances of the release, and the proposed response action. The requirement is appropriate if, based on such comparison, its use is well suited to the particular site. The facility must comply with the substantive elements of requirements that are determined to be both relevant and appropriate.



### 2.2.2.3 Application of ARARs at Former Fort Ord

CERCLA Section 121(d) allows the selection of alternatives that will not attain ARAR status if any of six conditions for a waiver of ARARs exists. However, the selected alternative must be protective even if an ARAR is waived. Only five of the conditions for a waiver may apply to a DoD site. The conditions for a waiver are as follows:

- The action selected is only part of a total response action that will attain the required level or standard of control when completed;
- Compliance with the designated requirement at that site will result in greater risk to human health and the environment (e.g., worker safety) than alternative options;
- Compliance with the designated requirement is technically impracticable from an engineering perspective;
- The action selected will result in a standard of performance that is equivalent to an applicable requirement through the use of another method or approach;
- A state requirement has not been equitably applied in similar circumstances on other clearance actions within the state; and
- A fund-financed clearance action does not provide a balance between available monies and the need for protection of human health and the environment at sites where the need is more immediate (not applicable to DoD sites).

In addition to ARARs being classified into three broad categories (i.e. chemical-specific, location-specific, and action-specific), each ARAR is also noted by the action that may be taken at the former Fort Ord in the process of implementing the potential remedial alternatives. Thus, during remediation of an area ARARs may pertain to activities that involve site preparation such as clearance of vegetation, grubbing, grading; and/or excavation or other intrusive activities. In many cases, an ARAR will pertain to more than one type of action stated above.

In determining whether a requirement is pertinent to MEC at the former Fort Ord, potential ARARs are initially screened for applicability. If determined not to be applicable, the requirement is then reviewed for both relevance and appropriateness. Requirements that are considered to be relevant and appropriate command the same importance as applicable requirements.

### 2.2.2.4 Land Use Control Guidelines

The following guidelines set forth by the EPA, Department of Defense (DoD), and DTSC (a part of Cal/EPA) that are relevant to potential Land Use Controls that may be selected for the Parker Flats MRA reuse areas will be considered in the development and implementation of remedial alternatives.

As described in the Management Principles for Implementing Response Actions at Closed, Transferring, and Transferred Ranges (EPA/DoD, 2000):

- Land use controls must be clearly defined, established in conjunction with affected parties, and enforceable.
- Land use controls will be considered as part of the development and evaluation of alternatives for a given Closed, Transferring, or Transferred (CTT) range.

Final

- DoD (the Army) will conduct periodic reviews to ensure the long-term effectiveness of response actions, including Land Use Controls.

In addition, EPA/DoD guidelines specifically address the requirement for institutional controls (Land Use Controls) when MEC contamination has been or may still be on the site as follows:

“Property transfer records shall detail past munition and explosive contamination and decontamination efforts; provide requisite residual contamination information; and advise the user not to excavate or drill in a residual contamination area without a metal detection survey.”

The EPA policy *Institutional Controls and Transfer of Real Property under CERCLA Section 120 (h)(3)(A), (B), or (C)* (EPA, 2000) requires the responsible agency to perform the following activities:

- "Monitor the institutional controls' effectiveness and integrity.
- Report the results of such monitoring, including notice of violation or failure of control to the appropriate EPA and/or State regulator, local or Tribal government, and designated party or entity responsible for enforcement.
- Enforce the institutional controls should a violation or failure of controls occur."

In addition, the policy states that “In order to ensure long-term protection of human health and safety in the presence of potential explosive hazards, institutional controls must be enforceable against whomever may gain ownership or control of the property in the future.”

In 1987, DTSC developed policy recommending the use of Land Use Covenants based on statutory authority in the California Health and Safety Code (Chapters 6.5, 6.8, 6.85) and the California Civil Code, Section 1471, which allows a nonowner of property to enter into environmental restrictions due to the presence of hazardous materials, hazardous wastes or constituents, or hazardous substances that will remain at the property at levels which are not suitable for unrestricted use of the land. In April, 2003, DTSC adopted regulations to add Section 67391.1—Requirements for Land Use Covenants—to Title 22, Division 4.5, Chapter 39, of the California Code of Regulations.

These regulations apply only to DTSC and specify that a Land Use Covenant imposing appropriate limitations on land use shall be executed and recorded at a county recorder's office so that they will be found during a title search of county records. The Land Use Covenant Regulations require DTSC to clearly set forth and define land use limitations or covenants in a remedy selection or response action decision document (for Parker Flats MRA reuse areas under CERCLA, the Record of Decision) prior to approving or concurring with a response action. The decision document must also include an implementation and enforcement plan.

Land Use Covenants are proprietary controls, agreed to by property owners, to allow ongoing use of the property as long as the cleanup remedy is not compromised by current or future development. Land Use Covenants include written instruments and agreements restricting land uses, easements, servitudes, covenants and land use restrictions, i.e., they are non-engineering mechanisms to restrict activities and site access to limit exposure pathways of human and environmental receptors to prevent exposure to contaminants. Land Use Covenants “run with the land”, i.e., they are binding on current and subsequent property owners, and remain in effect until they are formally removed or modified, pursuant to the California Health and Safety Code, sections 25233, 25234, and 25398.7. These regulations certify that DTSC may later modify or terminate Land Use Covenants if it is determined such modification or termination is protective of public health and safety and the environment.

For sites requiring Land Use Covenants, DTSC policy requires that the property owner enter into a Land Use Covenant Agreement to ensure that the state will have authority to implement, monitor, and enforce protective restrictions. Restrictions agreed to in Land Use Covenants are typically intended to do the following:

- Prevent inappropriate land use on property containing residual contamination or the surrounding property;
- Guarantee that information about property containing residual contamination is available to local governments and the public;
- Disclose to real estate transactions participants (buyers, sellers, lending institutions, brokers, title companies) that the property in question contains residual contamination;
- Ensure that long-term mitigation measures or monitoring requirements are carried out and maintained;
- Ensure that the integrity and stability of the remedy is maintained;
- Ensure that subsequent property owners or lessees have a duty to assume responsibility for any requirements or restrictions pertaining to residual contamination when they take over the property;
- Ensure that DTSC will be contacted prior to change in land use or the cleanup remedy; and
- Ensure that only DTSC can terminate or modify the remedy (land use covenant per DTSC policy).

### 2.3 Ongoing and Future MEC-Related Activities

This section describes ongoing and future MEC-related activities at the former Fort Ord that are components of the Army's basewide efforts under the Army's Munitions Response (MR) Site Security Program (Army, 2001) to promote MEC safety because of Fort Ord's history as a military base. Section 4.1 describes measures that are specific to implementation and management of the remedial alternatives selected for the Parker Flats MRA.

#### ***Five-Year Review***

A review of the basewide MR RI/FS sites will be conducted within 5 years after implementation of the selected remedy(s). The purpose of the five-year review is to determine whether the remedy at a site continues to be protective of human health and the environment after a period of 5 years from the time the remedy was implemented (or from the time of a previous five-year review). The methods, findings, and conclusions of the five-year review are documented in a Five-Year Review report. In addition, the Five-Year Review report documents provide newly identified site-related data or issues that are identified during the review, and the report identifies recommendations to address them as appropriate.

#### ***Deed Notice***

The following general type of notice will be included in the deed for transferring any former Fort Ord property.

“Munitions Response (MR) investigations indicate that it is not likely that MEC are located within the property. However, there is a potential for MEC to be present because MEC were used throughout the history of Fort Ord.”

### ***MEC Incident Reporting***

There is a potential for MEC to be present on the former Fort Ord because MEC were used throughout its history. In the event MEC is discovered by a future user of former Fort Ord land, a process has been developed for reporting such finds to an appropriate local law enforcement agency. The local law enforcement agency will arrange a response by competent MEC personnel, who will promptly be dispatched to dispose of any discovered MEC. This process is documented and must be acknowledged by the future grantee, its successors or assigns. A “Safety Alert” pamphlet and the Ordnance and Explosives Incident Reporting Form are provided to the property users.

### ***MEC Recognition and Safety Training***

The Army offers “MEC recognition and safety training” to anyone conducting ground disturbance activities (e.g., digging holes, excavating trenches, repairing underground utilities, etc.) at the former Fort Ord. The Army or the Army’s representative conducts a 30-minute training session. This training session includes a lecture on what type of MEC might be found and the procedure to follow if something is found. The “Safety Alert” brochure is also distributed. Trained construction personnel will contact an appropriate local law enforcement agency if a potential military munitions item is encountered. The local law enforcement agency will then arrange a response by qualified MEC personnel. The following organizations have received MEC recognition and safety training: California State University Monterey Bay (CSUMB), U.S. Army Corps of Engineers (USACE) contractors, Pacific Gas & Electric, Pacific Bell, and the Bureau of Land Management. MEC recognition and safety training can be scheduled by contacting the Fort Ord Base Realignment and Closure (BRAC) office at (831) 242-7919.

### ***School Education***

Since 1997, the former Fort Ord has had a MEC Safety Education Program that is offered to local schools annually. The objective of this program is to provide school-age children with the ability to recognize the visible attributes of various MEC items likely to exist on the former Fort Ord, associate danger with MEC items and former Fort Ord MEC areas, and understand the actions to be taken when a possible item is observed. This program has a three-tiered approach that includes distribution of the “Safety Alert” to organizations and agencies who provide information to the local community, a 1-hour MEC safety presentation for local elementary and middle schools for 5<sup>th</sup>, 6<sup>th</sup>, and 7<sup>th</sup> grade students, and distribution of the “Safety Alert” to parents of children in the local schools and high school students. Representatives from the Army conduct the MEC safety presentation.

### ***Community Involvement***

The Army is committed to develop opportunities to assist community members in understanding and participating in the cleanup decision-making process at the former Fort Ord. The Army holds public meetings, Community Involvement Workshops, Technical Review Committee (TRC) meetings, and open houses and conducts public information sessions through booths or tables at local community events. The Army provides public and media tours of former Fort Ord cleanup activities, distributes fact sheets, and makes presentations to special interest and community groups as necessary to address specific community concerns or explain significant cleanup activities. The Army also maintains document repositories available to the public including the administrative record and several information repositories at local libraries. Additionally, the Army administers a public environmental cleanup web site and mails monthly cleanup updates. The web site provides background information, a description of current activities, documents available for public comment, maps, notices, and agendas for upcoming public meetings. The monthly cleanup update includes information on recent cleanup activities, recently published documents and fact sheets, and is mailed to those who have requested to be on the community relations mailing list

and distributed at community involvement events. Community involvement activities are documented in a Community Relations Plan that is updated annually.

***Local and State Ordinances***

Some local jurisdictions have established ordinances to monitor or control intrusive activities in specified areas of the former Fort Ord to manage risks of encountering potential MEC.

### 3.0 IDENTIFICATION OF APPLICABLE RESPONSE ACTIONS

This section describes the applicable response actions that could mitigate and manage potentially remaining MEC risks at the Parker Flats MRA reuse areas, including:

- **No Further Action**—Assumes the reuse area is already in a protective and ARAR-compliant state for the designated reuse.
- **Land Use Controls**—Assumes the potentially remaining MEC risks at the reuse area can be managed through implementation of controls on the designated land reuse.
- **Additional MEC Remediation**—Assumes the potentially remaining MEC risks at the reuse area can not be adequately managed through implementation of controls on the designated land reuse; therefore, additional MEC remediation should be implemented.

The individual components of the response actions described herein will be screened and developed into reuse area-specific remedial alternatives in Section 4.0.

#### 3.1 No Further Action

The No Further Action Alternative is provided, as required under CERCLA and the National Contingency Plan (NCP), as a baseline for comparison to the other proposed remedial alternatives. This alternative assumes no further action would be taken related to MEC at the reuse area.

#### 3.2 Land Use Controls

The reuse-specific Land Use Controls that are potentially applicable for the Parker Flats MRA are described in the following sections. If selected as part of the remedy for the Parker Flats MRA reuse areas, these Land Use Controls will be implemented in accordance with the guidelines presented in Section 2.2.2.4 (Land Use Control Guidelines), and will be described in further detail in the Land Use Control Implementation Remedial Design/Remedial Action Work Plan (LUCI RD/RAWP). Under the Federal Facility Agreement (FFA) between the Army, EPA, and DTSC, a schedule for preparation of the LUCI RD/RAWP for the Parker Flats MRA will be submitted within 21 days of signature of the ROD. DTSC will also execute a Land Use Covenant imposing appropriate limitations on land use (i.e., any Land Use Controls selected as part of the remedy for the Parker Flats MRA reuse areas) that shall be recorded at a county recorder's office so that they will be found during a title search of county records.

The following Land Use Controls that will be considered for the Parker Flats MRA reuse areas are described below:

- Deed and/or Zoning Restrictions;
- MEC Recognition and Safety Training;
- Construction Monitoring; and
- Access Management Measures.

### 3.2.1 Deed and/or Zoning Restrictions

These types of restrictions may be appropriate if placing controls on, or limits to, property use would prevent or limit exposure to potentially remaining MEC risks at a reuse area. Specific types of restrictions would vary depending on the reuse area conditions, potential MEC risks, and anticipated future land use. Examples could include restrictions that require the property owner to apply for and obtain a permit from the local jurisdiction prior to excavation of soil, or restrictions that prevent residential use of the property. This control would identify who would be responsible for implementation, monitoring, reporting, and enforcement. If selected for implementation at Parker Flats MRA reuse areas, these restrictions would be described in further detail in the Land Use Control Implementation Remedial Design/Remedial Action Work Plan (LUCI RD/RAWP).

Deed and/or zoning restrictions regarding potential MEC risks at a Parker Flats MRA reuse area would establish the appropriate restriction that indicates:

- Specified reuses evaluated in the RA that were designated and approved at the time the Army transferred the property must be maintained by all property owners.
- Potential MEC risks may significantly increase if changes in the designated and approved reuse are implemented.
- Any modifications to these restrictions must be approved by the Army and EPA, and be coordinated with DTSC prior to implementation.

At the time of the next five-year review, the Army or Army's representatives would assess whether the restrictions should continue. If experience indicates that no MEC items have been found in the course of development or redevelopment of the reuse area, it is anticipated that the restrictions may, with the approval of the regulatory agencies, be discontinued, subject to reinstatement if a MEC item is encountered in the future.

### 3.2.2 MEC Recognition and Safety Training

For the Parker Flats MRA reuse areas, digging or underground "intrusive" activities are planned for the proposed reuses and development. Construction personnel involved in intrusive operations at these reuse areas would be required to attend the "MEC recognition and safety training" to increase their awareness of and ability to identify MEC items as specified in the Deed Notice (Section 4.1). Prior to planned intrusive activities, the landowner would be required to notify the Army or Army's representatives and provide MEC recognition and safety training for all workers performing intrusive activities. If selected for implementation at Parker Flats MRA reuse areas, this training would be described in further detail in the Land Use Control Implementation Remedial Design/Remedial Action Work Plan (LUCI RD/RAWP).

At the time of the next five-year review, the Army or Army's representatives would assess whether the training program should continue. If experience indicates that no MEC items have been found in the course of development or redevelopment of the reuse area, it is anticipated that the program may, with the approval of the regulatory agencies, be discontinued, subject to reinstatement if a MEC item is encountered in the future.

### 3.2.3 Construction Monitoring

Construction monitoring would be performed by qualified MEC personnel (military munitions specialist(s)) during any intrusive or ground-disturbing construction activities at Parker Flats MRA reuse

areas to address potential MEC risks to construction personnel. Construction monitoring would be arranged during the construction planning stages of the project prior to the start of any intrusive activities. MEC personnel would monitor construction activities for the potential presence of MEC during any intrusive activities. If evidence of MEC is found during intrusive construction activities, the work would cease; a process has been developed for reporting such finds to an appropriate local law enforcement agency. The local law enforcement agency would promptly dispatch or arrange a response by competent MEC personnel.

Construction monitoring may be applicable in the short-term during development of the reuse area, and/or in the long-term during established reuse. Any MEC-related data that may be discovered during construction monitoring would be reported by the Army under the annual monitoring program, and the monitoring results would be presented in a five-year review report (Section 4.1). If selected for implementation at Parker Flats MRA reuse areas, the level of effort involved in conducting construction monitoring would be determined on a case-by-case basis depending on site conditions, and would be described in further detail in the Land Use Control Implementation Remedial Design/Remedial Action Work Plan (LUCI RD/RAWP).

As part of annual monitoring and five-year review reporting (Section 4.1), after development is completed and the reuse is established, a review of any MEC-related data collected during development would be performed and documented for assessment by the project team (the Army, EPA, and DTSC; a part of Cal/EPA) to determine whether construction monitoring during established reuse should continue. At the time of the next five-year review, the need for continued construction monitoring would be assessed. If experience indicates that no MEC items have been found in the course of development, redevelopment, or reuse of an area, it is anticipated that the requirements may, with the approval of the regulatory agencies, be discontinued, subject to reinstatement if a MEC item is encountered in the future.

#### 3.2.4 Access Management Measures

Access management measures could include (1) maintenance of existing measures at the reuse area, or (2) implementation of additional measures. The Ordnance and Explosives Site Security Program Summary (Army, 2001) provides information about different types of site security measures that may be implemented at the former Fort Ord. For the Parker Flats MRA reuse areas, the following access management measures may be applicable:

- **Informational Displays** such as signs, kiosks, or display boards would provide safety information regarding potentially remaining MEC risks in nearby areas, and would be posted within a legible distance and be multi-lingual.
- **Fencing** would be selected based on land use and potential for residual MEC risks.
- **Security Patrols** may be required and employed by either private or governmental entities to monitor and discourage trespassing into areas potentially containing MEC risks.

If selected for implementation at Parker Flats MRA reuse areas, these measures would be described in further detail in the Land Use Control Implementation Remedial Design/Remedial Action Work Plan (LUCI RD/RAWP).

### 3.3 Additional MEC Remediation

The Additional MEC Remediation Alternative includes the following components:



- **Vegetation Clearance** involves conducting site preparation procedures to clear vegetation to bare ground or approximately 6 inches above ground surface, if necessary, to allow for proper operation of MEC detection equipment, and to provide the required ground surface visibility for the safety of MEC workers.
- **MEC Remedial Action** involves using the best available MEC detection and removal (remedial) technology procedures and Department of Defense Explosives Safety Board (DDESB)-approved MEC detonation procedures in areas where explosives MEC items are identified during remedial activities and require disposal.

Descriptions and applicable methods for implementation of additional MEC remediation are described below. If selected for implementation at Parker Flats MRA reuse areas, a reuse area-specific work plan outlining planned vegetation clearance methods and additional subsurface MEC removal methodologies would be available for regulatory agency and public review.

### 3.3.1 Vegetation Clearance

A range of vegetation clearance methods that are potentially applicable at the former Fort Ord were described and evaluated in the Evaluation of Vegetation Clearance Methods Technical Memorandum, Ordnance and Explosives Remedial Investigation/Feasibility Study, Former Fort Ord, California (Vegetation Clearance Technical Memorandum; Harding ESE, 2002). Table 12 of the Vegetation Clearance Technical Memorandum presents a matrix of vegetation clearance methods that should be retained for further consideration for the range of different plant communities (or types of vegetation) found at the former Fort Ord.

The selection of vegetation clearance methods depends on (1) the type of vegetation present, and (2) the planned reuse of the site. For the three types of vegetation present at the Parker Flats MRA (oak woodlands, central maritime chaparral, and grasslands), the following subset of vegetation clearance methods may apply depending on the site-specific characteristics:

- **No Action**—No vegetation clearance would be required prior to MEC remediation because vegetation that was cleared during the previous removal action has not re-grown to the extent that would prohibit the proper operation of MEC detection equipment, and vegetation at the site would provide the required ground surface visibility for the safety of MEC workers.
- **Manual Methods**—The use of manual equipment by an operator to cut vegetation by hand. Typically conducted by an operator who is on foot and in the work area being cleared (e.g., using motorized chainsaws, power chippers, mowers, weed eaters, and non-motorized hand tools such as clippers, loppers, pruning shears, and trimmers).
- **Mechanical Methods**—The use of mechanical equipment conducted by an operator to cut vegetation using self-propelled equipment in the work area being cleared (e.g., operation of tractor-pulled, track-carriers with booms, and skid-steer equipment fitted with vegetation clearance tools).
- **Prescribed Burning**—The use of fire under a specific set of conditions to burn vegetation and clear the ground surface for MEC remediation, habitat maintenance, enhancement, or other purposes.

Special circumstances apply at the Parker Flats MRA for the following types of reuse areas: (1) habitat reserve areas, and (2) borderlands between habitat reserve areas and development areas. The Installation-Wide Multispecies Habitat Management Plan for Former Fort Ord, California (HMP) (USACE, 1997) and modifications to the HMP provided in the Assessment, East Garrison—Parker Flats Land Use

Modifications, Fort Ord, California (Zander Associates, 2002) present the boundaries of habitat reserve and development areas and describe land use, conservation, management, and habitat monitoring requirements for target species within the Parker Flats MRA. The HMP for former Fort Ord was prepared in accordance with the U.S. Fish and Wildlife Service (USFWS) Biological Opinion 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, 1997). A forthcoming USFWS Biological Opinion is expected for contra costa goldfields and tiger salamander that may apply to Habitat Reserve in some of these areas that will also be considered prior to implementation of any actions.

Depending on the type and height of vegetation present and the proposed reuse of the area (or portion thereof) requiring additional MEC remediation, one or more of the vegetation clearance methods described above would be implemented in accordance with guidelines provided in the Vegetation Clearance Technical Memorandum; (Harding ESE, 2002); HMP (USACE, 1997) and subsequent modifications to the HMP (Zander Associates, 2002). A reuse area-specific work plan outlining planned vegetation clearance methods (and additional subsurface MEC removal methodologies) would be available for regulatory agency and public review.

### 3.3.2 MEC Remediation

After vegetation clearance is performed if necessary, a digital geophysical survey of the area to be remediated would be performed using the best appropriate technology. Any anomalies identified during the survey would be digitally reacquired and excavated to depth (the anomalies would be investigated, and MEC removals would be conducted if MEC was found). Any explosive items identified would be detonated using DDESB-approved MEC detonation procedures.

Digital geophysical detection equipment and associated Standard Operating Procedures (SOPs) would be determined in the reuse area-specific work plan based on site conditions and according to USACE Data Item Descriptions (DIDs) and site-specific Quality Control (QC) criteria (which can be considered DQOs). Subsurface MEC removal would be to depth (the anomalies would be investigated, and MEC removals would be conducted if MEC was found).

## 4.0 DEVELOPMENT OF REMEDIAL ALTERNATIVES

This section presents the Long Term Management Measures that will be implemented at the Parker Flats MRA; the screening and development of remedial alternatives for each reuse area; and a discussion of potentially applicable ARARs associated with implementation of the remedial alternatives.

Long Term Management Measures that will be implemented at the Parker Flats MRA are described below and include (1) a deed notice, (2) annual monitoring, and (3) five-year review reporting. These measures are considered as implementation and management aspects of the remedial alternatives, rather than specific mitigation measures, and as such do not require screening for applicability.

### 4.1 Long Term Management Measures Specific to Parker Flats MRA

This section describes the Long Term Management Measures that are specific to the Parker Flats MRA reuse areas. These measures will be applied to implement and manage the remedial alternatives selected for the Parker Flats MRA, and as such, are not risk management measures or response actions and are not screened or evaluated for reuse area-specific applicability. These measures would be described in further detail in the Land Use Control Implementation Remedial Design/Remedial Action Work Plan (LUCI RD/RAWP).

#### *Deed Notice*

The Army will establish a MEC-related deed notice that (1) informs future property owners MEC was found and removed at the reuse area; (2) specifies requirements that must be met prior to performing certain activities at the area; (3) specifies that any modifications to these requirements must be approved by the Army and EPA, and be coordinated with DTSC prior to implementation; and (4) outlines appropriate procedures to be followed in the event that MEC is encountered during development or reuse.

#### *Annual Monitoring and Five-Year Review Reporting*

The Army will monitor the Parker Flats MRA reuse areas on an annual basis, and collect and report any MEC-related data that may be discovered after transfer of the property. The Army will report results of the annual monitoring on a yearly basis. If MEC is encountered at the area during reuse, (1) MEC incident reporting will be performed; (2) the project team (the Army, EPA, and DTSC; a part of Cal/EPA) will be notified; and (3) the need for re-evaluation of the protectiveness of the area under the current remedy would be assessed by the project team.

A review of the remedies selected for the Parker Flats MRA reuse areas will be conducted within 5 years after implementation. The purpose of the five-year review is to determine whether the remedy at a reuse area continues to be protective of human health and the environment (1) after a period of 5 years from the time the remedy was implemented, or (2) from the time of a previous five-year review. The results of annual monitoring and the methods, findings, and conclusions of the five-year review will be documented in a five-year review report, which will identify any recommendations to address them as appropriate.

### 4.2 Screening of Response Actions

Three different response actions are considered in this FS. However, only the Land Use Controls require screening for reuse area-specific applicability as follows:

- **No Further Action**—Does not include a range of components that require reuse area-specific screening for applicability and is provided as a baseline for comparison to the other remedial alternatives as required under CERCLA and the National Contingency Plan (NCP) and described in Section 3.1.
- **Land Use Controls**—Includes a range of potential components (deed or zoning restrictions; MEC recognition and safety training; construction monitoring; access management measures) as described in Section 3.2 that require reuse area-specific screening for applicability prior to developing a comprehensive Land Use Control Alternative.
- **Additional MEC Remediation**—Does not include a range of components that require reuse area-specific screening for applicability in order to evaluate and compare this alternative to the other alternatives. As described in Section 3.3, vegetation clearance methods, if necessary, and additional MEC remediation methodologies would be identified based on reuse area-specific work plan that would be available for regulatory agency and public review.

#### 4.2.1 Screening of Land Use Controls

Tables 2 through 9 present the reuse area-specific screening of the range of Land Use Controls identified in Section 3.2 for each of the eight Parker Flats MRA reuse areas defined in Section 2.1.2, respectively. The screening presented in the tables assesses the need for additional risk management via Land Use Controls for each receptor assumed in the RA, and considers:

- Each reuse receptor identified (typically five or six per reuse area);
- Overall MEC Risk Score assigned to each receptor; and
- Assumptions regarding the likeliness of two different exposure scenarios for each receptor: (1) during development, and (2) during reuse.

Land Use Controls were selected for protection of the range of reuse receptors at each of the eight reuse areas as follows.

***During Development:*** Intrusive workers (e.g., construction workers, outdoor maintenance workers) were the only likely receptors identified in the RA during development of these areas.

***Intrusive Workers***—Overall MEC Risk Scores of D and E: Workers performing intrusive activities for which ‘high’ and ‘highest’ risks were estimated in the RA during development of the area would be protected from potentially remaining MEC risks because they would (1) receive MEC recognition and safety training, and (2) have onsite construction monitors (qualified MEC personnel) present during these activities.

***During Reuse:*** Three different types of likely receptors were identified in the RA during reuse of these areas.

- **Non-Residents**—Overall MEC Risk Scores of A and B: Receptors for which ‘low’ and ‘lowest’ risks were estimated in the RA after development has been performed and long-term reuse has been established (e.g., indoor workers, facility visitors) would not require additional protection from potentially remaining MEC risks.
- **Adult/Child Residents**—Overall MEC Risk Scores of D: Residents for which ‘high’ risks were estimated in the RA after development has been performed and long-term reuse has been established

would be protected from potentially remaining MEC risks because (1) planned development will involve extensive ground-disturbing activities (e.g., construction, grading) that will be monitored by qualified MEC personnel, and (2) the developer/property owner will be responsible for maintaining LUCs protective of reusers conducting any intrusive activities during post-development reuse.

- **Intrusive Workers**—Overall MEC Risk Scores of D and E: Workers for which ‘high’ and ‘highest’ risks were estimated in the RA during reuse of the area would be protected from potentially remaining MEC risks because they would (1) receive MEC recognition and safety training, and (2) have onsite construction monitors (qualified MEC personnel) present during these activities.

The Land Use Controls that best met the RAOs and would provide the best range of overlapping MEC risk management controls for the multiple reuse receptors are identified with a check mark in Tables 2 through 9; an explanation of the reasons for eliminating any controls from further consideration are also provided. The controls that are retained as components of the reuse area-specific Land Use Control Alternatives are evaluated and compared against the No Further Action and Additional MEC Remedial Action Alternatives in the Section 5.0.

#### 4.3 Development of Remedial Alternatives

The potentially applicable alternatives that would provide mitigation of potentially remaining MEC risks for those receptors identified in the screening tables (Tables 2 through 9) as requiring additional risk management (i.e., workers conducting intrusive activities) at each of the Parker Flats MRA reuse areas were developed based on the applicable components of the response actions described above and include:

- **No Further Action Alternative**—Provided as a baseline for comparison to the other remedial alternatives as required under CERCLA and the National Contingency Plan (NCP) as described in Section 3.1.
- **Land Use Control Alternative**—Includes the reuse area-specific components that were retained in Tables 2 through 9 (MEC recognition and safety training and construction monitoring for workers conducting intrusive activities) that would be described in further detail in the Land Use Control Implementation Remedial Design/Remedial Action Work Plan (LUCI RD/RAWP) as described in Section 3.2.
- **Additional MEC Remediation Alternative**—Includes vegetation clearance methods, if necessary, and additional MEC remediation methodologies that would be identified in a reuse area-specific work plan as described in Section 3.3.

#### 4.4 Potential Applicable or Relevant and Appropriate Requirements (ARARs) for Implementation of Remedial Alternatives at Parker Flats MRA

No potential federal and state ARARs were determined to apply to implementation of the No Further Action or Land Use Controls Alternatives. The potential ARARs associated with implementation of the Additional MEC Remediation Alternative are provided as an Attachment to this report.

## 5.0 EVALUATION AND COMPARISON OF REMEDIAL ALTERNATIVES

This section presents the evaluation and comparison of remedial alternatives that would provide mitigation of potentially remaining MEC risks for workers conducting intrusive activities at each of the eight Parker Flats MRA reuse areas based on the nine CERCLA evaluation criteria specified in the EPA's RI/FS Guidance (EPA, 1989). Of the three different types of likely receptors identified in the RA during development or reuse of these areas (Non-Residents, Adult/Child Residents, and Intrusive Workers), the evaluation and comparison of remedial alternatives is only performed with regards to workers conducting intrusive activities determined to require additional risk management in the screening presented in Section 4.2.1 and Tables 2 through 9 for each reuse area, respectively.

The three potential remedial alternatives developed for workers conducting intrusive activities at the eight Parker Flats MRA reuse areas include (1) No Further Action; (2) Land Use Controls; and (3) Additional MEC Remediation. As described in Sections 3.0 and 4.0, for the purposes of this FS, the components of these alternatives are the same for each of the eight Parker Flats MRA reuse areas. Therefore, the evaluation and comparison of alternatives is conducted for the collective group of reuse areas, with relevant reuse-area specific discussions included where appropriate.

Table 10 summarizes the evaluation and comparison of potentially applicable remedial alternatives based on the following nine evaluation criteria specified in the EPA's RI/FS Guidance (EPA, 1989).

### ***Threshold Criteria (Remedial Action Objectives; See Section 2.2)***

- 1) *Overall Protection of Human Health and the Environment* – An alternative must eliminate, reduce, or control threats to public health and the environment through treatment or institutional controls.
- 2) *Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)* – The alternative must meet Federal and State environmental statutes, regulations, and other requirements that pertain to the site or area unless a waiver is justified.

### ***Balancing Criteria***

- 1) *Long-Term Effectiveness and Permanence* – Considers the ability of an alternative to maintain protection of human health and the environment over time.
- 2) *Reduction of Toxicity, Mobility, or Volume Through Treatment* – Evaluates the alternative's use of treatment (for which there is a statutory preference) to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.
- 3) *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.
- 4) *Implementability* – Considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services. Technical feasibility considerations include the availability of services, necessary equipment, and skilled workers to implement a particular alternative. Administrative feasibility includes obtaining necessary permits and regulatory approvals for implementation of the alternative.
- 5) *Cost* – Capital and long-term management (LTM) costs are estimated for each alternative based on quotes for labor, materials, and equipment necessary to implement the alternative. For annual

LTM costs, the net present value (NPV) is calculated over the expected period of years it will take to implement the alternative based on real discount rates (similar to interest rates) that vary according to the period of performance for federal projects. For those alternatives whose life-cycle is indeterminate or exceeds 30 years, for the purposes of evaluating and comparing alternatives as specified in EPA's RI/FS Guidance (*EPA, 1989*), a period of 30 years is used for estimating long-term LTM costs. USACE/EPA provide guidelines for estimating remedial alternative costs in OSWER Directive 9355.0-75 (January 2005; updated yearly), Office of Management and Budget (OMB), Executive Office of the President, Appendix C. The guidelines for federal projects are applied to cost estimates provided by Army/USACE contractors for the alternatives. These cost estimates are intended to have an accuracy of +50 percent/-30 percent.

### ***Modifying Criteria***

- 1) ***State Acceptance*** – Evaluates technical and administrative issues and concerns that the state may have regarding each alternative. State Acceptance will be addressed in the Parker Flats MRA RI/FS ROD once comments on the RI/FS report and Proposed Plan have been received (*EPA, 1989*).
- 2) ***Community Acceptance*** – Evaluates issues and concerns that the public may have regarding each alternative. Community Acceptance will be addressed in the Parker Flats MRA RI/FS ROD once comments on the report and Proposed Plan have been received (*EPA, 1989*).

## 5.1 Evaluation of Remedial Alternatives

This section presents the evaluation of remedial alternatives for workers conducting intrusive activities at the eight Parker Flats MRA reuse areas.

### 5.1.1 Overall Protection of Human Health and the Environment

MEC removal actions were conducted to depths of four feet below ground surface (bgs) at the Parker Flats MRA reuse areas. In addition, if anomalies were detected at depths greater than four feet bgs, the anomalies were investigated, and MEC removals were conducted if MEC was found. Therefore, MEC is not expected in the majority of the Parker Flats MRA. In addition, Long Term Management Measures (deed notice, annual monitoring, and five-year review reporting) would be implemented to (1) warn property owners of potential MEC risks associated with intrusive activities, (2) monitor and report any MEC-related data during development or reuse, and (3) assess and manage information regarding the continued protectiveness of these alternatives over time.

Each of the remedial alternatives would provide protection of the environment at the Parker Flats MRA reuse areas because there are no species of special concern or HMP requirements. As described in Section 4.4, if Additional MEC Remediation is selected for the Habitat Reserve reuse area, the actions taken would comply with special requirements that apply to plant and animal species found in this area.

**No Further Action**—This alternative would not be protective of human health for the receptors assumed in the RA to conduct intrusive activities. Even though a MEC removal was conducted in this area, because current MEC-detection technologies do not have a 100% detection efficiency, there is a possibility that MEC remains in the subsurface at this area that would potentially pose MEC risks to those workers that will perform intrusive activities during development or reuse of the area.

**Land Use Controls**—This alternative would be protective of human health for the receptors assumed in the RA to conduct intrusive activities during development or reuse of the area. Receptors that are expected to perform intrusive activities during or after development would be protected under this

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alternative because the landowner will be required to (1) provide notice of planned intrusive activities, and in turn arrange for and provide MEC recognition and safety training to construction personnel prior to the start of intrusive work, and (2) coordinate and arrange for construction monitoring by qualified MEC personnel during any construction that involves intrusive activities.

**Additional MEC Remediation**—This alternative may offer some additional protection of human health for the receptors assumed in the RA to conduct intrusive activities during development or reuse of the area. This alternative assumes there is MEC remaining in the subsurface of this area that could pose a risk to reuse receptors. However, MEC-related field investigations, sampling, and removal activities were completed at these areas by the Army's Munitions Response contractors according to contractual and/or work plan requirements in place at the time the work was conducted. Although additional MEC remediation (conducting a second MEC investigation) using the best technology available today may provide some additional MEC-related information (particularly in the portions of areas identified in Section 2.1.1 where MEC removals could not be conducted due to the presence of ground surface containment structures such as pavement, building, and roads), the RI indicated the MEC removals conducted in these areas provided adequate data to assess potentially remaining MEC risks. Therefore, because even current MEC-detection technologies do not have a 100% detection efficiency, this alternative is not expected to provide a significant increase in the protection of human health. For these reasons, after additional MEC remediation is completed, these areas would require a reevaluation of MEC risks and are likely to continue to require additional risk mitigation measures (e.g., land use controls) to protect human health for those receptors that would perform intrusive activities during development and reuse.

#### 5.1.2 Compliance with ARARs

**No Further Action**—There are no ARARs that apply to implementation of this alternative.

**Land Use Controls**—There are no ARARs that apply to implementation of this alternative.

**Additional MEC Remediation**—This alternative would be implemented in compliance with the ARARs listed in the Attachment to this report.

#### 5.1.3 Short-Term Effectiveness

**No Further Action**—This alternative would not be effective in the short term because no further action would be taken to mitigate potentially remaining MEC risks to workers assumed in the RA to conduct intrusive activities during development.

**Land Use Controls**—This alternative would be effective in the short term (during development) because land use controls (MEC recognition and safety training; construction monitoring; access management measures) would be implemented to mitigate potentially remaining MEC risks to workers assumed in the RA to conduct intrusive activities during development. In several reuse areas, MEC removals were not conducted in a portion of the site due to the presence of ground surface containment structures (e.g., pavement, buildings, and roads). It is anticipated that the type and extent of construction monitoring during development would be more involved in these areas than in areas where MEC removals were conducted. Further details regarding these activities will be described in the Land Use Control Implementation Remedial Design/Remedial Action Work Plan (LUCI RD/RAWP). These portions of the reuse areas where construction monitoring may be more involved in the short term during development of the site include:



- Monterey Peninsula College EVOC—Approximately 4.5 acres of roads the RI interpreted as being within a former impact area where no data was available to determine whether the subsurface was investigated for MEC prior to construction of the roads;
- Monterey Horse Park—Approximately 2.2 acres of roads in the southern portion of area the RI interpreted as being within a former impact area where no data was available to determine whether the subsurface was investigated for MEC prior to construction of the roads;
- Habitat Reserve Area—Approximately 0.9 acres of roads the RI interpreted as being within a former impact area where no data was available to determine whether the subsurface was investigated for MEC prior to construction of the roads;
- Central Coast Veterans Cemetery—Approximately 4.1 acres of roads the RI interpreted as being within a former impact area where no data was available to determine whether the subsurface was investigated for MEC prior to construction of the roads;
- Army Maintenance Center—Approximately 34.5 acres of paved areas and buildings (MEC removal) was conducted in an approximately 1.0-acre unpaved area) the RI interpreted as being within a former training area where the subsurface was not investigated for MEC prior to construction of pavement and buildings; and
- Monterey-Salinas Transit Facility—Approximately 1.0 acres of paved areas the RI interpreted as being within a former training area where the subsurface was not investigated for MEC prior to construction of pavement.

**Additional MEC Remediation**—This alternative would not be effective in the short term (during development) because after additional MEC remediation is completed, these areas would require a reevaluation of MEC risks and are likely to continue to require additional risk mitigation measures (e.g., Land Use Controls) to protect receptors that may conduct intrusive activities during development.

#### 5.1.4 Long-Term Effectiveness and Permanence

**No Further Action**—This alternative would not provide long-term effectiveness or permanence because no further action would be taken to mitigate potentially remaining MEC risks to workers assumed in the RA to conduct intrusive activities during long-term reuse.

**Land Use Controls**—This alternative would provide long-term effectiveness and permanence because land use controls (MEC recognition and safety training; construction monitoring) would be implemented to mitigate potentially remaining MEC risks to workers assumed in the RA to conduct intrusive activities during long-term reuse. In several reuse areas where MEC removals were not conducted in a portion of the site due to ground surface containment structures (e.g., pavement, buildings, and roads), if potentially remaining risks are not addressed during development, it is anticipated that the type and extent of construction monitoring during reuse would be more involved than in areas where MEC removals were conducted. These portions of the reuse areas are described in Section 5.1.3 above.

**Additional MEC Remediation**—it is unknown whether this alternative would provide long-term effectiveness or permanence because after additional MEC remediation is completed, these areas would require a reevaluation of MEC risks and are likely to continue to require additional risk mitigation measures (e.g., Land Use Controls) to protect receptors that may conduct intrusive activities during long-term reuse.

### 5.1.5 Reduction of Toxicity, Mobility, or Volume Through Treatment

**No Further Action**—This alternative would not provide reduction of these parameters through treatment because no further action would be taken to mitigate potentially remaining MEC risks to workers assumed in the RA to conduct intrusive activities.

**Land Use Controls**—This alternative would not provide reduction of these parameters through treatment; however, potential exposures would be reduced through controls that would mitigate potentially remaining MEC risks to workers assumed in the RA to conduct intrusive activities.

**Additional MEC Remediation**—This alternative may provide some reduction of these parameters if MEC is discovered and removed during additional MEC remediation (particularly in the portions of areas identified in Section 2.1.1 where MEC removals could not be conducted due to the presence of ground surface containment structures such as pavement, building, and roads).

### 5.1.6 Implementability

**No Further Action**—This alternative would be not administratively feasible to implement, because the necessary approvals to take no further action to mitigate potentially remaining MEC risks to workers assumed in the RA to conduct intrusive activities are not expected.

**Land Use Controls**—This alternative would be administratively feasible to implement, because the necessary approvals to implement and manage Land Use Controls (MEC recognition and safety training, construction monitoring) are expected to be obtained. The necessary services, equipment, and skilled workers to implement this alternative are readily available. This alternative would require a moderate level of effort to implement from a technical perspective during development and reuse, because it requires coordination prior to the start of intrusive work to (1) provide MEC recognition and safety training to all construction personnel performing intrusive activities and refresher training on an ongoing basis as appropriate, and (2) mobilize qualified MEC personnel to provide monitoring during all intrusive construction activities. The need for construction monitoring during reuse would be assessed after development has been completed.

**Additional MEC Remediation**—This alternative would be administratively feasible to implement, because the necessary approvals to implement additional MEC remediation could be obtained. The necessary services, equipment, and skilled workers to implement this alternative are readily available. This alternative would require a high level of effort to implement from a technical perspective, because (1) it would require additional vegetation clearance in areas where vegetation has regrown since previous MEC removals were conducted, and (2) involves qualified MEC personnel teams conducting MEC removals, managing and reporting MEC-related data. In addition, after additional MEC remediation is completed, these areas would require a reevaluation of MEC risks and are likely to continue to require additional risk mitigation measures (e.g., Land Use Controls) to protect human health and comply with ARARs during development and long-term reuse.

### 5.1.7 Cost

Capital and long-term management (LTM) costs are estimated for each alternative based on quotes for labor, materials, and equipment necessary to implement the alternative. For LTM costs, the net present value (NPV) is calculated over the expected period of years it will take to implement the alternative based on real discount rates (similar to interest rates) that vary according to the period of performance for federal projects. USACE/EPA provide guidelines for estimating remedial alternative costs in OSWER Directive 9355.0-75 (January 2005; updated yearly), Office of Management and Budget (OMB),

Executive Office of the President, Appendix C. The guidelines for federal projects are applied to cost estimates provided by Army/USACE contractors for the alternatives. These cost estimates are intended to have an accuracy of +50 percent/-30 percent. For those alternatives whose life-cycle is indeterminate or exceeds 30 years, for the purposes of evaluating and comparing alternatives as specified in EPA's RI/FS Guidance (*EPA, 1989*), a period of 30 years is used for estimating LTM costs.

Cost estimating assumptions, unit costs, and real discount rates (that vary according to the period of performance) that are associated with implementation of the remedial alternatives are provided in Appendix A. Reuse-area specific costs for each of the alternatives evaluated are presented in Table 11.

Long Term Management Measures (deed notice, annual monitoring, five-year review reporting) will be implemented at all Parker Flats MRA reuse areas as implementation and management aspects of the selected remedial alternatives. The costs associated with implementing these measures for the entire Parker Flats MRA over a period of 30 years are approximately \$258,000 as summarized in Table 11. Cost estimates for these measures are provided in Appendix A, Table A1.

**No Further Action**—There are no costs associated with this alternative.

**Land Use Controls**—The costs associated with implementing this alternative are summarized in Table 11 for each of the reuse areas, and range from \$50,000 to \$245,000. Cost estimates for this alternative are provided in Appendix A, Tables A2 through A9 for each of the eight reuse areas.

**Additional MEC Remediation**—The costs associated with implementing this alternative are summarized in Table 11 for each of the reuse areas, and range from \$72,000 to \$5.316 million. Cost estimates for this alternative are provided in Appendix A, Tables A2 through A9 for each of the eight reuse areas. Costs for this alternative may be higher than can be estimated at this time because (1) after additional MEC remediation is completed, these areas would require a reevaluation of MEC risks, and (2) are likely to continue to require additional risk mitigation measures (e.g., Land Use Controls) to protect human health during development and long-term reuse.

#### 5.1.8 State Acceptance

State acceptance will be addressed in the Parker Flats MRA RI/FS ROD once comments on the RI/FS report and Proposed Plan have been received.

**No Further Action**—This alternative is not likely to be acceptable to the regulatory agencies because it does not take action to mitigate potentially remaining MEC risks to workers assumed in the RA to conduct intrusive activities during the planned development and reuse of these areas.

**Land Use Controls**—This alternative is likely to be acceptable to the regulatory agencies because it takes action both in the short and long term to mitigate potentially remaining MEC risks to workers assumed in the RA to conduct intrusive activities during the planned development and reuse of these areas, thereby providing protection of human health.

**Additional MEC Remediation**—It cannot be determined at this time whether this alternative would be acceptable to the regulatory agencies. This alternative takes action to attempt to mitigate potentially remaining MEC risks to workers assumed in the RA to conduct intrusive activities during the planned development and reuse of these areas. However, (1) from a cost-benefit analysis perspective, the costs associated with implementation of this alternative are extremely high to achieve what is anticipated to be a limited potential reduction in MEC risks, and (2) after additional MEC remediation is completed, these areas would require a reevaluation of MEC risks and are likely to continue to require additional risk

mitigation measures (e.g., Land Use Controls) to protect human health during development and long-term reuse.

#### 5.1.9 Community Acceptance

Community acceptance will be addressed in the Parker Flats MRA RI/FS ROD once comments on the RI/FS report and Proposed Plan have been received.

**No Further Action**—This alternative is not likely to be acceptable to the public because it does not take action to mitigate potentially remaining MEC risks to workers assumed in the RA to conduct intrusive activities during the planned development and reuse of these areas.

**Land Use Controls**—This alternative is likely to be acceptable to the public because it takes action both in the short and long term to mitigate potentially remaining MEC risks to workers assumed in the RA to conduct intrusive activities during the planned development and reuse of these areas, thereby providing protection of human health.

**Additional MEC Remediation**—It cannot be determined at this time whether this alternative would be acceptable to the public.

### 5.2 Comparison of Remedial Alternatives

The remedial alternatives for workers conducting intrusive activities at the eight Parker Flats MRA reuse areas are compared below based on their ability to achieve the nine evaluation criteria specified in the EPA's RI/FS Guidance (*EPA, 1989*).

#### 5.2.1 Overall Protection of Human Health and the Environment

The No Further Action Alternative would not be protective of human health for workers conducting intrusive activities, and therefore is not retained for further consideration. The Land Use Control Alternative would provide protection of human health for workers conducting intrusive activities. Although the Additional MEC Remediation Alternative may provide some additional protection of human health if MEC is found and removed (particularly in the portions of areas identified in Section 2.1.1 where MEC removals could not be conducted due to the presence of ground surface containment structures such as pavement, building, and roads), this alternative is not expected to provide a significant decrease in potentially remaining MEC risks because even current MEC-detection technologies do not have a 100% detection efficiency. For these reasons, after additional MEC remediation is completed, these areas would require a reevaluation of MEC risks and are likely to continue to require additional risk mitigation measures (i.e., Land Use Controls) to protect human health for those receptors that would perform intrusive activities during development and reuse.

#### 5.2.2 Compliance with ARARs

No potential federal and state ARARs were determined to apply to implementation of the No Further Action or Land Use Controls Alternatives. The Additional MEC Remediation Alternative would be implemented to comply with the potential ARARs shown in the Attachment to this report.

#### 5.2.3 Short-Term Effectiveness

The Land Use Control Alternative is the only alternative that would be effective in the short term during development of the reuse areas for workers conducting intrusive activities. The Additional MEC

Remediation Alternative may provide some additional effectiveness in the short term at mitigating potentially remaining MEC risks (particularly in the portions of areas identified in Section 2.1.1 where MEC removals could not be conducted due to the presence of ground surface containment structures such as pavement, building, and roads). However, after additional MEC remediation is completed, these areas would require a reevaluation of MEC risks and are likely to continue to require additional risk mitigation measures (e.g., Land Use Controls) to protect receptors that may conduct intrusive activities during development.

#### 5.2.4 Long-Term Effectiveness and Permanence

The Land Use Control Alternative is the only alternative that would be effective for workers conducting intrusive activities in the long term during reuse of these areas. The Additional MEC Remediation Alternative may provide some additional effectiveness in the long term at mitigating potentially remaining MEC risks (particularly in the portions of areas identified in Section 2.1.1 where MEC removals could not be conducted due to the presence of ground surface containment structures such as pavement, building, and roads). However, after additional MEC remediation is completed, these areas would require a reevaluation of MEC risks and are likely to continue to require additional risk mitigation measures (e.g., Land Use Controls) to protect receptors that may conduct intrusive activities during long-term reuse.

#### 5.2.5 Reduction of Toxicity, Mobility, or Volume Through Treatment

The No Further Action and Land Use Controls alternatives would not provide reduction of these parameters through treatment; however, under the Land Use Controls Alternative, potential exposures would be reduced through controls that would mitigate potentially remaining MEC risks to workers conducting intrusive activities. The Additional MEC Remediation may provide some reduction of these parameters if MEC is discovered and removed during additional MEC remediation (particularly in the portions of areas identified in Section 2.1.1 where MEC removals could not be conducted due to the presence of ground surface containment structures such as pavement, building, and roads).

#### 5.2.6 Implementability

The No Further Action Alternative would be not administratively feasible to implement, because the necessary approvals to take no further action to mitigate potentially remaining MEC risks to workers conducting intrusive activities are not expected.

The Land Use Controls Alternative would be administratively feasible to implement, because the necessary approvals to implement and manage Land Use Controls could be obtained. The necessary services, equipment, and skilled workers to implement this alternative are readily available. This alternative would require a moderate level of effort to implement from a technical perspective during development and reuse.

The Additional MEC Remediation Alternative would be administratively feasible to implement, because the necessary approvals to implement additional MEC remediation could be obtained. The necessary services, equipment, and skilled workers to implement this alternative are readily available. However, this alternative would require a high level of effort to implement from a technical perspective, and after additional MEC remediation is completed, these areas would require a reevaluation of MEC risks and are likely to continue to require additional risk mitigation measures (i.e., Land Use Controls) to protect human health and comply with ARARs during development and long-term reuse.

### 5.2.7 Cost

There are no costs associated with implementing the No Further Action Alternative, but it takes no action to mitigate potentially remaining MEC risks. Of the two alternatives that take action, the Land Use Controls Alternative has the lowest costs associated with implementation. As summarized in Table 11 for each of the reuse areas, these costs range from \$50,000 to \$245,000. The Additional MEC Remediation Alternative has the highest costs associated with implementation. Costs for this alternative may be higher than can be estimated at this time because (1) after additional MEC remediation is completed, these areas would require a reevaluation of MEC risks, and (2) are likely to continue to require additional risk mitigation measures (e.g., Land Use Controls) to protect human health and comply with ARARs during development and long-term reuse. As summarized in Table 11 for each of the reuse areas, these costs range from \$72,000 to \$5.316 million. Cost estimates for these alternatives are provided in Appendix A, Tables A2 through A9 for each of the eight reuse areas.

### 5.2.8 State Acceptance

State acceptance will be addressed in the Parker Flats MRA RI/FS ROD once comments on the RI/FS report and Proposed Plan have been received.

The No Further Action Alternative is not likely to be acceptable to the regulatory agencies because it does not take action to mitigate potentially remaining MEC risks to workers conducting intrusive activities during planned development and reuse of these areas.

The Land Use Control Alternative is anticipated to be acceptable to the regulatory agencies because it takes action both in the short and long term to mitigate potentially remaining MEC risks to workers conducting intrusive activities during planned development and reuse of these areas, and provides protection of human health and the environment.

It cannot be determined at this time whether the Additional MEC Remediation alternative would be acceptable to the regulatory agencies. This alternative takes action to attempt to mitigate potentially remaining MEC risks to workers conducting intrusive activities during planned development and reuse of these areas. However, (1) from a cost-benefit analysis perspective, the costs associated with implementation of this alternative are extremely high to achieve what is anticipated to be a limited potential reduction in MEC risks, and (2) after additional MEC remediation is completed, these areas would require a reevaluation of MEC risks and are likely to continue to require additional risk mitigation measures (e.g., Land Use Controls) to protect human health during development and long-term reuse..

### 5.2.9 Community Acceptance

Community acceptance will be addressed in the Parker Flats MRA RI/FS ROD once comments on the RI/FS report and Proposed Plan have been received.

## 6.0 IDENTIFICATION OF PREFERRED REMEDIAL ALTERNATIVES

This section presents a summary of the preferred alternatives that best met the evaluation criteria and were selected for implementation at each of the eight Parker Flats MRA reuse areas. Long Term Management Measures (i.e., a deed notice, annual monitoring, and five-year review reporting) associated with the implementation and management of the selected remedial alternatives for the Parker Flats MRA are estimated to have a total cost over a period of 30 years of approximately \$258,000. Cost estimates for these measures are provided in Appendix A, Table A1.

The need for additional risk management was assessed for each likely reuse receptor assumed in the RA at each of the eight reuse areas. The Land Use Control Alternative was selected as the preferred remedial alternative as follows:

***During Development:*** Intrusive workers (e.g., construction workers, outdoor maintenance workers) were the only likely receptors identified in the RA during development of these areas.

***Intrusive Workers***—Overall MEC Risk Scores of D and E: Workers performing intrusive activities for which ‘high’ and ‘highest’ risks were estimated in the RA during development of the area would be protected from potentially remaining MEC risks under the Land Use Control Alternative because they would (1) receive MEC recognition and safety training, and (2) have onsite construction monitors (qualified MEC personnel) present during these activities.

***During Reuse:*** Three different types of likely receptors were identified in the RA during reuse of these areas.

- **Non-Residents**—Overall MEC Risk Scores of A and B: Receptors for which ‘low’ and ‘lowest’ risks were estimated in the RA after development has been performed and long-term reuse has been established (e.g., Indoor Workers, Facility Visitors) would not require additional protection from potentially remaining MEC risks.
- **Adult/Child Residents**—Overall MEC Risk Scores of D: Residents for which ‘high’ risks were estimated in the RA after development has been performed and long-term reuse has been established would be protected from potentially remaining MEC risks under the Land Use Control Alternative because (1) planned development will involve extensive ground-disturbing activities (e.g., construction, grading) that will be monitored by qualified MEC personnel, and (2) the developer/property owner will be responsible for maintaining LUCs protective of reusers conducting any intrusive activities during post-development reuse.
- **Intrusive Workers**—Overall MEC Risk Scores of D and E: Workers for which ‘high’ and ‘highest’ risks were estimated in the RA during reuse of the area would be protected from potentially remaining MEC risks under the Land Use Control Alternative because they would (1) receive MEC recognition and safety training, and (2) have onsite construction monitors (qualified MEC personnel) present during these activities.

This alternative would be protective of human health and the environment for all receptors, and would be effective in the short- and long-term at mitigating potentially remaining MEC risks to workers conducting intrusive activities during development and reuse of each area; would require a moderate level of effort to implement; and would have a comparatively low cost associated with its implementation.

Implementation of the Land Use Controls Alternatives at these reuse areas will be described in further detail in the Land Use Control Implementation Remedial Design/Remedial Action Work Plan (LUCI RD/RAWP). Under the Federal Facility Agreement (FFA) between the Army, EPA, and DTSC, a schedule for preparation of the LUCI RD/RAWP for the Parker Flats MRA will be submitted within 21 days of signature of the ROD as described in Section 3.2.

The preferred remedial alternatives selected for each reuse area are described below.

#### 6.1 Monterey Peninsula College EVOC

The preferred remedial alternative for managing potential MEC risks to workers conducting intrusive activities at this reuse area (construction workers, outdoor maintenance workers) during both development and long-term reuse is the Land Use Control Alternative that consists of MEC recognition and safety training and construction monitoring. Additional risk management was not determined to be necessary during long-term reuse for non-resident reusers (trespassers, recreational users, indoor workers, student/faculty).

Long-term management costs associated with implementation of this alternative are approximately \$125,000. Cost estimates for implementation of this alternative over a period of 30 years are provided in Appendix A, Table A2.

#### 6.2 Horse Park

The preferred alternative for managing potential MEC risks to workers conducting intrusive activities at this reuse area (construction workers, outdoor maintenance workers) during both development and long-term reuse is the Land Use Control Alternative that consists of MEC recognition and safety training and construction monitoring. Additional risk management was not determined to be necessary during long-term reuse for non-resident reusers (trespassers, recreational vehicle campers, recreational horseback riders).

Long-term management costs associated with implementation of this alternative are approximately \$221,000. Cost estimates for implementation of this alternative over a period of 30 years are provided in Appendix A, Table A3.

#### 6.3 Habitat Reserve

The preferred alternative for managing potential MEC risks to workers conducting intrusive activities at this reuse area (construction workers, habitat workers) during both development and long-term reuse is the Land Use Control Alternative that consists of MEC recognition and safety training and construction monitoring. Additional risk management was not determined to be necessary during long-term reuse for non-resident reusers (trespassers, recreational users, habitat monitors).

Long-term management costs associated with implementation of this alternative are approximately \$75,000. Cost estimates for implementation of this alternative over a period of 30 years are provided in Appendix A, Table A4.

#### 6.4 Veterans Cemetery

The preferred alternative for managing potential MEC risks to workers conducting intrusive activities at this reuse area (construction workers, cemetery workers, outdoor maintenance workers) during both development and long-term reuse is the Land Use Control Alternative that consists of MEC recognition



and safety training and construction monitoring. Additional risk management was not determined to be necessary during long-term reuse for non-resident reusers (trespassers, recreational reusers, cemetery visitors).

Long-term management costs associated with implementation of this alternative are approximately \$245,000. Cost estimates for implementation of this alternative over a period of 30 years are provided in Appendix A, Table A5.

## 6.5 Monterey County Development Reserve

The preferred alternative for managing potential MEC risks to workers conducting intrusive activities at this reuse area (construction workers, outdoor maintenance workers) during both development and long-term reuse is the Land Use Control Alternative that consists of MEC recognition and safety training and construction monitoring. Additional risk management was not determined to be necessary during long-term reuse for non-resident reusers (trespassers, recreational reusers, indoor workers) or adult/child residents because the planned development will involve extensive ground-disturbing activities that will be monitored by qualified MEC personnel, which is expected to reduce potentially remaining MEC risks. The developer/property owner will be responsible for maintaining Land Use Controls protective of reusers conducting any intrusive activities during post-development reuse.

Long-term management costs associated with implementation of this alternative are approximately \$153,000. Cost estimates for implementation of this alternative over a period of 30 years are provided in Appendix A, Table A6.

## 6.6 Monterey County Public Facilities

The preferred alternative for managing potential MEC risks to workers conducting intrusive activities at this reuse area (construction workers, outdoor maintenance workers) during both development and long-term reuse is the Land Use Control Alternative that consists of MEC recognition and safety training and construction monitoring. Additional risk management was not determined to be necessary during long-term reuse for non-resident reusers (trespassers, indoor workers, public facility visitors).

Long-term management costs associated with implementation of this alternative are approximately \$56,000. Cost estimates for implementation of this alternative over a period of 30 years are provided in Appendix A, Table A7.

## 6.7 Army Maintenance Center

The preferred alternative for managing potential MEC risks to workers conducting intrusive activities at this reuse area (construction workers, outdoor maintenance workers) during both development and long-term reuse is the Land Use Control Alternative that consists of MEC recognition and safety training and construction monitoring. Additional risk management was not determined to be necessary during long-term reuse for non-resident reusers (trespassers, indoor workers, public facility visitors).

Long-term management costs associated with implementation of this alternative are approximately \$50,000. Cost estimates for implementation of this alternative over a period of 30 years are provided in Appendix A, Table A8.

## 6.8 Monterey-Salinas Transit Facility

The preferred alternative for managing potential MEC risks to workers conducting intrusive activities at this reuse area (construction workers) during both development and long-term reuse is the Land Use Control Alternative that consists of MEC recognition and safety training and construction monitoring. Additional risk management was not determined to be necessary during long-term reuse for non-resident reusers (trespassers, recreational users, indoor workers, public facility visitors).

Long-term management costs associated with implementation of this alternative are approximately \$70,000. Cost estimates for implementation of this alternative over a period of 30 years are provided in Appendix A, Table A9.

## 7.0 APPROVAL PROCESS

The approval process for the Parker Flats MRA RI/FS includes the following components:

- Prepare the reuse area-specific RI/FS report with regulatory agency and public review of the Draft and Draft Final reports.
- Prepare a Proposed Plan that presents the Army's preferred alternative for Track 2 and summarizes the results of the RI, RA, and FS.
- Solicit public comments on the Proposed Plan during a 30-day review period.
- Provide an opportunity for a public meeting on the Proposed Plan where written and verbal comments can be submitted.
- Prepare the Record of Decision (ROD) that (1) summarizes the results of the RI, RA, and FS, (2) includes a Responsiveness Summary that summarizes any public comments received on the Proposed Plan, and Army responses to comments, and (3) specifies the details of the selected remedy(s), including plans for development and submittal of a Land Use Control Implementation Remedial Design or Remedial Action Work Plan (LUCI RDWP/RAWP). Under the Federal Facility Agreement (FFA) between the Army, EPA, and DTSC, a schedule for preparation of the LUCI RD/RAWP for the Parker Flats MRA will be submitted within 21 days of signature of the ROD.
- Receive EPA approval of the ROD, and review by DTSC.
- Announce the decision regarding the remedy selection in a local major newspaper and place copies of the RI/FS, Proposed Plan, and ROD in the Administrative Record and local information repositories.

## 8.0 REFERENCES

- Department of Defense (DoD)/U.S. Environmental Protection Agency (EPA), 2000. *Management Principles for Implementing Response Actions at Closed, Transferring, and Transferred Ranges*. March.
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