

U.S. Army Corps of Engineers, Los Angeles District
Formerly Used Defense Sites (FUDS) Program

PROPOSED PLAN

FOR

Camp San Luis Obispo (CSLO), Munitions Response Site (MRS) 01/02 – Grenade Courts 25 and 26 and MRS 05 – Multi-Use Range Complex, San Luis Obispo County, California

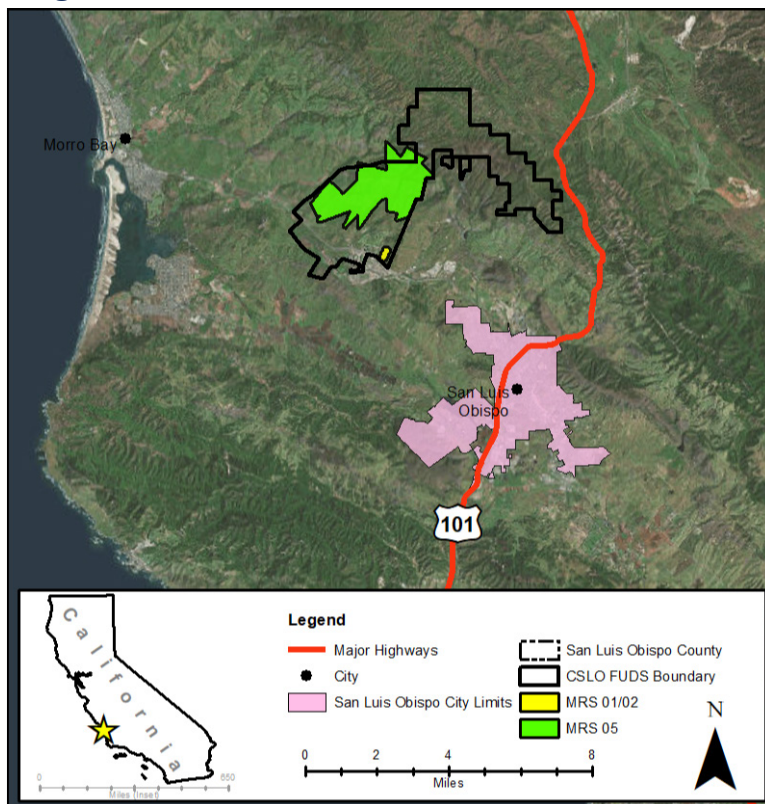
FUDS Project No. J09CA203107 (CSLO MRS 01/02) and J09CA203105 (CSLO MRS 05)



INTRODUCTION

The U.S. Army Corps of Engineers (USACE) presents this Proposed Plan (PP) to allow the public the opportunity to review and comment on the Preferred Alternatives for **Camp San Luis Obispo (CSLO), Munitions Response Site (MRS) 01/02 – Grenade Courts 25 and 26 and MRS 05 – Multi-Use Range Complex** Formerly Used Defense Sites (FUDS) (hereafter collectively referred to as the **CSLO MRSs**) located in San Luis Obispo County, California. Figure 1 shows the location of the CSLO MRSs.

Figure 1: CSLO MRS 01/02 and MRS 05 Site Location



MARK YOUR CALENDARS

PUBLIC COMMENT PERIOD:

1 May 2019 to 7 June 2019

USACE will accept written comments on the Proposed Plan during the public comment period. Comment letters must be postmarked by 7 June 2019, and should be submitted to:

FUDS Project Manager
Attn: CESPL-PM-M
United States Army Corps of Engineers
Los Angeles District
915 Wilshire Boulevard, Suite 930
Los Angeles, CA 90017-3401
Phone: (213) 452-3988
Email: FUDS.SPL@usace.army.mil

To request an extension of the public comment period, send a written request to the FUDS Project Manager by 6 June 2019.

PUBLIC MEETING:

Wednesday, 22 May 2019, 5:30 – 7:30pm

USACE will host a public meeting to explain the Proposed Plan and all of the alternatives resulting from the Feasibility Study (the study completed prior to this Proposed Plan). Oral and written comments will be accepted at the meeting, held at:

Ludwick Community Center
864 Santa Rosa St.
San Luis Obispo, CA 93401

FOR MORE INFORMATION:

Project documents are available in the Administrative Record file, which includes a copy of the *Final Remedial Investigation/Feasibility Study Report*, at the following location:

San Luis Obispo Public Library
995 Palm Street
San Luis Obispo, CA 93403
Contact: (805) 781-5991

This document discusses the rationale for selecting Preferred Alternatives for the **CSLO MRSs**. USACE, Los Angeles District, which is the lead agency for this munitions response, issued this PP for the **CSLO MRSs**. The California Department of Toxic Substances Control (DTSC), which is the regulatory agency,

has reviewed this PP and concurs with the Preferred Alternatives presented in this document. USACE, Los Angeles District, is presenting this information to keep the public fully informed of the decision making process regarding impacts from former military use in the **CSLO MRSs**; fulfilling the public participation requirements under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 United States Code [USC] §9617(a) (Ref. 1) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) [40 Code of Federal Regulations [CFR] §300.430(f)(2)] (Ref. 2).

USACE designated two sub-areas (**MRS 01/02A** and **MRS 01/02B**) within **MRS 01/02** and three sub-areas [**MRS 05-North**, **MRS 05-South**, and **MRS 05-Shooting Range (SR)**] within **MRS 05**. USACE based the sub-areas on historical use, results of previous investigations, and future land use. Figure 2 shows the sub-areas and Table 1 summarizes information about each **MRS 01/02** and **MRS 05** sub-area including the selected Preferred Alternative for each sub-area. Each Preferred Alternative is specific to that particular sub-area. As such, the Preferred Alternative may differ between sub-areas. Based on the results of the RI and previous investigations, no Department of Defense (DoD) military munitions (munitions) or munitions debris (MD) have been identified with MRS 01/02B. Therefore, this MRS sub-area was recommended for “No Further Action” at the completion of the RI and was not analyzed in the FS.

Figure 2: CSLO MRS 01/02 and MRS 05 Layout and Sub-Areas

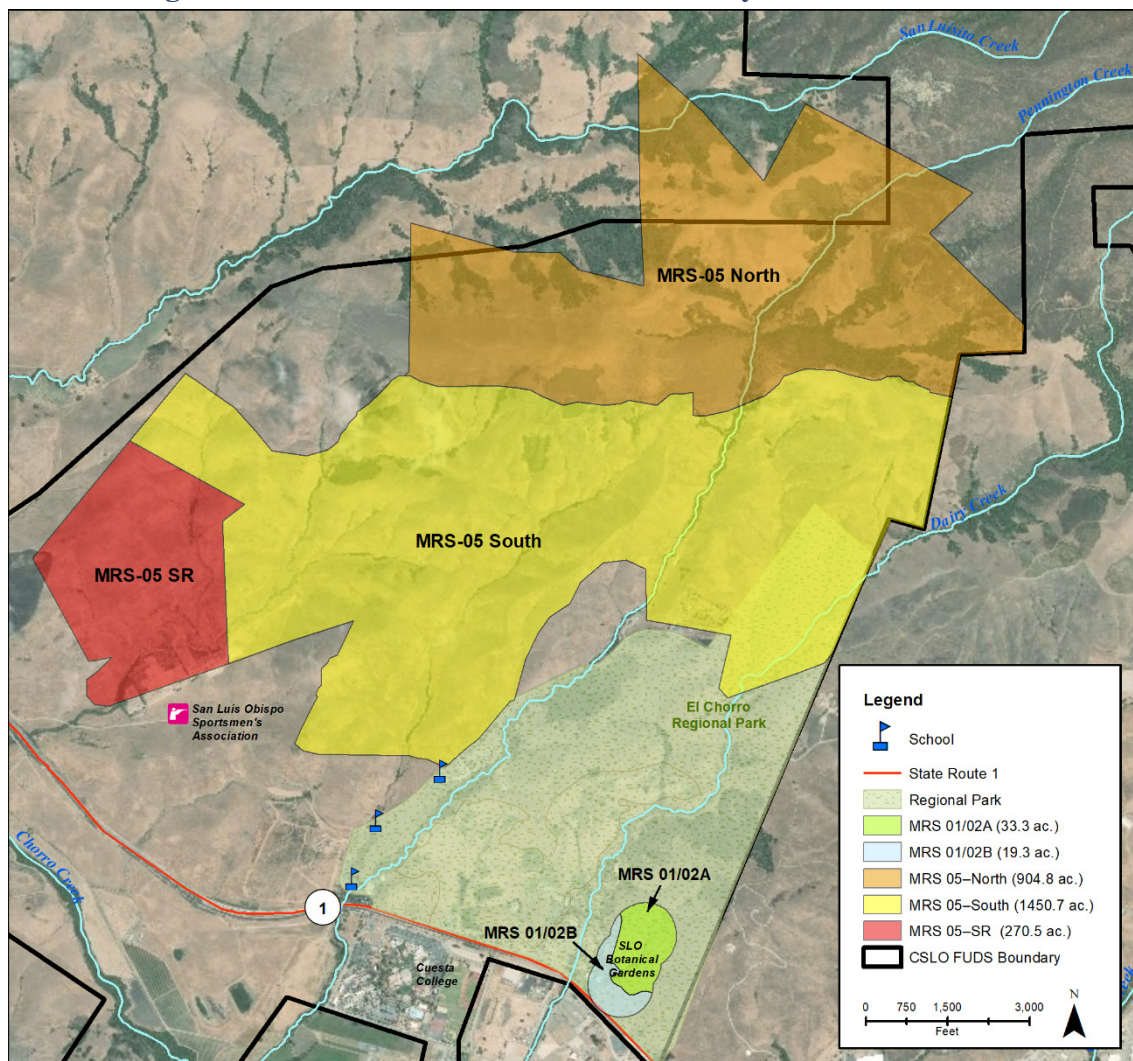


Table 1: CSLO MRS Sub-Area Descriptions

MRS	MRS Sub-area	Acreage	Current Land Use	Future Land Use	Anticipated Depth of Intrusive Activities	Preferred Alternative
MRS 01/02	MRS 01/02A	33.3	Recreational / Educational	Recreational / Educational	3 feet	Alternative 4
	MRS 01/02B	19.3	Recreational / Educational	Recreational / Educational	Not Applicable (N/A)	No Further Action ¹
MRS 05	MRS 05-North	904.8	Recreational / Agricultural	Recreational / Agricultural	N/A	Alternative 2
	MRS 05-South	1,450.7	Recreational / Agricultural	Recreational / Agricultural	2 feet	Alternative 4
	MRS 05-SR	270.5	Recreational / Agricultural	Recreational / Agricultural	2 feet	Alternative 4

¹ No Munitions and Explosives of Concern (MEC) or munitions constituents (MC) hazard has been identified within MRS 01/02B during the Remedial Investigation (RI) or previous investigations; any remedy implemented in MRS 01/02 will only be implemented in the MRS 01/02A portion of the MRS.

This PP identifies the Preferred Alternatives for protecting human receptors from explosive hazards associated with DoD military munitions, which may be MEC, that remain within the **CSLO MRS sub-areas** based on the results of the Remedial Investigation and Feasibility Study (RI/FS) completed in 2018. In this PP, USACE both provides the rationale for each Preferred Alternative and includes summaries of the other remedial alternatives it evaluated based on the reasonably anticipated future use for each of the **CSLO MRS sub-areas**. The alternatives are identified below. Details regarding the decision process and the alternative selection are discussed in the Summary of Remedial Alternatives and Summary of Preferred Alternatives sections.

- Alternative 1: No Further Action;
- Alternative 2: Institutional Controls (ICs) to Protect Current and Future Site Users;
- Alternative 3: DoD military munitions Removal from the Surface and ICs to Protect Current and Future Site Users;
- Alternative 4¹: Digital Geophysical Mapping (DGM) and/or Advanced Geophysical Classification (AGC) with Surface/Subsurface Removal of DoD military munitions and ICs to Protect Current and Future Site Users;
- Alternative 5²: Excavation, Sifting, Removal of DoD military munitions, and Restoration.

The proposed Preferred Alternatives for each **CSLO MRS sub-area** are based on the RI findings and discussions among the lead and support agencies, the affected community, and other stakeholders.

¹ Note that in the Final RI/FS Report, the use of traditional DGM equipment and AGC sensors was evaluated separately as Alternatives 4 and 5; however, due to advances in the applications of these technologies the alternatives have been combined into a single alternative and the type of equipment to be used will be determined during the Remedial Action planning process.

² Alternative 5 was previously identified as Alternative 6 in the Final RI/FS Report.

The PP:

- Presents basic background information;
- Identifies the Preferred Alternative for each **CSLO MRS sub-area** and explains the rationale for each identified alternative;
- Encourages public review and comment on the recommended Preferred Alternative; and
- Provides information on how the public can be involved in the process.

One or more Decision Documents will provide the final Selected Remedies for the **CSLO MRS sub-areas**. The Decision Document’s “Responsiveness Summary” section will include USACE’s responses to public comments. Figure 3 summarizes the various steps in the development and approval process for the **CSLO MRS sub-area** Decision Documents. After consideration of each comment, USACE will approve the required Decision Documents.

PUBLIC INVOLVEMENT PROCESS

USACE encourages property owners and other interested parties to review this document and submit comments. USACE will consider the public comments before selecting and approving the Preferred Alternative for each of the MRS sub-areas that make up the **CSLO MRSs**.

USACE will accept comments on the PP during the public comment period. During the public comment period, USACE will present the PP at the public meeting (see Mark Your Calendars notification on Page 1). USACE will also accept verbal and written comments at the public meeting. USACE will document and consider comments before selecting the final remedy. The first page of this PP provides the location, date and time of the public meeting, and the location of the Administrative Record file for the **CSLO MRSs**.

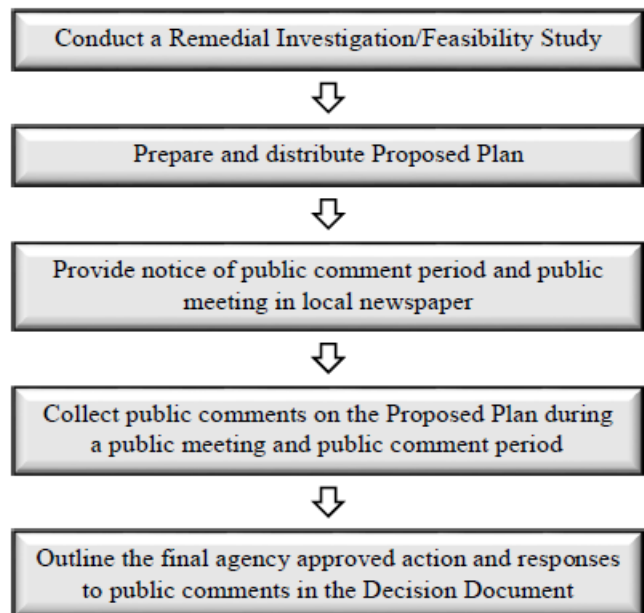
The PP and the Final RI/FS Report are a part of the **CSLO MRSs** Administrative Record that contains the documents used in making decisions on remedial projects at the site.

SITE HISTORY AND BACKGROUND

This PP summarizes information that can be found in greater detail in the Final RI/FS Report (Ref. 3) and other documents contained in the Administrative Record file for the **CSLO MRSs**. USACE encourages the public to review these documents to gain a more comprehensive understanding of the **CSLO MRSs** and previous remedial activities that have been conducted at the **CSLO MRSs**.

The **CSLO MRSs** are situated along California State Highway 1, approximately eight miles east of the Pacific Ocean (at Morro Bay) and approximately five miles northwest of U.S. Highway 101 between the cities of San Luis Obispo and Morro Bay on the western slopes of the Santa Lucia Range (Figure 1). The **CSLO MRSs** include **MRS 01/02 – Grenade Courts 25 and 26** and **MRS 05 – Multi-Use Range Complex**. **MRS 01/02** comprises 52.6 acres and **MRS 05** comprises 2,626 acres; combined, the **CSLO**

Figure 3: CSLO MRSs Decision Document Process



MRSs total area is 2,678.6 acres. **MRS 01/02** has been subdivided into two sub-areas and **MRS 05** has been subdivided into three sub-areas; Figure 2 and Table 1 depict and summarize the **CSLO MRS sub-areas**.

CSLO was established in 1928 by the State of California as a National Guard Camp. Identified at that time as Camp Merriam, it originally consisted of 5,800 acres. The U.S. Army took over Camp Merriam and renamed it Camp San Luis Obispo in 1940. Additional lands were added in the early 1940s until the total acreage reached 14,959. Although the available historical information does not indicate how the land was transferred from the State of California to the Department of the Army, historical records do indicate that between 1945 and 1952, the Department of the Army owned and leased land used for CSLO. The records, which are inventories of owned, sponsored, and leased facilities, indicate that the maximum amount of land owned was 12,958 acres between 1946 and 1948, along with 6,069 acres leased through four leases (note that not all land was owned or leased at the same time and the maximum size of CSLO was 14,959 acres). During World War II (WWII), CSLO was used by the U.S. Army from 1943 to 1946 for infantry division training. Uses of the camp included artillery, small arms ranges, mortar, rocket, and grenade practice ranges. There were 27 ranges and 13 training areas located on CSLO during WWII.

Following the end of WWII, a small portion of the former camp land was returned to its former private owners. The U.S. Army was making arrangements to relinquish the rest of CSLO to the State of California and other government agencies when the conflict in Korea started in 1950. The camp was reactivated at that time.

The U.S. Army used the former camp during the Korean Conflict from 1951 through 1953 when the Southwest Signal Center was established for the purpose of signal corps training. Eighteen ranges and sixteen training areas were present at CSLO during the Korean Conflict. A limited number of these ranges and training areas were used previously during WWII. Following the Korean Conflict, the camp was maintained in inactive status until it was relinquished by the Army in the 1960s and 1970s. Approximately 4,685 acres was relinquished to the General Services Administration (GSA) in 1965. GSA then transferred the property to other agencies and individuals beginning in the late-1960s through the 1980s; most of which was transferred for educational purposes (e.g., California Polytechnic State University [Cal Poly] and Cuesta College). A large portion of CSLO (the original 5,800 acres) has been retained by the California National Guard (CNG) and is not part of the FUDS program. In an Archives Search Report (ASR) completed in 1994, 9,159 acres of CSLO were identified as eligible for the Defense Environmental Restoration Program (DERP) FUDS (Ref. 5). This PP addresses 2,678.6 acres associated with MRS 01/02 and MRS 05. The remainder of the property identified as eligible for the FUDS program (approximately 6,583 acres) is being addressed through separate projects, as necessary.

USACE completed an RI/FS for the **CSLO MRSs** in September 2018. USACE developed this PP based on findings of the Final RI/FS Report (Ref. 3).

Site-Specific History for MRS 01/02 (Grenade Courts)

Grenade Court 25, (MRS 01) and Grenade Court 26, (MRS 02) consist of approximately 52.6 combined acres (Figure 2).

Previous investigations identified these grenade ranges as “standard grenade ranges” that were used for training activities. This area was swept for DoD military munitions by USACE during a Time-Critical Removal Action (TCRA) in 1992; hand grenade fragments and expended fuzes were found. During the ASR process, the site inspection team found one expended hand grenade fuze north of the baseball fields. The following types of munitions are suspected or known to have been used in **MRS 01/02**:

- Rifle grenades;
- Practice hand grenades; and
- High Explosive (HE) hand grenades.

Site-Specific History for MRS 05 (Multi-Use Range Complex)

The Multi-Use Range Complex consists of approximately 2,626 acres situated north of Highway 1 and spanning the width of the entire former training area, with all ranges facing north to northeast. Multiple use ranges associated with this MRS included ranges for 3.5-inch rockets, rifles, mortars, squad defense training, and close combat training. It is important to note that many of these ranges and range fans overlap. The specific acreages presented for individual range fans do not represent the total acreage for the **MRS 05 Multi-Use Range Complex**.

The following types of munitions are suspected or known to have been used in **MRS 05**:

- Projectile, 105 millimeter (mm) HE;
- Projectile, 105mm Smoke;
- Projectile, 75mm Shrapnel;
- Projectile, 37mm HE;
- Rocket, 5-inch HE;
- Rocket, 2.36-inch HE Anti-tank (HEAT);
- Rocket, 2.36-inch Practice;
- Mortar, 3-inch Stokes;
- Mortar, 81mm HE;
- Mortar, 81mm white phosphorus (WP); and
- Mortar, 60mm HE.

SITE CHARACTERISTICS

Current and Anticipated Land Use

The current and future land use for each **CSLO MRS sub-area** is summarized in Table 1. Additional information regarding land use for each sub-area is listed below.

- MRS 01/02A – Current and future land use is expected to remain unchanged and continue to be used mainly for recreation and educational purposes, including the expansion of the San Luis Obispo County Botanical Gardens, which will include intrusive activities up to a depth of three feet (ft) below ground surface (bgs);
- MRS 01/02B – Current and future land use is expected to remain unchanged and continue to be recreational (ball fields) and educational (Botanical Garden facilities);
- MRS 05-North – Current and future land use is expected to remain unchanged and continue to be used mainly for recreational (hiking) and agricultural (ranching) purposes, which will not involve intrusive activities because activity is limited to grazing only due to steep terrain;
- MRS 05-South – Current and future land use is expected to remain unchanged and continue to be used mainly for recreational (hiking) and agricultural (ranching) purposes; which may include intrusive activities up to a depth of two ft bgs because various ranching operations including development of ranch facilities may occur; and
- MRS 05-SR – Current and future land use is expected to remain unchanged and continue to be used mainly for recreational (public shooting range) and agricultural purposes, which will include

maintenance and renovation of the shooting range resulting in intrusive activities up to a depth of two ft bgs.

Topography

The **CSLO MRSs** consist mainly of rolling hills, mountains, and canyons. The majority of the southern portion of the **CSLO MRSs** terrain is nearly level to moderately sloping and the elevation ranges from 300 to 1,500 ft. The hills/mountains are strongly sloping to very steep with elevations ranging from 600 to 3,400 ft across the **CSLO MRSs**, with the higher elevations towards the northern and northeastern portion of the site.

Soils

A large portion of the **CSLO MRSs** consists of rolling hills and mountains with three categories of soils occurring within: alluvial plains and fans; terrace soils; and hill/mountain soils. Soils associated with the alluvial plains and fans occur mainly adjacent to stream channels. Near the southern boundaries of the **CSLO MRSs**, where the slope is nearly level to moderately sloping, the surface layer is coarse sandy loam to shaley loam. Soils in steeper areas tend to be silty clay, clay loam, and clay.

Vegetation

According to the Formation Level Vegetation Mapping Database for San Luis Obispo County, the plant communities listed in Table 2 are present within the **CSLO MRSs**.

Table 2: Plant Communities in the CSLO MRSs

Vegetation Type	Area (acres)	Percent Cover
Mesomorphic Tree Vegetation - Forest & Woodlands	178.1	6.9%
Mesomorphic Shrub Vegetation	288.0	11.2%
Mesomorphic Herbaceous Vegetation	2,028.5	78.8%
Temperate Flooded Riparian Vegetation	44.2	1.7%
Temperate Meadow & Freshwater Marsh	1.5	0.1%
Urban Built Up	34.6	1.3%

Special Status Species and Critical Habitat

The Endangered Species Act (ESA) is intended to prevent the extinction of plant and animal species, provide a means to conserve the ecosystems on which species listed as endangered or threatened under ESA (“listed species”) depend, and to provide a program for conservation and recovery of these species. In addition to the federal ESA, the State of California has a state law under which are listed additional species that California has identified as threatened or endangered.

Critical habitat, as designated by the U.S. Fish and Wildlife Service (USFWS), is defined in the ESA as a specific geographic area that contains the features essential to the conservation of endangered or threatened species and that may require special management and protection. Critical habitat for the California red-legged frog (MRS 01/02 and MRS 05) and south-central steelhead (MRS 05) is located within the **CSLO MRSs**. Table 3 lists the federally- and state-listed endangered or threatened species with known occurrences (Chorro Creek bog thistle) or the potential to occur within the **CSLO MRSs**.

Table 3: Endangered or Threatened Species with Potential to Occur at the CSLO MRSs

Common Name	Scientific Name	Federal Status	State Status
Crustacean			
Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	Threatened	--
Birds			
Least Bell's Vireo	<i>Vireo bellii pusillus</i>	Endangered	--
Bald eagle	<i>Haliaeetus leucocephalus</i>	--	Endangered
California condor	<i>Gymnogyps californianus</i>	--	Endangered
Tricolor blackbird	<i>Agelaius tricolor</i>	--	Candidate Endangered ³
Plants			
Chorro Creek bog thistle ²	<i>Cirsium fontinale</i> var. <i>obispoense</i>	Endangered	Endangered
Indian Knob mountain balm	<i>Eriodictyon altissimum</i>	Endangered	--
Spreading navarretia	<i>Navarretia fossalis</i>	Threatened	--
California jewelflower	<i>Caulanthus californicus</i>	Endangered	--
Amphibians			
California tiger salamander	<i>Ambystoma californiense</i>	Threatened	Threatened
California red-legged frog ¹	<i>Rana draytonii</i>	Threatened	--
Foothill yellow-legged frog	<i>Rana boylei</i>	--	Candidate Threatened ³
Fish			
South-central steelhead ¹	<i>Oncorhynchus mykiss</i>	Threatened	--
Insects			
Kern primrose sphinx moth	<i>Euproserpinus euterpe</i>	Threatened	--
Mammals			
Giant kangaroo rat	<i>Dipodomys ingens</i>	Endangered	--
¹ Designated critical habitat present in MRS 01/02 and MRS 05. ² Known occurrences within MRS 05. ³ "Candidate species" means a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the commission has formally noticed as being under review by the department for addition to either the list of endangered species or the list of threatened species, or a species for which the commission has published a notice of proposed regulation to add the species to either list.			

Regardless of the Preferred Alternatives chosen based on this PP, munitions response and other project actions must comply with substantive ESA (federal) requirements regarding take of listed species and avoiding jeopardy of listed species or adverse modification of critical habitat. USACE will coordinate remedy design and incorporation of avoidance and minimization measures with the USFWS and California Department of Fish and Wildlife.

Surface Water/Groundwater/Wetlands

The CSLO MRSs are located in the Estero Bay and Salinas Hydrologic units and the Morro Creek-Frontal Pacific Ocean and Santa Margarita Creek-Salinas River watersheds. Chorro Creek-Frontal Morro Bay

(draining west) and Santa Margarita Creek (draining east) are the predominant sub-watersheds. Several creeks are located within the **CSLO MRSs**, including Walters Creek, Chumash Creek, Pennington Creek, Dairy Creek, San Luisito Creek, and Chorro Creek. Most of the creeks are intermittent tributaries of Chorro Creek, which drains west into the Pacific Ocean via Morro Bay.

The **CSLO MRSs** are located north of the San Luis Obispo Valley Groundwater Basin and east of the Chorro Valley and Los Osos Valley groundwater basins. The Los Osos, Chorro, Walters, Chumash, Pennington, and Morro creeks provide drainage to the Los Osos Valley drainage basin, where water bearing formations are found. Groundwater in the Los Osos Valley is found at depths from 10 to 50 ft bgs. The water bearing zone is estimated to extend to a depth of 200 ft bgs and is drained by Chorro Creek and Los Osos Creek. Sediment debris is transported by these creeks into Morro Bay during hydrologic events (Ref. 3).

The National Wetlands Inventory database, based on the Cowardin classification used by the USFWS, was used as a baseline to develop a general idea of how many acres and what types of wetlands are found within the **CSLO MRSs** (Table 4).

Table 4: Wetlands Identified at the CSLO MRSs	
Wetland Type	Acres
MRS 01/02	
Freshwater Emergent Wetland	0.63
Freshwater Forested/Shrub Wetland	0.88
Riverine	0.30
TOTAL	1.81
MRS 05	
Freshwater Emergent Wetland	26.57
Freshwater Forested/Shrub Wetland	22.38
Riverine	29.23
TOTAL	78.18

USACE regulates discharges of dredged and fill material into waters of the United States, which includes many streams and wetlands such as those in the **CSLO MRSs**. Prior to implementing any necessary remedial actions at the **CSLO MRSs**, additional evaluation of surface water features may be required to determine hydraulic connection between wetlands and waters of the U.S. to determine the requirements for meeting the substantive requirements of the Clean Water Act (CWA) USC §1344.

Prehistoric and Historic Cultural Resources

The California Archaeological Inventory, Central Coast Information Center, California Points of Historical Interest, the California Historical Landmarks, the California Register of Historical Resources, the National Register of Historic Places (NRHP), and the California State Historic Resources Inventory listings were researched and reviewed for information regarding cultural and archaeological resources within the **CSLO MRSs** (Ref. 3). The results of this research yielded the following information:

- Ten archaeological sites have been identified within portions of MRS 05. The Primary numbers for these sites are: 40-000545; 40-000606; 40-000607; 40-000608; 40-000609; 40-000913; 40-001759; 40-001760; 40-002426; 40-002762.
- There is one historic built-environment resource (40-002762; building foundation) that has been recorded within MRS 05.
- No archaeological sites or historic built-environment resources have been recorded within MRS 01/02.
- No sites are listed on the Archaeological Determination of Eligibility list nor are any historic properties located within the project area for MRS 05 or MRS 01/02.
- No isolated artifacts have been recorded within the project area for MRS 05 or MRS 01/02.

Based on the research conducted, previously recorded cultural resources have been identified in or around the **CSLO MRSs**; however, much of the area has not been field surveyed to determine the presence or absence of cultural resources, and those that have been identified have not been evaluated for NRHP eligibility. In general, there were no cultural resources restrictions related to the geophysical work conducted during the RI, as no previously recorded or previously unknown archaeological sites or other cultural resources concerns were identified during the geophysical survey or intrusive investigation.

SUMMARY OF PREVIOUS INVESTIGATION RESULTS

Previous investigations and surface clearances were conducted at the **CSLO MRSs** from 1946 to 2010. A brief summary of these previous investigations and surface clearances at the **CSLO MRSs** are summarized below.

1946 Surface Clearance – According to U.S. Army correspondence from 1964, all the range impact areas were cleared by Explosive Ordnance Disposal personnel and items disposed of in 1946. No information regarding types of munitions or disposition of munitions was noted (Ref. 4).

1986 and 1993 Preliminary Assessments (PA) – USACE, Los Angeles District, prepared multiple PAs in 1986 for individual portions of CSLO. The individual PAs were superseded by a more comprehensive PA that included the entire CSLO acreage prepared in 1993 by USACE, Los Angeles District. The 1993 PA determined that the site was used for various military activities (e.g., artillery and small arms training, including mortar, rocket, and grenade ranges) that included the use of DoD military munitions and could constitute a public safety hazard (Ref. 5).

1992 TCRA – In 1992, USACE performed an Unexploded Ordnance (UXO) Removal Action on approximately 95 acres of **MRS 05** and **MRS 01/02**. The 1992 *TCRA Report* indicated that no UXO items were observed in the impact areas (**MRS 05**). Eight UXO items (MKII HE hand grenades) and approximately 50 expended hand grenade fuzes were discovered in **MRS 01/02** (north of the ball fields). Seven UXO items were detonated in place, and one was removed for disposal to the Defense Reutilization and Marketing Office at Vandenberg Air Force Base (Ref. 6).

1994 and 2004 ASR and Supplement – The *ASR* was completed by USACE, Rock Island District, in September 1994. During the *ASR* site visit (18-24 October 1993), the survey team discovered one expended hand grenade fuze (north of the ball fields in **MRS 01/02**) and several abandoned vehicles identified as munitions targets (in **MRS 05**). The *ASR* reported that 9,159 acres of CSLO was eligible for the DERP-FUDS (Refs. 5 and 7).

The *ASR Supplement* was completed by USACE, Rock Island District, in 2004 and summarized the information from the 1994 *ASR* and other associated investigations. The *ASR Supplement* identified the following information related to **MRS 05** and **MRS 01/02**:

- MRS 01 – Grenade Court, Range 25; 10 acres; MKII, hand grenade, frag; M21, practice hand grenade; M9A1, rifle grenade, anti-tank;
- MRS 02 – Grenade Court, Range 26; 16 acres; MKII, hand grenade, frag; M21, practice hand grenade; M9A1, rifle grenade, anti-tank;
- MRS 05 – Multi-Use Range Complex; 2,049 acres; small arms, general; M28, rocket, HEAT, 3.5-inch.

2006 Draft Preliminary Historical Records Review (HRR) – In July 2006, a *Draft Preliminary HRR Report* was completed for CSLO and Baywood Park Training Area by USACE, St. Louis District. The HRR was primarily focused on identifying historical activities that might potentially generate the presence of hazardous substances with an emphasis on establishing the types, quantities, and areas of MEC and chemical warfare activities. The report concentrated on verifying findings of previous studies and supplementing them, if possible, with particular emphasis on filling “data gaps” (Ref. 4).

2007 Site Inspection (SI) – The SI was performed to evaluate evidence for the presence of DoD military munitions and MC at the **CSLO MRSs**. The objective of the SI was to determine whether MRSs identified within CSLO warranted subsequent characterization as part of an RI/FS, No DoD Action Indicated (NDAI), or a TCRA. To accomplish this objective, Qualitative Reconnaissance and MC sampling were performed. (Ref. 8).

No MEC was identified at any of the MRSs and no MD was observed in **MRS 01/02** during the SI. MD associated with 81mm, 60mm, and 4.2-inch mortars (note: based on a review of records and databases by USACE, there is no information to indicate that 4.2-inch mortars used at CSLO were chemical munitions); 3.5-inch rockets; 37mm, 75mm, and 105mm projectiles; and fuzes were observed in **MRS 05**. In addition, small arms debris was also observed.

During the SI, no explosives were detected in surface soil, but copper exceeded its background concentration in **MRS 01/02**, and antimony and copper exceeded background concentrations in **MRS 05**. Evaluation of those MC in a Screening Level Human Health Risk Assessment determined that exposures at the reported surface soil concentrations did not pose significant potential for risks of human health effects.

Only one MC (copper) slightly exceeded the ecological screening levels at **MRS 01/02** and **MRS 05** during the Screening Level Ecological Risk Assessment (SLERA). The SLERA conclude that copper is not present at a concentration that would pose an unacceptable potential for risk to the health of ecological receptors.

Table 5 presents a summary of the SI results and recommendations:

Table 5: Summary of SI Results and Recommendations

MRS	MEC Found	MD Found	MC Present	Recommendation	Rationale ¹
MRS 01 (Grenade Court 25)	No	No	No	RI/FS based on historical findings, no further MC sampling.	MEC and MD have been reported in the past and a removal action was recommended in 1992 but records have not identified if the removal action was completed; further evaluation of potential MEC presence.
MRS 02 (Grenade Court 26)	No	No	No	RI/FS based on historical findings, no further MC sampling.	MEC and MD have been reported in the past and a removal action was recommended in 1992 but records have not identified if the removal action was completed; further evaluation of potential MEC presence.
MRS 05 (Multi-Use Range Complex)	No	Yes	Yes	TCRA, IC, and RI/FS. Further environmental sampling recommended for all media.	Numerous reports of MEC and MD over the years. Factors such as population density and current land use, as well as confirmed presence of MEC and MD warrant TCRA and follow-on RI/FS. SI data demonstrate the need for characterizing all media at MRS 05.
¹ Note: The rationale presented here is taken directly from the <i>Final SI Report</i> .					

2009 Environmental Security Technology Certification Program (ESTCP) Wide Area Assessment (WAA) – During an ESTCP UXO classification pilot study using WAA at a 10-acre test area in **MRS 05**, over 2,500 anomalies were identified and 26 UXO items were blown in place. UXO that were found included (18) 60mm HE mortars, (4) 81mm HE mortars, a 37mm HE projectile, a 5-inch HE rocket warhead, a 2.36-inch HEAT rocket (model not indicated), and a 3-inch Stokes mortar. Four of the UXO items were found on the surface, while the remainder were found in the shallow subsurface (Ref. 9).

2010 TCRA – A TCRA was conducted during the autumn of 2010 on approximately 170 acres of **MRS 05**. The TCRA consisted of detector-aided visual surface sweeps (using 200 ft by 200 ft grids) to locate MEC. The MEC was detonated on-site and the MD was removed from the site to facilitate identification of MEC. Approximately 5,500 pounds of MD were inspected, certified clear of hazardous/explosives material, and removed from the site. Twenty-three MEC items were located and detonated on-site during the TCRA field activities. An additional task during the TCRA was to place nine warning signs indicating potential UXO hazards in the area. The signs were placed at locations identified by Cal Poly and San Luis Obispo County (Ref. 10).

Table 6 summarizes the UXO discovered and detonated on-site during the TCRA field activities.

Table 6: 2010 TCRA UXO Items

MEC Item Identification	Quantity	Condition
M43, 81mm HE mortar w/M525 Point Detonating (PD) fuze	5	Armed
3-inch Stokes mortar (no fuze)	1	Unfuzed
2.36-inch rocket warhead (model not indicated)	1	Unfuzed
M49A2, 60mm HE mortar w/M525 PD fuze	10	Armed
M19A1, WP rifle grenade w/M9A1 fuze	1	Armed
M6A1, 2.36-inch HEAT rocket	1	Armed
M49A2, 60mm HE mortar / unfuzed	4	Unfuzed

MC samples were collected from six grids during the demolition process. Samples were collected before and after detonation. Fifteen samples were collected and analyzed as part of the investigation. Analytical results for all soil samples were below stated project goals and did not indicate any MC left behind resulting from the detonation activities.

2010 Historic Map and Aerial Photo Analysis – USACE, St. Louis District, completed a historical map and aerial photography analysis of CSLO. In this report, **MRS 01** was identified as a Practice Grenade Court and **MRS 02** was identified as a Live Grenade Court. Several ranges associated with **MRS 05** were identified including mortar/machine gun ranges, rocket ranges, and small arms ranges (Ref. 11).

Munitions Finds Not Related to Investigations – Local property owners such as Cal Poly have discovered DoD military munitions in the past during routine facility maintenance activities. The following text summarizes some of the non-investigation related munitions finds:

- DTSC conducted informal site visits at CSLO in 2006 and 2007. During the site visits, the teams encountered the following items and recorded their coordinates.
 - 3-inch rocket debris;
 - Rifle grenade debris;
 - 60mm tail fin;
 - 81mm WP mortar, intact;
 - 81mm HE mortar, intact;
 - 4.2-inch mortar debris; and
 - Various berms, bunkers, and crater features.

The San Luis Obispo County Sheriff was dispatched to dispose of the two intact mortars.

- The *ASR* identified and reported numerous accounts of MEC and MD observed on property owned by Cal Poly (i.e., within **MRS 05**) over the years. Munitions that were identified include bazooka rounds, WP items, hand grenades, an 81mm round, and an artillery round. Also reported in the *ASR*, explosive ordnance has been found at the El Chorro Regional Park. Reportedly, a phosphorus grenade was found on the County schools site in 1986 and a mortar was found on the adjacent property the same year. Research of San Luis Obispo County Bomb Squad responses for 1986 revealed a removal of a hand grenade from San Luis Obispo County School property, but no 1986 response record was shown for a mortar round.

SUMMARY OF REMEDIAL INVESTIGATION RESULTS

2011 – 2018 Remedial Investigation/Feasibility Study – USACE conducted an RI to characterize the nature and extent of DoD military munitions and MC, fill data gaps, and assess potential explosives safety hazards within the **CSLO MRSs**. The FS evaluated remedial alternatives for their ability to reduce the potential explosives hazards associated with munitions posed to property owners and the general public (Ref. 3).

RI field operations were conducted at the **CSLO MRSs** from September to December 2011. The RI included a geophysical survey using DGM towed-array and man-portable equipment. The RI also included environmental sampling, including sampling of background soil, and analysis. DoD military munitions were recovered during the intrusive investigation. The geophysical and soil sampling data collected during the RI identified the boundaries of the potential impact areas, while the results of previous investigations at the **CSLO MRSs** provided data to identify the potential munitions present. Collectively, these investigations, which bounded the impact areas and identified the munitions potentially present, satisfied the criteria for characterizing the nature and extent of munitions present.

Following the completion of the RI field operations, USACE performed a Treatability Study within a portion of **MRS 05-South** to evaluate the AGC process (from data collection through data analysis and intrusive investigation). USACE used data collected during the Treatability Study in the Final RI/FS Report to develop anomaly densities and to calculate cost estimates for Remedial Action Alternatives (RAAs) involving AGC (Ref. 12).

Munitions and Explosives of Concern Characterization

During the RI, DoD military munitions were recovered within the **CSLO MRSs** (Table 7).

Table 7: DoD Military Munitions Overview	
UXO	Number Found
MRS 01/02	
MKII HE hand grenades	3
M1A1 mine fuzes	2
MRS 05	
M43, 81mm HE mortar	3
MK3, 4.5-inch HE barrage rocket (BR)	1
M38, 37mm low explosive (LE) projectile	1
M6A1, 2.36-inch HEAT rocket	1
M6A1, 2.36-inch rocket warhead	3
M38, 37mm HE projectile	1
M49, 60mm HE mortar	1
MK3, 4.5-inch BR fuze (MK145 with booster)	1
M1, practice mine with (w/) spotting charge	1
M485, 155mm illumination projectile	1
TOTAL UXO	19

A summary of the characterization results for each **CSLO MRS sub-areas** is provided below:

- **MRS 01/02** – RI fieldwork included 8.3 line miles of DGM transects and 2.0 line miles of analog geophysical surveys within the 52.6 acres of the MRS. In addition, 1.2 line miles of DGM survey were completed outside the MRS boundary to ensure the extent of potential MEC contamination had been delineated. It was determined that the extent of potential MRS contamination was contained within the MRS boundary and no additional modification to the boundary was required.

Based on the results of the RI, **MRS 01/02** has been divided into new sub-areas to facilitate the evaluation of the potential hazards to human health posed by the potential presence of MEC in these areas. The sub-areas are summarized below:

- **MRS 01/02A** sub-area consisting of 33.3 acres was developed because UXO and MD items were recovered in sufficient quantity and distribution to verify the use of the MRS sub-area as a grenade training area.
- **MRS 01/02B** sub-area consisting of 19.3 acres was separated as a sub-area because no UXO or MD was observed in this area during the RI field operations.

Table 8 summarizes the results of the geophysical investigation at **MRS 01/02**. Figure 4 presents the results of the geophysical anomaly density analyses for **MRS 01/02**. Note that geophysical anomaly density is not shown for **MRS 01/02B** because no MEC or MD was identified during field activities completed in this sub-area. A complete detailed listing of the investigation results for the project is contained in the Final RI/FS Report (Ref. 3).

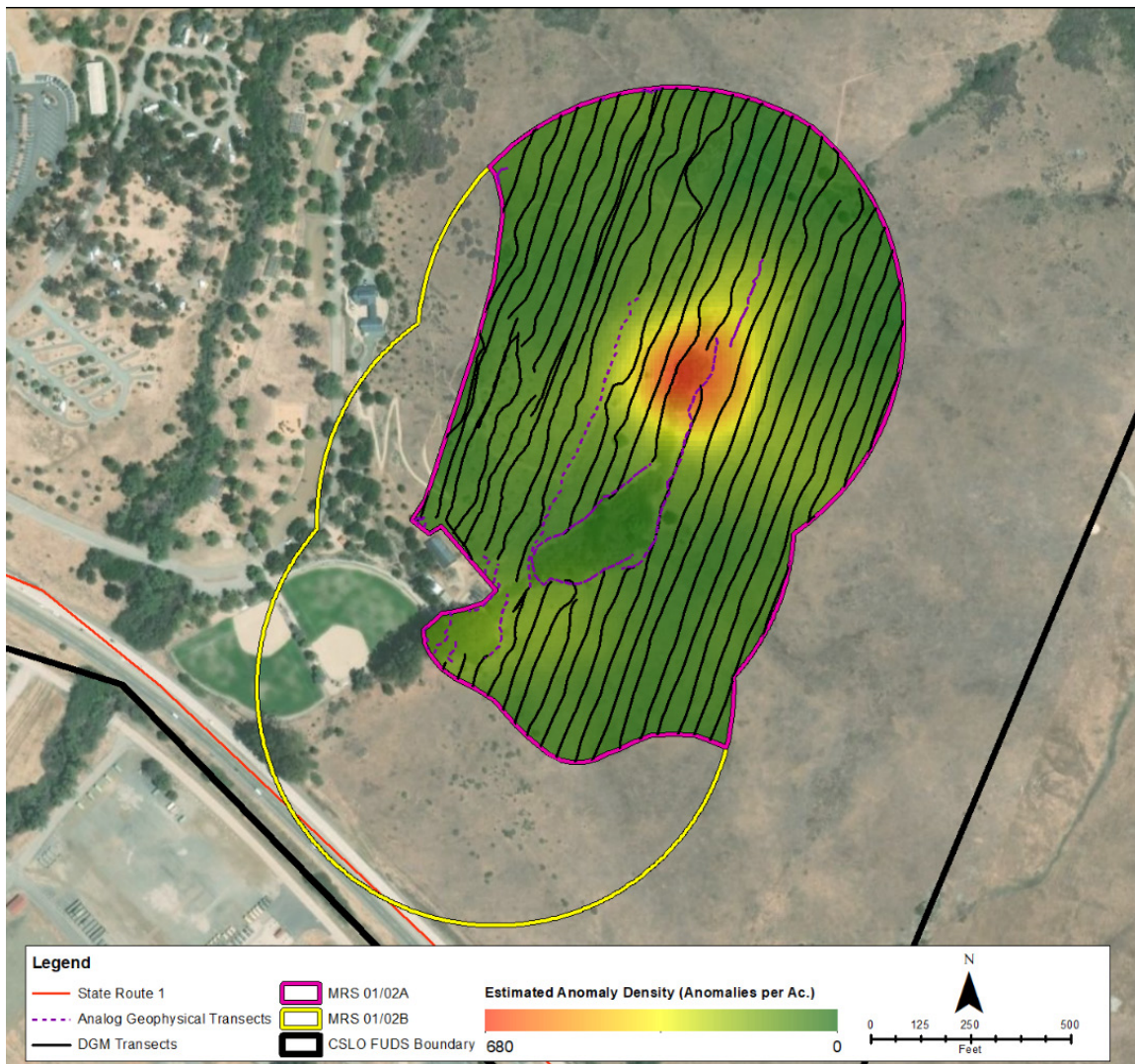
Table 8: Summary of RI Results at MRS 01/2

MRS Sub-area	DoD Military Munitions Found	Average Calculated Geophysical Anomaly¹ Density	Maximum² Calculated Geophysical Anomaly Density	Estimated High Anomaly Density Areas within Sub-area
MRS 01/02A	5 UXO 252 MD	29/acre	454/acre	14.25 acres with >100/acre
MRS 01/02B	None	N/A	N/A	None

¹ Anomaly is defined as subsurface metallic material that may or may not be MEC or MD.

² Based on the available data, USACE determined that anomaly density of greater than 400 anomalies/acre may be indicative of potential impact areas.

Figure 4: CSLO MRS 01/02 Geophysical Anomaly Density



- **MRS 05** – MEC investigation included completing 36.8 line miles of DGM transects and 23.6 line miles of analog geophysical surveys within the 2,628.7 acres of the MRS. In addition, 2.9 line miles of DGM survey and 4.0 line miles of analog survey were completed outside the MRS boundary to ensure the extent of potential MEC contamination had been delineated. The density of geophysical anomalies observed within the additional transects along the southern boundary and in one area along the northwestern boundary were indicative of a potential target area; therefore, the MRS boundary was expanded to incorporate 105.5 acres in these areas.

Based on the results of the RI and expected future land use, **MRS 05** has been divided into new sub-areas to facilitate the evaluation of the potential hazards to human health posed by the potential presence of MEC in these areas. The sub-areas are summarized below:

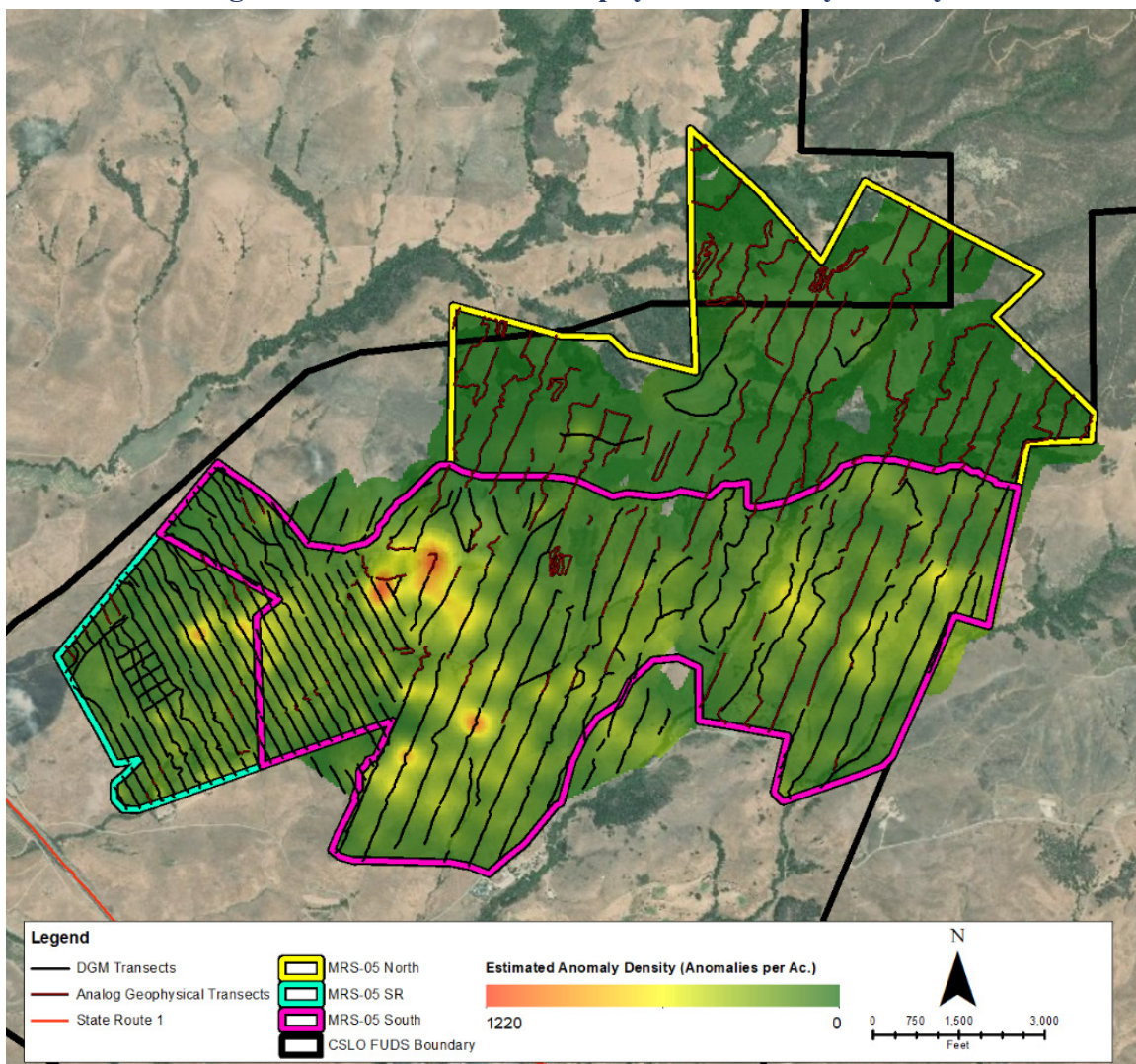
- **MRS 05-North** sub-area consisting of 905.1 acres was developed because the area has a low density of MD/UXO based on results of RI data. In addition, access to the area by potential human receptors is limited due to terrain and vegetation. No UXO and very few MD items were recovered, which suggests the use of the MRS sub-area as a safety buffer area.

- **MRS 05-South** sub-area consisting of 1,453.0 acres was developed because the area has a high density of MD/UXO (average of 154 anomalies/acre with a maximum density of 986 anomalies/acre) based on results of RI data. In addition, access to the area by potential human receptors is likely based on current and future land use as an agricultural and recreational area. UXO and MD items were recovered in sufficient quantity and distribution to suggest the use of the MRS sub-area as target areas for rocket, mortar, and artillery training. Investigation of 105.5 acres adjacent to the south and northwestern boundaries of **MRS 05-South** sub-area identified similar density of MD/UXO; therefore, the MRS boundary has been expanded to incorporate these areas.
- **MRS 05-SR** sub-area consisting of 270.6 acres was developed because the area has a medium density of MD/UXO (average of 46 anomalies/acre with a maximum density of 409 anomalies/acre) based on results of RI data. In addition, access to the area by potential human receptors is likely based on current and future land use as a recreational shooting range. UXO and MD items were recovered in sufficient quantity and distribution to suggest the use of the MRS sub-area as target areas for mortar and rocket training.

Table 9 summarizes the results of the geophysical investigation at **MRS 05**. Figure 5 presents the results of the geophysical anomaly density analyses for **MRS 05**. A complete detailed listing of the investigation results for the project is contained in the Final RI/FS Report (Ref. 3).

Table 9: Summary of RI Results at MRS 05				
MRS Sub-area	DoD Military Munitions Found	Average Calculated Geophysical Anomaly ¹ Density	Maximum ² Calculated Geophysical Anomaly Density	Estimated High Anomaly Density Areas within Sub-area
MRS 05-North	6 MD	2/acre	0-10/acre at over 90% of the sub-area	None
MRS 05-South	13 UXO 2,594 MD	154/acre	986/acre	1,093 acres with >100/acre
MRS 05-SR	1 UXO 173 MD	46/acre	409/acre	11 acres with >100/acre
¹ Anomaly is defined as subsurface metallic material that may or may not be MEC or MD. ² Based on the available data, USACE determined that anomaly density of greater than 400 anomalies/acre may be indicative of potential impact areas.				

Figure 5: CSLO MRS 05 Geophysical Anomaly Density



Summary of Nature and Extent of MC at the Project Site

Surface soil sampling (0-6 inches bgs) in **MRS 01/02A**, **MRS 05-North**, **MRS 05-South**, and **MRS 05-SR** for MC was performed at selected locations where visual and geophysical data indicated the highest suspected contamination (i.e., areas with higher relative density of MD or instances of UXO). No MEC or MD was observed in **MRS 01/02B**; therefore, no samples were collected in this area. Sediment sample locations were based on down-slope locations of creek beds near the areas of high density anomalies. These samples were analyzed to evaluate whether the MCs identified as contaminants of potential concern (COPC) (explosives and select metals [antimony, copper, lead, and zinc]) remained at the **CSLO MRSs** as a result of prior military actions and if they would contribute to an environmental risk/hazard to human and ecological receptors. The locations of these biased samples were considered to be potential sources and were used to determine whether a release had occurred. Additionally, pre- and post-Blow in Place (BIP) soil sampling was implemented during RI field data collection at six locations where BIP of UXO was conducted. Background soil samples were collected during the RI field activities to develop background concentrations. The information below summarizes MC characterization at the **CSLO MRSs**.

- **MRS 01/02A** – Five discrete surface soil samples were collected from MRS 01/02A.
 - Explosives – All analytical results for explosives were reported as non-detects at concentrations less than the risk-based screening limits.
 - Metals – Samples were analyzed for antimony, copper, lead, and zinc. Analytical results for all the selected metals indicate the presence of metals in the soil samples. The detected concentrations of each metal analyte were compared statistically to background concentrations to determine if a potential release of MC had occurred. All metals results were below background 95% upper tolerance limits (UTL) established for each analyte, which indicates that no release occurred as a result of the presence of UXO/MD.
- **MRS 05** – Based on the results of the geophysical surveys and intrusive investigation, surface soil samples were collected from **MRS 05**. Conclusions for each **MRS 05** sub-area are presented in the following subsections.
 - **MRS 05-North** – One surface soil sample was collected in the area where MD was observed.
 - Explosives – All analytical results for explosives were reported as non-detects at concentrations less than the risk-based screening limits.
 - Metals – Analytical results indicate the presence of metals in the soil samples. All metals results were below background 95% UTL established for each analyte, which indicates that no release occurred as a result of the presence of MD.
 - **MRS 05-South** – Twenty-nine surface soil samples were collected in **MRS 05-South**.
 - Explosives – All analytical results for explosives were reported as non-detects at concentrations less than the risk-based screening limits.
 - Metals – Analytical results indicate the presence of metals in the soil samples. Concentrations of metals in the soil samples collected exhibited concentrations above background levels, indicating a potential release of metals due to historical military activities. All results were below human health screening criteria; therefore, a human health risk assessment was not applicable. Antimony, copper, lead, and zinc, therefore, were retained as COPCs for **MRS 05-South**, and were evaluated in the SLERA.
 - Sediments – Six sediment samples were collected from the San Luisito Creek in **MRS 05-South**. Nitroglycerin was detected in one sample; however, this concentration is well below the screening levels and no other explosives were detected. All metals results were below background concentrations. Based on the sample results, it is concluded that there has been no release into the sediments at **MRS 05-South**, and no further evaluation of COPCs is required.
 - BIP Samples – Biased, discrete surface soil samples were taken at each location before and after the BIP of UXO items. Results of the pre- and post-BIP sample results were then compared. Two post-BIP samples indicated a potential release of lead and copper. The jet perforators used during the BIP operations are manufactured using both copper (perforator cone) and lead (soldering for the cone to perforator connection). These analytes have been retained in **MRS 05-South** as COPCs and were further evaluated in a SLERA.
 - SLERA – Results of the SLERA for soil samples collected in **MRS 05-South** indicated that, while maximum observed concentrations of antimony, copper, lead, and zinc are suggestive of potential releases at **MRS 05-South**, data suggests that the magnitude and extent of any releases was limited, and overall exposures are similar to background conditions. Therefore, it is unlikely that unacceptable risk exists from chemical constituents in soil at **MRS 05-South**. Results of the SLERA for lead identified in post-BIP samples found that because the mean concentration of lead exceeds the soil screening level for only the most sensitive receptor and the total area represented by the six BIP

samples is 0.09 acre, unacceptable risks from lead to ecological receptors in the post-BIP area is not expected. In addition, the results of the SLERA for copper found that risk to ecological receptors from copper cannot be ruled out in this very small, localized area, though due to the very limited area of the release, unacceptable risks to ecological receptors are not expected.

- **MRS 05-SR** – One surface soil sample and field duplicate were collected in **MRS 05-SR**.
 - Explosives – All analytical results for explosives were reported as non-detects at concentrations less than the risk-based screening limits.
 - Metals – Analytical results indicate the presence of metals in the soil samples. All metals results were below background 95% UTL established for each analyte, which indicates that no release occurred as a result of the presence of UXO and MD.

Remedial Investigation Results Conclusions

The primary objective and purpose of the RI was to characterize MEC and MC contamination present in the identified investigation areas at the **CSLO MRSs** and to assess potential MEC hazards to human receptors and potential MC risks/hazards to human health or the environment that might result from that potential contamination. Based on the results of the soil and sediment sampling and the SLERA, no MC risk/hazard was identified for the **CSLO MRSs**. Following are the conclusions for each **CSLO MRS sub-area** related to MEC.

- **MRS 01/02A**, consisting of 33.3 acres, was developed because the area has the highest density of MD/UXO with an estimate mean density of 29 MD/UXO per acre, maximum density of 454 MD/UXO per acre, and 14.25 acres having an estimated density over 100 MD/UXO per acre. Five UXO items and 252 MD items were observed within the sub-area during the RI field operations and UXO and MD were identified in the area during previous investigations. Current and future land use for **MRS 01/02A** is expected to remain unchanged and continue to be used mainly for recreation and educational purposes, including the expansion of the San Luis Obispo County Botanical Gardens. Educational/recreational/groundskeeping/administrative activities may intentionally disturb the ground surface to a depth of three ft bgs. Construction workers involved with expansion activities may intentionally disturb the ground to a depth greater than three ft bgs. Therefore, exposure pathways for human receptors to encounter MEC are considered potentially complete for **MRS 01/02A** where UXO was identified and detonated on-site during the RI field operations and MD have been identified.
- **MRS 01/02B**, consisting of 19.3 acres, generally comprises the developed portion of the MRS (recreational [ball fields] and educational [Botanical Garden facilities]). No MEC or MD items were recovered from this area during the RI. During previous investigations, there have been no reports of MEC or MD discoveries in this area. Therefore, the MEC exposure pathway for **MRS 01/02B** is considered incomplete. **MRS 01/02B** was not carried forwarded to the FS, as no risk/hazard associated with MEC or MC was identified within the MRS sub-area. Therefore evaluation of potential RAAs is not warranted.
- **MRS 05-North**, consisting of 905.1 acres, was developed because the area has the lowest density of MD/UXO with an estimated mean density of 2 MD/UXO per acre and a density of between 0 and 10 MD/UXO per acre at over 90% of the sub-area. No UXO items and six MD items were observed within the sub-area during the RI field operations. No previous investigations have been conducted in this area. Current and future land use for **MRS 05-North** is expected to remain unchanged and continue to be used mainly for recreational and agricultural (ranching) purposes. Access to the area is very limited due to steep terrain and limited roads. Recreational and

agricultural (ranching) activities are not anticipated to result in any intrusive activities. Therefore, exposure pathways for human receptors to encounter MEC are considered potentially complete for **MRS 05-North** where MD have been identified.

- **MRS 05-South**, consisting of 1,453 acres (including 105.5 acres of additional investigation area), was developed because the area has the highest density of MD/UXO with an estimated mean density of 154 MD/UXO per acre, a maximum density of 986 MD/UXO per acre, and 1,093 acres having an estimated density over 100 MD/UXO per acre. Thirteen UXO items and 2,594 MD items were observed within the sub-area during the RI field operations. UXO and MD have been identified in the area during previous investigations. Current and future land use for **MRS 05-South** is expected to remain unchanged and continue to be used mainly for recreational and agricultural purposes by Cal Poly. The property within this sub-area is primarily owned and operated by Cal Poly School of Agriculture with student programs to demonstrate modern ranching practices. Recreational and agricultural (ranching) activities are not anticipated to result in any excavations deeper than two ft bgs. Therefore, exposure pathways for human receptors to encounter MEC are considered complete for **MRS 05-South** where UXO and MD have been identified.
- **MRS 05-SR**, consisting of 270.6 acres, was developed because the area has a medium density of MD/UXO with an estimated mean density of 46 MD/UXO per acre, a maximum density of 409 MD/UXO per acre, and 11 acres having an estimated density over 100 MD/UXO per acre. One UXO item and 173 MD items were observed within the sub-area during the RI field operations. No previous investigations have been conducted in this area. Current and future land use for **MRS 05-SR** is expected to remain unchanged and continue to be used mainly for recreational and agricultural purposes, including a public shooting range. The property within this sub-area is operated by the SLO Sportsmen's Association with a variety of ranges throughout the area open for public use. Recreational (including the public shooting range) and agricultural (ranching) activities are not anticipated to result in any excavations deeper than two ft bgs. Therefore, exposure pathways for human receptors to encounter MEC are considered complete for **MRS 05-SR** where UXO and MD have been identified.
- **MRS 05 Boundary Recommendation** – Based on the RI, the boundary of **MRS 05-South** has been expanded to incorporate an additional 105.5 acres in which UXO and a high density of MD was identified. Following the completion of the RI field operations, the boundary of **MRS 05** was updated in the FUDS Management Information System. The updated acreages are listed in Table 10. The revised acreage for the MRS and sub-areas was used in the FS.

Table 10: Revised MRS 05 Acreage

MRS 05 Sub-area	RI Project Acreage	FS Analysis Acreage
MRS 05 – North	905.1	904.8
MRS 05-South	1,453.0	1,450.7
MRS 05-SR	270.6	270.5
TOTAL	2,628.7	2,626

SUMMARY OF STAKEHOLDER AND PUBLIC INVOLVEMENT

USACE, Los Angeles District, has discussed information related to the RI/FS with stakeholders (DTSC, local government, and property owners) during several technical project planning (TPP) meetings. Prior

to initiating the RI fieldwork, TPP meetings were held in June 2010, July 2010, and July 2011. During development of the Final RI/FS Report, one TPP meeting was held in March 2018.

USACE also hosted a public meeting in March 2018 at the Ludwick Community Center. This meeting's purpose was to allow USACE to provide the community an update on the munitions response status and to give community members the opportunity to discuss their concerns with USACE personnel. USACE published an announcement for the meeting in the local newspaper. Three community members attended the meeting in addition to a representative from DTSC. The main concern expressed by the public was the schedule for completing work at the **CSLO MRSs**.

Other public meetings have been held during the TCRA in 2010 and prior to the RI fieldwork in 2011 to present information to the community about the history and potential hazards associated with the CSLO MRSs. In addition, warning signs were posted along access points to the MRSs during the 2010 TCRA.

SCOPE AND ROLE OF THE RESPONSE ACTION

USACE, Los Angeles District, is developing a response or action plan to address DoD military munitions that may be MEC, which may be present at the **CSLO MRSs**. The scope of the response action is to address the potential explosive safety hazard posed by the potential presence of MEC at the **CSLO MRSs**. Ultimately, the goal is to remove or reduce the probability that current or future site users would encounter munitions. The alternatives USACE is considering in this PP have been developed in accordance with CERCLA and complement USACE's overall strategy for addressing munitions at a property and allowing, from an explosives safety perspective, for the safe use of the land to continue.

SUMMARY OF POTENTIAL SITE RISKS/HAZARDS

It is the lead agency's judgment that the Preferred Alternatives identified in this PP, or one of the other active measures considered in the PP, is necessary to protect public health or welfare or the environment from actual or threatened exposure to DoD military munitions.

Based on the results of the RI MC soil sampling, analytical result screening, and subsequent risk assessments, there is no expectation of an unacceptable risk to human or ecological receptors from MC (explosives and metals). Detailed information on analytical results are provided in the Final RI/FS Report (Ref. 3).

The **CSLO MRS sub-areas** were assessed using the U.S. Environmental Protection Agency (USEPA) MEC Hazard Assessment (MEC HA), which assesses the current potential MEC hazard and how that hazard may be modified by the implementation of remedial alternatives. The MEC HA is based on the results of the RI and the historical information available from prior studies. In addition, a Conceptual Site Model (CSM) was developed to evaluate the potential for human receptors to encounter munitions at the MRSs based on current and future land use. Detailed information regarding the MEC HA and CSM can be found in the Final RI/FS Report (Ref. 3).

The USACE FUDS Military Munitions Response Program (MMRP) Risk Management Methodology will be implemented after the completion of any potential Selected Remedy to determine the residual risk at the site.

REMEDIAL ACTION OBJECTIVES

Remedial Action Objectives (RAO) drive the formulation and development of response actions. The aim is to achieve the NCP’s threshold criteria of “Overall Protection of Human Health and the Environment” and “Compliance with Applicable or Relevant and Appropriate Requirements (ARAR).”

Because USACE did not find evidence of unacceptable risk from any MC releases from historical DoD operations within the **CSLO MRSSs**, the RAOs do not address chemical contamination, including MC-related contamination. Instead, the RAOs focus on the potential explosive safety hazards associated with munitions. Unlike RAOs for most hazardous chemical contaminants, for which USEPA or state agencies have set cleanup levels based on a specified acceptable risk, regulatory guidelines have not promulgated a specific acceptable risk level associated with the presence of munitions that may pose an explosive hazard.

RAOs address specific goals for reducing the unacceptable risk due to the presence of munitions within an MRS to ensure protection of human health and the environment. Based on the data results of the RI and previous investigations, USACE determined that munitions are not present within the **CSLO MRS 01/02B sub-area**; therefore, USACE did not document specific RAOs for this MRS sub-area in the FS (Ref. 3).

A factor considered in the RAOs is the anticipated depth of intrusion (digging) during activities conducted within the MRS and the depth to which munitions may be present. USACE based the depth of intrusion on the current and reasonably anticipated future land uses. The depths to which various munitions may be present, which USACE based on previous investigations, are tabulated in Table 11.

Table 11: Potential DoD Military Munitions Summary for the CSLO MRS Sub-areas

MRS Sub-area	Potential UXO	Description ¹	Maximum Depth of Detection (RI Results)
MRS 01/02A	MKII HE hand grenades	Filler (Smokeless powder-Nitrocellulose, Potassium nitrate, Barium nitrate)	1-4 inches bgs
	M1A1 mine fuzes	Filler (black powder)	5 inches bgs
MRS 05-North	N/A – No UXO identified during RI		
MRS 05-South	M1 practice mine w/spotting charge	Filler (black powder, red phosphorous)	5 inches bgs
	M485 155mm illumination projectile	Fuze, Projectile, Point Detonating (Delay Element, Detonator) Fuze, Projectile, Mechanical Time Super Quick (Primer Mixture, Lead Charge, Relay Charge)	30 inches bgs
	M38 37mm LE projectile	Cartridge Case (Flashless-nonhygroscopic Powder) Fuze, Projectile, Base Detonating (Tetryl) Projectile, 37mm, Practice [LE] (Black Powder)	2 inches bgs
	M38 37mm HE projectile	Filler (TNT)	1 inch bgs
	M6A1 2.36-inch rocket warhead	Rocket, Warhead (Pentolite) Fuze, Rocket, Base Detonating (Tetryl, Primer Mixture)	1-3 inches bgs

Table 11: Potential DoD Military Munitions Summary for the CSLO MRS Sub-areas

	M6A1 2.36-inch HEAT rocket	Rocket Motor, M6A1 2.36-inch (M7 Propellant, Igniter, Electric Squib) Rocket, Warhead (Pentolite) Fuze, Rocket, Base Detonating (Tetryl, Primer Mixture)	0 inches bgs
	M43 81mm HE mortar	Fuze, Projectile, Point Detonating (RDX, Tetryl) Projectile (TNT or Comp B) Propelling Assembly (Propellant, M9, Black Powder, Primer Mix No.70, Propellant, M8)	1-10 inches bgs
	M49 60mm HE mortar	Fuze, Projectile, Point Detonating (Booster, Detonator) Projectile (TNT) Propelling Assembly (Propellant, M9, Black Powder, Primer Mix No.70, Propellant, M8)	2 inches bgs
	MK3 4.5-inch HE BR	Projectile (TNT)	11 inches bgs
	MK3 4.5-inch BR fuze (MK 145 with booster)	Projectile (TNT) Fuze, Rocket, (Tetryl, Primer Mixture)	0 inches bgs
MRS 05-SR	M43 81mm HE mortar	Fuze, Projectile, Point Detonating (RDX, Tetryl) Projectile (TNT or Comp B) Propelling Assembly (Propellant, M9, Black Powder, Primer Mix No.70, Propellant, M8)	1-10 inches bgs
¹ Specific nomenclature regarding recovered DoD military munitions and MD is not available from the previous investigations; therefore, a best match was determined from the current Fragmentation Database dated September 22, 2015 (Final RI/FS Report).			

Based on historical information, previous investigations, and anticipated future land use, the following RAOs have been developed for each **CSLO MRSs sub-area**:

- **MRS 01/02A** – Prevent human interaction with surface and subsurface DoD military munitions (if present) under current and reasonably anticipated future recreational and educational activities to a depth of three ft bgs.
- **MRS 05-North**– Prevent human interaction with surface DoD military munitions (if present) under current and reasonably anticipated future recreational and agricultural activities on the surface.
- **MRS 05-South** – Prevent human interaction with surface and subsurface DoD military munitions (if present) under current and reasonably anticipated future recreational and agricultural activities to a depth of two ft bgs.
- **MRS 05-SR** - Prevent human interaction with surface and subsurface DoD military munitions (if present) under current and reasonably anticipated future recreational and agricultural activities to a depth of two ft bgs.

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Section 121(d) of CERCLA [42 USC §9621(d)] states that remedial actions on CERCLA sites must comply with or waive any ARAR, which include regulations, standards, criteria, or limitations promulgated under federal environmental, or more stringent state environmental or state facility siting laws, which are identified by a state in a timely manner. Substantive requirements of laws and regulations

may be designated as ARARs for on-site response actions, but administrative requirements (such as permits or recordkeeping) are not ARARs for on-site response actions

ARAR identification considers a number of site-specific factors, including the potential remedial action, chemicals at the site, site physical characteristics, and site location. ARARs are generally divided into three categories: action-specific, location-specific, and chemical-specific. The results of the evaluation of ARARs for the **CSLO MRSs** are:

Action-Specific Applicable or Relevant and Appropriate Requirements

These ARARs are usually technology or activity-based requirements or limitations placed on actions taken with respect to remedial actions, or requirements to conduct certain actions to address particular circumstances at a site. Action-specific ARARs for the **CSLO MRSs** include:

1. **Resource Conservation and Recovery Act**, Subpart X, 40 Code of Federal Regulations (CFR) §264.601, Environmental performance standards for impacted soils. The listed document delineates environmental performance standards to be complied with during disposition of munitions-related items (e.g., consolidated demolition). Consolidated demolition of munitions-related items must occur in a manner that will ensure protection of human health and the environment, as specified in this section. This ARAR applies to Alternatives 3, 4, and 5.
2. **California Health and Safety Code**, Title 22 §66265.382. The substantive requirement under this code is to ensure that detonation of waste explosives is done in a manner that does not threaten human health or the environment. This ARAR applies to Alternatives 3, 4, and 5.

Location-Specific Applicable or Relevant and Appropriate Requirements

These ARARs are triggered by the particular location and the proposed remedial activity at the site. Some of these requirements govern activities in certain environmentally sensitive areas. Location-specific ARARs for the **CSLO MRSs** include:

1. **Endangered Species Act**, 16 USC §1538(a). The substantive requirement under this act is to ensure that any action taken will not result in a “take” of an endangered or threatened species unless such taking is incidental to the activity consistent with 16 USC §1538(a)(1)(B). Applicable because endangered or threatened species have been identified within the **CSLO MRSs** as noted in Table 3. (Refer to Section 2.2.2.7 in the Final RI/FS Report for further detail on the species present [Ref. 3]). This ARAR applies to Alternatives 3, 4, and 5.
2. **Migratory Bird Treaty Act**, 16 USC §703(a) (prohibition on take of migratory birds). The Migratory Bird Treaty Act (MBTA) prohibits pursuit, hunting, taking, capture, or killing or attempting the same, of migratory birds native to the United States. There have been observations of birds, such as Hutton’s vireo (forest-nesting), oak titmouse (forest- and ground-nesting), blue grosbeak (forest [shrub]-nesting), and lazuli bunting (forest [shrub]-nesting), which are subject to the MBTA, onsite during the breeding season of early March through mid-July (with the season extended from February 15 to August 30, to ensure the protection of birds and nests). In addition, red-breasted and red-napped sapsuckers (forest-nesting), which are subject to the MBTA, have been observed onsite during the winter (Ref. 15). If birds or nests are identified (during the winter or during nesting season), relevant buffer areas would be established around the bird and/or nest and fieldwork would not be conducted in the area until the biologist could ensure that activities would not result in a take. The vegetation clearing and ordnance removal and/or detonation

activities required at the MRS under the Surface Removal and ICs alternative and the Surface and Subsurface Removal alternative would potentially adversely impact the environment in the short-term by disturbing wildlife habitat that is used by ground- and forest-nesting birds. Vegetation removal would be restricted by not clearing vegetation during the February 15 to August 30 time-frame. Ordnance removal and demolition operations would be scheduled and implemented based on this time restriction as well. In addition, a biologist would be onsite during all remedial action activities to monitor for birds and nests. The ICs only alternative would not impact habitat that is used by ground- and forest-nesting birds.

3. **Clean Water Act**, 33 USC §1344. Regulates the discharge of dredged or fill material into the waters of the U.S., including wetlands. Applicable because jurisdictional waters, including ephemeral streams and wetlands, are present in the **CSLO MRSs**. Remedial action activities, such as vegetation clearance and intrusive investigation of subsurface anomalies, could result in the discharge of materials into jurisdictional waters; therefore, the impact to streams and wetlands may need to be evaluated prior to initiating any activities. This ARAR applies to Alternatives 3, 4, and 5.
4. **Archaeological Resources Protection Act**, 16 USC §470ee(a). Requires protection of archaeological resources if discovered on federally-owned lands, such as those owned by the U.S. Forest Service within the boundary of CSLO MRS 05. Remedial activities may uncover or disturb cultural resources that are known to exist within the MRSs; therefore, remedial action activities may not excavate, remove, damage, or otherwise alter or deface such resources. Based on the prevalence of these archaeological sites, it is expected that thorough investigation and disturbance of the **CSLO MRSs** will lead to further encounters with archaeological resources. This ARAR applies to Alternatives 3, 4, and 5.

Chemical-Specific Applicable or Relevant and Appropriate Requirements

No chemical-specific ARARs have been identified for the **CSLO MRSs**.

SUMMARY OF REMEDIAL ALTERNATIVES

To satisfy the RAOs, USACE has developed and conducted a detailed analysis of the following remedial alternatives (except where noted) for the **CSLO MRS sub-areas**.

Alternative 1: No Further Action

The No Further Action Alternative provides a baseline for comparing other alternatives. Because no remedial activities would be implemented with the No Further Action alternative, long-term human health and environmental risks for the site essentially would be the same as those identified in the RI/FS. Under Alternative 1, response actions would not be taken and compliance with ARARs is not applicable. This alternative, which has no associated costs, does not either achieve the RAOs for the **CSLO MRS sub-areas** or require time to implement.

Alternative 2: ICs to Protect Current and Future Site Users

Under this alternative, ICs would be implemented to address potential risk associated with intrusive activities (e.g. digging, construction) in areas having the potential for the presence of munitions that may pose an explosive hazard. Alternative 2 would have no effects to cultural and environmental resources because munitions removal actions would not be taken; therefore, Alternative 2 complies with ARARs.

ICs are measures undertaken to limit the potential for the public to encounter munitions. These measures will include implementation of site-specific 3Rs Explosives Safety Education Programs (3Rs Program) (see 3Rs.mil). The 3Rs Program may include munitions awareness training and distribution of 3Rs educational material (e.g., explosive safety guides, fact sheets). Informing people of the dangers associated with munitions and the action to take should they encounter or suspect they have encountered a munition reduces the risk posed to site users by munitions that may be present. An IC Plan will identify those entities responsible for implementing and maintaining the ICs and the frequency at which the ICs will be evaluated to determine their effectiveness.

USACE considered the below ICs for the **CSLO MRS sub-areas**:

1. ***Education Awareness 3Rs (Recognize, Retreat, Report) Program***: USACE will implement a 3Rs (Recognize, Retreat, Report) Program to inform property owners and the public about both the potential hazards associated with munitions that may be present within the **CSLO MRSs** and of the actions to take should they encounter or suspect they have encountered a munition.

USACE will invite regulators and safety officials (e.g., DTSC) and key stakeholders (e.g. property owners) to participate in developing ICs intended to address the **CSLO MRSs** as part of the implementation of the selected remedy. USACE considers direct mailing of 3Rs Program education materials (e.g. fact sheets) to stakeholders and other local government entities (i.e., county and local law enforcement, emergency responders, county planning agency, and local school district); and distribution of 3Rs fact sheets in public locations (e.g., El Chorro Regional Park and public shooting range) to be core activities of Alternative 2. In addition, USACE will host public meetings to disseminate 3Rs Program information the **CSLO MRSs** to the general public, property owners, and site users.

USACE will reinforce the 3Rs Program's message to minimize the potential for an encounter with a munition to result in an unintentional detonation leading to death or injury. USACE will distribute 3Rs information packets containing printed media (e.g., brochures, posters). USACE will distribute these packages, as appropriate, by mail to stakeholders.

2. ***Emergency Contact Information***: USACE will develop a communications tree that provides emergency contact information for inclusion in 3Rs Program materials USACE makes available to the public. The communication tree will provide information regarding whom the public should contact (i.e., county law enforcement) in the event that a munitions item is identified.
3. ***Informational Signs***: USACE installed signage during the 2010 TCRA regarding the presence of potential MEC hazards and the emergency contact information to use if MEC is encountered. These signs are posted at access points to the MRS. Additional signage will be installed and all signage will be maintained in the future to present the "3Rs of Explosives Safety." Responsibilities for installing, maintaining, and replacing signs will be identified during the remedial action implementation process and will be documented in an ICs Plan or a memorandum of agreement with the stakeholders.

Alternative 3: DoD Military Munitions Removal from the Surface and ICs to Protect Current and Future Site Users

This alternative consists of using UXO-qualified personnel to investigate for the presence of munitions and remove munitions from the surface. Upon completion of the munitions surface removal, ICs as outlined in Alternative 2 will be implemented.

During the implementation of this alternative, a biologist would be present during all onsite activities to monitor the presence of birds and nests that may be protected under the MBTA. If birds or nests are identified, relevant buffer areas would be established around the bird and/or nest and fieldwork would not be conducted in the area until the biologist could ensure that activities would not result in a take. Fieldwork would be scheduled for outside the bird breeding season February 15 to August 30.

Alternative 4: DGM and/or AGC with Surface/Subsurface Removal of DoD Military Munitions and ICs to Protect Current and Future Site Users

Alternative 4 requires the implementation of DGM and/or AGC, during which anomalies will be mapped using technologies that can identify anomalies requiring investigation and, in the case of AGC, can discriminate anomalies that may be munitions from ones that are not. If the anomaly data is uncertain, the anomaly will be investigated. The use of DGM and AGC provides the highest detection performance, and provides an objective, documented audit trail of the measurements and analyses used to support remedial actions. Because site-specific conditions may vary at each of the **CSLO MRS sub-areas**, USACE may use more than one technology during its geophysical surveys. In each case, USACE uses the best available and most appropriate technology.

This alternative consists of land surveying to delineate remedial action boundaries, vegetation clearance, the removal of munitions from the surface (as discussed in Alternative 3), geophysical surveying using DGM and/or AGC (either traditional EM61 technology or AGC sensors), intrusive investigation of selected anomalies, the removal of munitions from the surface/subsurface, and the destruction of munitions determined to be MEC. The actual depth of removal for each of the **CSLO MRS sub-areas** is as stated in the RAO Section, above. The type of DGM/AGC sensor used during implementation of Alternative 4, which will be determined during the planning for the remedial action, will depend on the sensors' capability and site-specific conditions. By policy, the best available and appropriate technology will be used, as such it is possible more than one technology will be used.

Although Alternative 4 could affect cultural and natural resources, its implementation could be designed to prevent an impact to resources and allow compliance with ARARs. If necessary, archaeologists and biologists would be present during activities that may be required in sensitive areas. Coordination with state and Federal agencies during the remedial action's planning stages would lay out site-specific measures to be implemented during removal activities to mitigate the impact to cultural and natural resources. These measures may include identifying areas that may need to be avoided or have restrictions placed on the amount of disturbance that may occur to facilitate the removal of munitions from the surface or subsurface. If munitions are present in areas that are inaccessible due to biological and cultural resources, USACE anticipates that RAOs would only be achieved with the implementation of ICs, which would focus on providing 3Rs Explosives Safety Education to educate people on the dangers associated with munitions and actions to take should they encounter or suspect they have encountered a munition. Provision of a 3Rs Program, which seeks to inform the public of the actions to take should they encounter a munition, achieves the RAO for the **CSLO MRS sub-areas** where this alternative is implemented.

During the implementation of this alternative, a biologist would be present during all onsite activities to monitor the presence of birds and nests that may be protected under the MBTA. If birds or nests are identified, relevant buffer areas would be established around the bird and/or nest and fieldwork would not be conducted in the area until the biologist could ensure that activities would not result in a take. Fieldwork would be scheduled for outside the bird breeding season February 15 to August 30.

Implementation of Alternative 4 would require trimming and mowing of vegetation to a height of 12 inches to avoid impeding or limiting either the effectiveness of the DGM/AGC equipment used during the geophysical survey or the investigation of detected anomalies and removal of subsurface munitions. Trees with a trunk diameter of 3 inches or more will be left uncut. Upon completion of the land surveying and vegetation clearance, the removal of munitions, MD, and other metallic debris on the surface that would interfere with the DGM/AGC would be conducted. These actions will enhance the geophysical survey and the equipment's detection and discrimination capabilities. Munitions encountered during the surface removal will be evaluated and detonated on-site (UXO) or recycled (MD) in compliance with approved procedures. MD and other metallic debris will be evaluated to determine its explosives safety status. MD documented as safe will be processed for disposition by a scrap metal recycler.

Upon completion of the surface removal, a geophysical survey using DGM/AGC will be conducted on the entire **CSLO MRS sub-area** at which Alternative 4 is implemented to detect subsurface metallic anomalies. A qualified geophysicist will analyze DGM/AGC data to identify potential targets, which UXO qualified personnel will investigate to determine if they are munitions. Munitions and other material encountered during investigation will be removed and properly dispositioned (e.g., detonated, taken to a recycling facility). In areas where this alternative would be implemented on property owned by Cal Poly, the following precautions would be implemented to minimize the impact to the school's agricultural programs:

- Limiting excavation to smallest footprint necessary and hand digging, if at all possible;
- Reseeding disturbed areas with native grass species with application of water, if necessary;
- Working in drier times of the year while avoiding high fire season;
- Having water available for fire mitigation if necessary;
- Allowing cattle to graze in paddocks not actively being investigated;
- Limiting traffic and prohibiting access during wet weather events when erosion risk is high; and
- Allowing a stop period during the annual Bull Test Sale Event in early October.

Upon completion of the munitions surface and subsurface removal, ICs as outlined in Alternative 2 will be implemented.

Alternative 5: Excavation, Sifting, Removal of DoD Military Munitions, and Restoration

This alternative would lead to a determination of unlimited use/unrestricted exposure (UU/UE) for the project site. A UU/UE determination for a **CSLO MRS sub-area** at which it was implemented is intended to prevent restrictions being placed on the use of the land and other natural resources.

Implementation of Alternative 5 is unlikely to be acceptable to project stakeholders for several reasons. These include: (1) lack of implementability due to complete removal of ecological receptor habitat (i.e., non-compliance with ARARs and subsequent degraded site conditions resulting from the destruction of potentially sensitive areas following the removal of surface soil and vegetation); and (2) prohibitive cost

(i.e., costs for removing, sifting, re-grading the property would likely be orders of magnitude higher than less aggressive or invasive alternatives).

This alternative would entail the complete removal of vegetation prior to excavation of soils over the entirety of the **CSLO MRS sub-areas** at which it is implemented. Then, soils (to the maximum depth of three ft bgs based on the detection depth observed during previous investigations) would be removed from the site and sifted. Metallic materials would be removed during the sifting process and screened for potential explosive hazards and detonated on-site (UXO) or recycled (MD) as described in Alternatives 4. Sifted soil, from which explosive hazards have been removed would be reused at the site as backfill for excavated areas. If implemented, re-vegetation would be required to restore the area as close to original condition as possible. The excavation and restoration of site soils would be conducted in areas where (1) munitions were previously encountered that were determined to pose the greatest risk to human receptors, and (2) a very high density of MD, which could cause the cost of other alternatives to be too high.

Alternative 5 would not attain ARARs (a Threshold Criteria), as it would disturb the entirety of the MRS, including identified sensitive areas. As such, USACE does not consider it a viable alternative and did not evaluate it further in this PP.

Long-term Management

Implementation of ICs may require long-term monitoring to ensure their effectiveness. The procedures for long-term monitoring, including responsible parties and frequency, will be defined in the IC Plan developed during the IC implementation process.

Recurring reviews would be required for each alternative except Alternative 1, the No Further Action alternative, and Alternative 5, which would allow for UU/UE. These recurring reviews would be conducted to monitor the effectiveness of the remedy and determine if the response action continues to minimize human health risks and be protective of human health and safety and of the environment. Evidence of changes to anticipated land use (i.e., construction of buildings) or increased activity in the area could influence this assessment.

Waste Associated with Alternative Selection

The only waste expected from the implementation of Alternatives 3 through 5 is scrap metal. Scrap metal would be processed as required by DoD Instruction 4140.62, Material Potentially Presenting an Explosive Hazard, with Material Documented as Safe shipped to a local metals recycler.

EVALUATION OF ALTERNATIVES

USACE used NCP's nine required criteria to evaluate the remedial alternatives individually and against each other to select a remedy. This section of the PP presents the relative performance of each alternative against the nine criteria, noting how each alternative compares to the other options under consideration.

The nine criteria fall into three groups: threshold criteria, primary balancing criteria, and modifying criteria (Ref. 14). The purposes of these three groups are provided below.

- Threshold criteria (criteria 1 and 2 below) are requirements that each alternative must meet in order to be eligible for selection.
- Primary balancing criteria (criteria 3 through 7 below) are used to weigh major trade-offs among alternatives.

- Modifying criteria (criteria 8 and 9 below) may be considered to the extent that information is available during the FS, but can be fully considered only after public comment is received on the PP.

The nine evaluation criteria are discussed below. The “Detailed Analysis of Alternatives” can be found in the FS (Ref. 3).

1. Overall Protection of Human Health and the Environment – Considers ability to eliminate, reduce, or control threats to public health and the environment.

2. Compliance with Applicable or Relevant and Appropriate Requirements – For an alternative to become eligible for selection it must meet cleanup levels or other remedial requirements identified as ARARs, or a waiver should be identified and the justification for invoking it must be provided. An alternative that cannot comply with these ARARs, or for which a waiver cannot be justified, would be eliminated from consideration for further discussions as a potential alternative in the PP.

3. Long-Term Effectiveness and Permanence – The ability to maintain protection of human health and the environment over time.

4. Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment – Use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.

5. Short-term Effectiveness – The length of time needed to implement an alternative and the hazards posed to residents, construction/commercial workers, visitors/recreational users, and trespassers, and the environment during implementation.

6. Implementability – The technical and administrative feasibility to implement the alternative, including factors such as the relative availability of goods and services.

7. Cost – Estimated cost for implementing the alternative. The basis for developing the cost estimates for the RAAs is presented in Section 11.1.2 of the Final RI/FS Report (Ref. 3). All cost information is provided as an estimate, with an accuracy expectation of +50 to -30%. The cost estimates will be refined as the remedy is designed and implemented.

8. State/Support Agency Acceptance – Considers whether DTSC agrees with USACE’s analyses and recommendation based on the RI/FS and PP.

9. Community Acceptance – Considers whether the local community agrees with USACE’s analyses and preferred alternative. Public comments on the PP are an important indicator of community acceptance.

The remedial alternatives developed for the **CSLO MRSs** were evaluated and compared to the nine criteria specified above based on the following publications: United States Army Military Munitions Response Program *Munitions Response Remedial Investigation/Feasibility Study Guidance* (Ref. 14) and the USEPA *Guidance for Conducting Remedial Investigations and Feasibility Studies under Comprehensive Environmental Response, Compensation, and Liability Act* (Ref. 13).

The detailed analysis of alternatives may be thought of as proceeding in two steps: (1) a detailed evaluation of each alternative relative to the nine NCP criteria; and (2) evaluation of the remedial alternatives relative

to each other, based on their ability to achieve the evaluation criteria. The Final RI/FS Report provides a detailed comparison of each alternative to the nine criteria.

During the detailed analysis, the alternatives are refined, as appropriate, and analyzed in detail with respect to the evaluation criteria. The detailed analysis of alternatives consists of the analysis and presentation of the relevant information needed to allow decision makers to select a site remedy. However, it is not the decision making process. The results of this detailed analysis of alternatives are used to compare the alternatives and identify the key tradeoffs among them. This approach to analyzing alternatives is designed to provide decision makers with sufficient information to adequately compare the alternatives, select an appropriate remedy for a site, and demonstrate satisfaction of CERCLA requirements.

The Final RI/FS Report provides a comprehensive analysis of the remedial alternatives for the **CSLO MRSs** based on the alternative's ability to achieve the nine evaluation criteria specified in the NCP (Ref 21).

A more detailed description of the analysis for each **CSLO MRS sub-area** can be found in Section 11.2 (Individual Analysis) and Section 11.3 (Comparative Analysis) of the Final RI/FS Report. The comparative analysis is provided below to specifically discuss the strengths and weaknesses of Alternatives 1 through 5 with regard to each other. Alternative 5 does not pass the threshold criteria of compliance with ARARs because implementation of this alternative would result in significant damage to sensitive habitats for endangered or threatened species and to cultural sites; therefore, it is not evaluated further. Tables 12 through Table 15 provide a summary of the comparison of alternatives relative to each other for each **CSLO MRS sub-area**.

MRS 01/02A

Table 12 presents an overview of the comparative evaluation this MRS sub-area. Based on the comparative analysis, Alternatives 4 and 2 ranked as the best overall alternatives (were highly likely or likely to meet the most evaluation criteria). Alternative 3 was the next best alternative. Alternative 4 may be the most acceptable RAA based on the amount of MEC/MD recovered during the RI and the limited intrusive investigation that would be required if AGC sensors are used. Additionally, since future intrusive activities are planned within the footprint of sub-area **MRS 01/02A**, Alternative 4 may be more suitable since it would be more effective over the long-term, depending on the timeframe for future development. The cost of Alternative 4 is higher than either Alternative 2 or 3; however, it allows for the RAO and future land use requirements to be met.

MRS 05-North

Table 13 presents an overview of the comparative evaluation for this MRS sub-area. Based on the comparative analysis, Alternatives 3 and 2 ranked as the best overall alternatives (were highly likely or likely to meet the most evaluation criteria); followed by Alternative 4. Alternative 2 may be the most acceptable RAA based on the lack of MEC and limited MD recovered during the RI and the limited accessibility of the MRS sub-area. Alternative 2 meets the RAO for this sub-area by educating site users on ways to prevent interaction with surface munitions. Alternative 2 is also the most cost effective alternative for achieving the RAO.

MRS 05-South

Table 14 presents an overview of the comparative evaluation for this MRS sub-area. Based on the comparative analysis, Alternatives 4 and 2 ranked as the best overall alternatives (were highly likely or

likely to meet the evaluation criteria). Alternative 3 was the next best alternative. Alternative 4 may be the most acceptable RAA based on the amount of MEC/MD recovered during the RI and the potential for receptors to be exposed to explosive hazards. The cost of Alternative 4, is slightly less than Alternative 3 due it being less labor intensive with the use of AGC over the large acreage associated with the sub-area; therefore, it may be the more acceptable alternative for implementation at the site (due to the more aggressive removal of potential explosive hazards from the surface and subsurface).

MRS 05-SR

Table 15 presents an overview of the comparative evaluation for this MRS sub-area. Based on the comparative analysis, Alternatives 4 and 2 ranked as the best overall alternatives for this sub-area (were highly likely or likely to meet the most evaluation criteria); followed by Alternative 3. Alternative 4 may be the most acceptable RAA based on the amount of MEC/MD recovered during the RI and the potential for receptors to be exposed to explosive hazards during intrusive activity expected at the MRS sub-area. The cost of Alternative 4 is higher than either Alternative 2 or 3; however, it allows for the RAO and future land use requirements to be met.

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Table 12: EVALUATION OF REMEDIAL ALTERNATIVES
MRS 01/02A

Evaluation Criteria	Remedial Alternatives				
	Alternative 1 – No Further Action.	Alternative 2 – ICs to Protect Current and Future Site Users.	Alternative 3– DoD Military Munitions Removal from the Surface and ICs to Protect Current and Future Site Users	Alternative 4 – DGM and/or AGC with Surface/ Subsurface Removal of DoD Military Munitions and ICs to Protect Current and Future Site Users	Alternative 5 – Excavation, Sifting, Removal of DoD Military Munitions, and Restoration
Overall Protection of Human Health and the Environment	x	■	■	■	x
Compliance with Applicable or Relevant and Appropriate Requirements	N/A	■	■	■	x**
Long-term Effectiveness and Permanence	x	◆	▣	▣	N/A
Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment	x	x	▣	▣	N/A
Short-term Effectiveness	x	▣	▣	▣	N/A
Implementability	x	▣	▣	▣	N/A
Cost*	\$0	\$318,463	\$1,463,191	<u>\$1,892,551</u>	\$22,083,350
State Acceptance	To Be Determined (TBD)	TBD	TBD	TBD	TBD
Community Acceptance	TBD	TBD	TBD	TBD	TBD

Ranking: ■ Meets Criteria (Yes, regarding the first two criteria)

▣ High ability to meet criteria

◆ Moderate ability to meet the criteria

x Does not meet criteria (No, regarding the first two criteria)

Notes: Preferred Alternative is highlighted and cost is **Bold Underline**.
TBD: These criteria will be further evaluated following the comment period for the PP.

N/A: Not Applicable

* The estimated costs include costs for the remedial action and for recurring activities such as printing materials and recurring reviews (including escalation). There are no Operations and Maintenance Costs associated with the remedial action.

** Alternative 5 is not further evaluated because it does not pass the two threshold criteria.

Table 13: EVALUATION OF REMEDIAL ALTERNATIVES
MRS 05-North

Evaluation Criteria	Remedial Alternatives				
	Alternative 1 – No Further Action.	Alternative 2 – ICs to Protect Current and Future Site Users.	Alternative 3– DoD Military Munitions Removal from the Surface and ICs to Protect Current and Future Site Users	Alternative 4 – DGM and/or AGC with Surface/ Subsurface Removal of DoD Military Munitions and ICs to Protect Current and Future Site Users	Alternative 5 – Excavation, Sifting, Removal of DoD Military Munitions, and Restoration
Overall Protection of Human Health and the Environment	x	■	■	■	x
Compliance with Applicable or Relevant and Appropriate Requirements	N/A	■	■	■	x**
Long-term Effectiveness and Permanence	x	◆	■	■	N/A
Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment	x	x	■	■	N/A
Short-term Effectiveness	N/A	■	■	■	N/A
Implementability	N/A	■	■	■	N/A
Cost*	\$0	<u>\$319,787</u>	\$5,481,590	\$7,785,430	\$57,183,156
State Acceptance	TBD	TBD	TBD	TBD	TBD
Community Acceptance	TBD	TBD	TBD	TBD	TBD

Ranking: ■ Meets Criteria (Yes, regarding the first two criteria)

■ High ability to meet criteria

◆ Moderate ability to meet the criteria

x Does not meet criteria (No, regarding the first two criteria)

Notes: Preferred Alternative is highlighted and cost is **Bold Underline**.
TBD: These criteria will be further evaluated following the comment period for the PP.

N/A: Not Applicable

* The estimated costs include costs for the remedial action and for recurring activities such as printing materials and recurring reviews (including escalation). There are no Operations and Maintenance Costs associated with the remedial action.
** Alternative 5 is not further evaluated because it does not pass the two threshold criteria.

Table 14: EVALUATION OF REMEDIAL ALTERNATIVES
MRS 05-South

Evaluation Criteria	Remedial Alternatives				
	Alternative 1 – No Further Action.	Alternative 2 – ICs to Protect Current and Future Site Users.	Alternative 3– DoD Military Munitions Removal from the Surface and ICs to Protect Current and Future Site Users	Alternative 4 – DGM and/or AGC with Surface/ Subsurface Removal of DoD Military Munitions and ICs to Protect Current and Future Site Users	Alternative 5 – Excavation, Sifting, Removal of DoD Military Munitions, and Restoration
Overall Protection of Human Health and the Environment	x	■	■	■	x
Compliance with Applicable or Relevant and Appropriate Requirements	N/A	■	■	■	x**
Long-term Effectiveness and Permanence	x	◆	■	■	N/A
Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment	x	x	■	■	N/A
Short-term Effectiveness	x	■	■	■	N/A
Implementability	N/A	■	■	■	N/A
Cost*	\$0	\$310,513	\$30,398,811	<u>\$43,413,091</u>	\$474,594,105
State Acceptance	TBD	TBD	TBD	TBD	TBD
Community Acceptance	TBD	TBD	TBD	TBD	TBD

Ranking: ■ Meets Criteria (Yes, regarding the first two criteria)

■ High ability to meet criteria

◆ Moderate ability to meet the criteria

x Does not meet criteria (No, regarding the first two criteria)

Notes: Preferred Alternative is highlighted and cost is **Bold Underline**.
 TBD: These criteria will be further evaluated following the comment period for the PP.

N/A: Not Applicable

* The estimated costs include costs for the remedial action and for recurring activities such as printing materials and recurring reviews (including escalation). There are no Operations and Maintenance Costs associated with the remedial action.

** Alternative 5 is not further evaluated because it does not pass the two threshold criteria.

Table 15: EVALUATION OF REMEDIAL ALTERNATIVES
MRS 05-SR

Evaluation Criteria	Remedial Alternatives				
	Alternative 1 – No Further Action.	Alternative 2 – ICs to Protect Current and Future Site Users.	Alternative 3– DoD Military Munitions Removal from the Surface and ICs to Protect Current and Future Site Users	Alternative 4 – DGM and/or AGC and Surface/Subsurface Removal of DoD Military Munitions and ICs to Protect Current and Future Site Users	Alternative 5 – Excavation, Sifting, Removal of DoD Military Munitions, and Restoration
Overall Protection of Human Health and the Environment	X	■	■	■	X
Compliance with Applicable or Relevant and Appropriate Requirements	N/A	■	■	■	X**
Long-term Effectiveness and Permanence	X	◆	▣	▣	N/A
Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment	X	X	▣	▣	N/A
Short-term Effectiveness	X	▣	▣	▣	N/A
Implementability	X	▣	▣	▣	N/A
Cost*	\$0	\$311,838	\$5,520,893	<u>\$8,750,773</u>	\$114,722,871
State Acceptance	TBD	TBD	TBD	TBD	TBD
Community Acceptance	TBD	TBD	TBD	TBD	TBD

Ranking: ■ Meets Criteria (Yes, regarding the first two criteria)

▣ High ability to meet criteria

◆ Moderate ability to meet the criteria

X Does not meet criteria (No, regarding the first two criteria)

Notes: Preferred Alternative is highlighted and cost is **Bold Underline**.

TBD: These criteria will be further evaluated following the comment period for the PP.

N/A: Not Applicable

* The estimated costs include costs for the remedial action and for recurring activities such as printing materials and recurring reviews (including escalation). There are no Operations and Maintenance Costs associated with the remedial action.

** Alternative 5 is not further evaluated because it does not pass the two threshold criteria.

SUMMARY OF PREFERRED ALTERNATIVE

Based on detailed and comparative analyses of alternatives, USACE believes the highlighted alternatives presented in Table 12 through Table 15 for each of the **CSLO MRS sub-areas** are the Preferred Alternatives. A Preferred Alternative is considered necessary to protect public health, welfare and the environment from actual or threatened releases of hazardous substances (e.g., munitions are potentially present in the **CSLO MRSs**) into the environment. The preferred Alternative can change in response to public comment or new information, such as a change in land use or identification of new hazards.

MRS 01/02A

Table 12 and the Evaluation of Alternatives section presents an overview of the comparative evaluation (with regard to the NCP criteria) for this sub-area. Alternative 4 is the Preferred Alternative. Additionally, since future intrusive activities are planned within the footprint of sub-area **MRS 01/02A**, Alternative 4 would be more suitable since it would be more effective over the long-term, depending on the timeframe for future development. In addition, Alternative 4 allows for the RAO and future land use requirements to be met. If new information is discovered during remedial action implementation, general site use and construction activities, or recurring reviews (e.g., unexpected sensitive biological or archaeological resources) requiring a new or supplementary response, the alternative preference and/or selection may be revisited.

MRS 05-North

Table 13 and the Evaluation of Alternatives section presents an overview of the comparative evaluation (with regard to the NCP criteria) for this sub-area. Alternative 2 is the Preferred Alternative for this sub-area. Alternative 2 meets the RAO for this sub-area by educating site users on ways to prevent interaction with surface munitions. Alternative 2 is also the most cost effective alternative for achieving the RAO. If new information is discovered during remedial action implementation, general site use by the public, or recurring reviews (e.g., assumptions regarding site accessibility or the density of MD observed at the site do not match with expectations) requiring a new or supplementary response, the alternative preference and/or selection may be revisited.

MRS 05-South

Table 14 and the Evaluation of Alternatives section presents an overview of the comparative evaluation (with regard to the NCP criteria) for this sub-area. Alternative 4 is the Preferred Alternative for this sub-area. In addition, Alternative 4 allows for the RAO and future land use requirements to be met. If new information is discovered during remedial action implementation, general site use by the public, or recurring reviews (e.g., unexpected sensitive biological or archaeological resources) requiring a new or supplementary response, the alternative preference and/or selection may be revisited.

MRS 05-SR

Table 15 and the Evaluation of Alternatives section presents an overview of the comparative evaluation (with regard to the NCP criteria) for this sub-area. Alternative 4 is the Preferred Alternative for this sub-area. In addition, Alternative 4 allows for the RAO and future land use requirements to be met. If new information is discovered during remedial action implementation, general site maintenance or use by the public, or recurring reviews (e.g., unexpected sensitive biological or archaeological resources) requiring a new or supplementary response, the alternative preference and/or selection may be revisited.

Based on information currently available, USACE believes the Preferred Alternatives proposed for the **CSLO MRS sub-areas** meet both the Threshold criteria and provide the best balance of tradeoffs with

respect to the Balancing and Modifying criteria. The Preferred Alternatives provide the greatest reduction of risk within the constraints imposed by the environmental conditions at a reasonable cost when compared to the other options. USACE expects the Preferred Alternatives to fulfill the following statutory and regulatory requirements of Section 121(b) of CERCLA: (1) be protective of human health and the environment, (2) comply with ARARs (unless justified by a waiver), (3) be cost-effective when evaluated against the nine criteria described in the NCP, and (4) provide a permanent remedial solution to the maximum extent practicable. For sub-areas (**MRS 01/02A**, **MRS 05-South**, and **MRS 05-SR**) where the exposure pathway receptors to encounter munitions, treatment of recovered munitions that are determined to be MEC is a principal element of the Preferred Alternative. In other sub-areas (**MRS 05-North**), where either the potential for munitions to be present is low or the exposure pathways for receptors to encounter a munition is considered unlikely to be complete, alternatives that do not include treatment (i.e., implementation of ICs) are considered appropriate.

The state regulatory agency, DTSC, concurs that the selection of the proposed Preferred Alternatives, as presented above, are appropriate and provide the best balance of tradeoffs.

COMMUNITY PARTICIPATION

USACE provides information regarding the remedial alternatives for the **CSLO MRSs** to the public through public meetings, the Administrative Record file for the site, and announcements published in the *San Luis Obispo County Tribune* (local newspaper). USACE encourages the public to gain a more comprehensive understanding of the site and the remedial activities that have been conducted at the site.

Public input is a key element in the CERCLA process. The local community is encouraged to comment on this PP and the Preferred Alternatives summarized herein. Comments from the public will be used to help determine what action to take. Members of the public may communicate verbally or in writing at the public meeting on 22 May 2019. Representatives from USACE and DTSC will be present at the meeting to explain the PP, hear concerns, and answer questions.

Members of the public may comment in writing during the public comment period (1 May 2019 to 7 June 2019). Correspondence should be sent to:

FUDS Project Manager
Attn: CESPL-PM-M
United States Army Corps of Engineers
Los Angeles District
915 Wilshire Boulevard, Suite 930
Los Angeles, CA 90017-3401
Phone: (213) 452-3988
Email: FUDS.SPL@usace.army.mil

If special correspondence or public meeting accommodations are needed, please call **(213) 452-3988**.

After considering public comments, USACE will select the final remedies. The Preferred Alternatives may be modified based on public comment or new information. The selected remedies will be described in a Decision Document (the next step after this PP). USACE will respond to comments from the public in a responsiveness summary, which will be part of the Decision Document and will be available for review in the Administrative Record file.

REFERENCES

1. Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 11 December 1980, 42 United States Code (USC) 9601-9675, Public Law (PL) 96-510, as amended by the Superfund Amendment and Reauthorization Act (SARA). 17 October 1986.
2. National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300.
3. USACE. 2018. Final Remedial Investigation/Feasibility Study Report, Camp San Luis Obispo – San Luis Obispo County, California, MRS 01/02 and MRS 05. FUDS MMRP Project Number – J09CA203107 (MRS 01/02) and J09CA203105 (MRS 05). Contract No. W912PL-12-D-0005, Task Order 0008. September.
4. CEMVS, 2006. Preliminary Historical Records Review Camp San Luis Obispo and Baywood Park Training Area, San Luis Obispo, California. 6 July.
5. CEMVR, 1994. Archives Search Report Findings for Camp San Luis Obispo, San Luis Obispo, California. September.
6. USACE, 1992. Camp San Luis Obispo – El Chorro Regional Park Removal Project Final Report, FUDS Project Number J09CA203105, San Luis Obispo. April.
7. CEMVR, 2004. Archives Search Report Findings for Camp San Luis Obispo, Supplement, San Luis Obispo, California.
8. USACE, 2007. Final Site Inspection Report, Former Camp San Luis Obispo, San Luis Obispo, California. Prepared for U.S. Army Corps of Engineers Southwest IMA Region. September.
9. ESTCP, 2010. Pilot Program Classification Approaches in Munitions Response Final Report, San Luis Obispo, California. May.
10. USACE, 2011. Final Time-Critical Removal Action Report, Former Camp San Luis Obispo MRS 05, San Luis Obispo, California.
11. CEMVS, 2010. Draft Military Munitions Response Program Historic Map and Aerial Photo Analysis, Camp San Luis Obispo, California. FUDS Property Number J09CA2031. 11 April.
12. USACE, 2015. Final Treatability Study Report – Former Camp San Luis Obispo, J09CA203105, San Luis Obispo, California. October.
13. USEPA. 1988. Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA. EPA/540/G-89/004, OSWER Directive 9355.3-01. October.
14. U.S. Army. 2009. Military Munitions Response Program – Munitions Response – Remedial Investigation/Feasibility Study Guidance. November.
15. Morro Coast Audubon Society. 2018. Morro Bay and San Luis Obispo Area Guide. Available at: <https://www.morrocoastaudubon.org/p/bmbsloguide.html>. October.

GLOSSARY OF TERMS

Administrative Record - The documents that form the basis for the selection of a response action and maintained by USACE.

Anomaly - Any item that is identified as a subsurface irregularity during geophysical investigation. This irregularity deviates from the expected subsurface ferrous and nonferrous material at a site (pipes, power lines, etc.).

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 - This Act authorizes federal action to respond to the release or potential release of hazardous substances into the environment or a release or threat of release of a pollutant or contaminant into the environment that may present an imminent or substantial danger to public health or welfare.

Decision Document - The documentation of remedial response decisions at FUDS. Concurrence on the Decision Document by U.S. Environmental Protection Agency or the state regulatory agency is sought and the Army approves the document.

Feasibility Study (FS) - a study undertaken by the lead agency to develop and evaluate options for remedial action. The RI data are used to define the objectives of the response action, to develop remedial action alternatives, and to undertake an initial screening and detailed analyses of the alternatives. The term also refers to a report that describes the results of the study.

Formerly Used Defense Sites (FUDS) - Facility or site that was under the jurisdiction of the Secretary of Defense and owned by, leased to, or otherwise possessed by the United States at the time of actions leading to contamination by hazardous substances, for which the Secretary of Defense shall carry out all response actions with respect to releases of hazardous substances from that facility or site.

Institutional Control (IC)- Proprietary Controls and state or local laws, regulations, ordinances, zoning restrictions, or other governmental controls or notices that: (i) limit land, water and/or resource use to minimize the potential for human exposure to waste materials at the site; (ii) limit land, water and/or resource use to implement, ensure non-interference with, or ensure the protectiveness of the Remedial Action; and/or (iii) provide information intended to modify or guide human behavior at the site.

Military Munitions Response Program (MMRP) – Program designed to address the remediation of unexploded ordnance, discarded military munitions, and munitions constituents located on defense sites.

Munitions and Explosives of Concern (MEC) - Specific categories of military munitions that may pose unique explosives safety risks, specifically composed of (a) unexploded ordnance, (b) discarded military munitions, or (c) munitions constituents (e.g., TNT, RDX) present in high enough concentrations to pose an explosive hazard.

Munitions Constituents (MC) - Any material originating from unexploded ordnance, discarded military munitions, or other military munitions, including explosive and non-explosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions.

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

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

Preferred Alternative - The alternative that USACE feels is the best way to address past military impacts to a site.

Proposed Plan (PP) - The Preferred Remedial Alternative for a site is presented to the public in a PP. The PP briefly summarizes the remedial alternatives studied in the detailed analysis phase of the Remedial Investigation/Feasibility Study, highlighting the key factors that led to identifying the Preferred Alternative. The PP, as well as the Remedial Investigation/Feasibility Study and the other information that forms the basis for the lead agency's response selection, is made available for public comment in the Administrative Record file.

Remedial Investigation (RI) - A process undertaken by the lead agency to determine the nature and extent of the problem presented by the release. The RI emphasizes data collection and site characterization, and is generally performed concurrently and in an interactive fashion with the feasibility study. The RI includes sampling and monitoring, as necessary, and includes the gathering of sufficient information to determine the necessity for remedial action and to support the evaluation of remedial alternatives.

Removal Action - The cleanup or removal of released hazardous substances from the environment, such actions as may be necessary taken in the event of the threat of release of hazardous substances into the environment, such actions as may be necessary to monitor, assess, and evaluate the release or threat of release of hazardous substances, the disposal of removed material, or the taking of such other actions as may be necessary to prevent, minimize, or mitigate damage to the public health or welfare or to the environment, which may otherwise result from a release or threat of release. The term includes, in addition, without being limited to, security fencing or other measures to limit access, provision of alternative water supplies, temporary evacuation and housing of threatened individuals not otherwise provided for, action taken under section 9604 (b) of this title, and any emergency assistance which may be provided under the Disaster Relief and Emergency Assistance Act [42 U.S.C. 5121 et seq.].

Unexploded Ordnance (UXO) - Military munitions that have been (a) primed, fuzed, armed, or otherwise prepared for action; (b) have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installation, personnel, or material; and/or (c) remain unexploded either by malfunction, design, or any other cause.



Follow the 3Rs of Explosives Safety:

- **Recognize:**
when you may have encountered a munition and that munitions are dangerous.
- **Retreat:**
do not approach, touch, move or disturb it, but carefully leave the area.
- **Report:**
call 911 and advise the police of what you saw and where you saw it.

USE THIS SPACE TO WRITE YOUR COMMENTS

Your input on the Proposed Plan for the **CSLO MRSSs** is important to the United States Army Corps of Engineers. Comments provided by the public are valuable in helping the United States Army Corps of Engineers select final remedial alternatives for the site.

You may use the space below to write your comments, then fold and mail. Comments must be postmarked by 7 June 2019. If you have any questions about the comment period, please contact the FUDS Project Manager by phone at (213) 452-3988 or by email at FUDS.SPL@usace.army.mil.

[illegible]

Name: _____

Address: _____

City: _____

State: _____ Zip: _____

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PLACE STAMP
HERE
The Post Office
will not deliver
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FUDS Project Manager
Attn: CESPL-PM-M
United States Army Corps of Engineers
Los Angeles District
915 Wilshire Blvd., Ste. 930
Los Angeles, CA 90017-3401