The United States Army Corps of Engineers

presents the:

PROPOSED PLAN FOR REMEDIAL ACTION
FORMER MOJAVE GUNNERY RANGE "C" MUNITIONS RESPONSE SITES/AREAS OF INTEREST, KERN COUNTY, CALIFORNIA

MARK YOUR CALENDAR!

Public Comment Period: November 7, 2012 to December 7, 2012

Public Meeting: November 7, 2012

A public meeting will be held to explain the Proposed Plan. Oral and written comments on the Proposed Plan and associated remedial actions will be accepted at the meeting.

Location: California City, City Hall
21000 Hacienda Blvd., California City, CA 93505

Time: 6:00 PM to 8:00 PM

For more information, see the Mojave Gunnery Range "C" Information Repository located at:
California City Branch Library
9507 California City Blvd., California City, CA 93505
Contact: (760) 373-4757

FEBRUARY 2013

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U.S. ARMY CORPS OF ENGINEERS ANNOUNCES PROPOSED PLAN

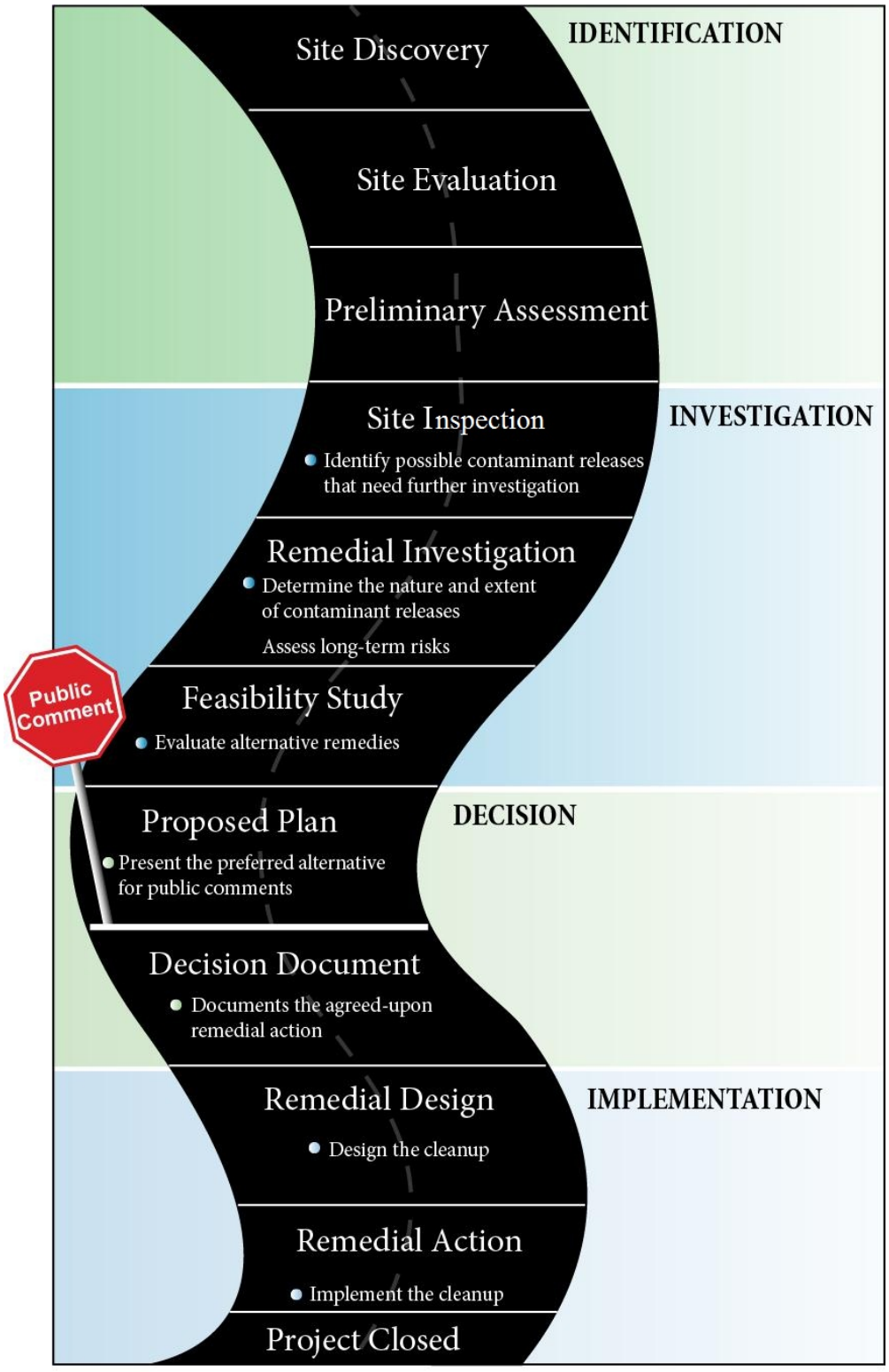
The purpose of the Proposed Plan is to summarize the Remedial Investigation / Feasibility Study (RI/FS) activities at the **Former Mojave Gunnery Range "C" (MGRC)** Munitions Response Sites (MRS) and Areas of Interest (AOI), present an evaluation of the remedial alternatives for mitigating hazards at each of the sites, present the Preferred Alternative for each MRS and AOI, and solicit public review and comment on all of the alternatives presented. **MGRC** was included under the Formerly Used Defense Sites (FUDS) project number J09CA728101. Ten areas were evaluated during the RI and this Proposed Plan includes information for MRS-01, -02, and -05 and AOI-01, -02, -03, and -05 only. MRS-03, MRS-04, and AOI-04 will be addressed under separate RI/FS programs and will ultimately have their own stand-alone Proposed Plan, apart from this document. The United States Army Corps of Engineers (USACE) will internally realign the AOIs to render them MRSs and allocate a FUDS project number for each prior to implementing the Preferred Alternatives.

This Proposed Plan identifies the Preferred Alternatives for cleaning up Munitions and Explosives of Concern (MEC) contamination at **MGRC** in Kern County, California, and provides the rationale for these preferences. Additionally, this plan includes summaries of other remedial alternatives evaluated for potential use at each of the MRSs.

This document is issued by USACE, the lead agency for site activities, with support from the primary regulatory agency–the California Department of Toxic Substances Control (DTSC), and secondary supporting entities–the County of Kern, California, and California City, California. USACE, in consultation with DTSC, will select a final remedy for the sites after reviewing and considering all information submitted during the public comment period but may modify the Preferred Alternatives or select another remedial alternative presented in this Proposed Plan based on new information or public comment. Therefore, the public is encouraged to review and comment on all the alternatives in this Proposed Plan. **Figure 1** depicts the process followed by USACE, in accordance with the requirements of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), for **MGRC**. This figure also illustrates the importance of public participation in the selection of the remedial alternatives for each of the MRSs and AOIs.

USACE is issuing this Proposed Plan as part of its public participation responsibilities under Section 117(a) of CERCLA [42 USC §9617(a)] and 40 CFR §300.430(f)(3) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This Proposed Plan summarizes information that can be found in greater detail in the RI/FS reports and other documents contained in the Administrative Record file for the **MGRC**. USACE encourages the public to review these documents to gain a more comprehensive understanding of the **MGRC** site and remedial activities that have been conducted at the site.

Figure 1 – Roadmap of the CERCLA Process



SITE HISTORY AND BACKGROUND

MGRC is located approximately four miles east of Mojave, California, and overlaps the southwestern corner of California City, California **(Figure 2)**. **MGRC** encompasses approximately 20,908 acres in Kern County, California. The majority of **MGRC**, including five MRSs and five AOIs, is undeveloped and has an unpaved road system that allows unrestricted public access. It is used primarily for off-highway activities by local residents, illegal dumping of household debris, small arms shooting practice, and seasonal sheep grazing. The developed portion of California City in the northeastern corner of **MGRC** consists of residential and commercial properties with housing and businesses. There are approximately 5,092 individual parcels within **MGRC**.

The properties comprising **MGRC** are owned by the U.S. government (administered by the Bureau of Land Management), Kern County (vacant desert lands subject to Proposition 8), and numerous private landowners. The parcel acreage for Kern County and private land owners is difficult to track because land ownership is fluid and changes on a routine basis due to active real estate trading and purchase, as well as county or bank repossessions. Six sections (1 square mile or 640 acres per section) are currently in use by the Hyundai-Kia North American Proving Grounds as an automobile test track and have 24-hour security controlled access with roving patrols.

There are five MRSs and five AOIs identified within the boundaries of **MGRC**. **Figure 3** depicts the locations of the MRSs and five AOIs.

MARK YOUR CALENDARS

PUBLIC COMMENT PERIOD:

November 7, 2012 to December 7, 2012

USACE will accept written comments on the Proposed Plan during the public comment period. Comment letters must be postmarked by December 7, 2012, and should be submitted to:

Mr. Randy Tabije
United States Army Corps of Engineers
Los Angeles District
915 Wilshire Boulevard, 13th Floor
Los Angeles, CA 90017-3401
Phone: (213) 452-3669
Fax: (213) 452-4213
E-mail: roland.r.tabije@usace.army.mil

To request an extension of the public comment period, send a written request to Mr. Randy Tabije by December 1, 2012.

PUBLIC MEETING:

November 7, 2012, 6:00 PM to 8:00 PM

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

California City, City Hall
21000 Hacienda Blvd.
California City, CA 93505

For more information, see the Information Repository, which includes a copy of the RI/FS, at the following location:

California City Branch Library
9507 California City Blvd.,
California City, CA 93505
Contact: (760) 373-4757

On August 19, 1944, the Department of the Navy took possession of 22,400 acres of land east of the city of Mojave, California, to train air crews in aerial bombing, strafing, and air-to-ground rocketry. At a later date (unspecified in historical records), leases were established for the use of the property. This area became known as **MGRC** and was used during World War II as an air-to-ground training area with six reported stationary ground targets and one reported mobile

target. After the war, **MGRC** was used for testing and evaluation of pilot-less aircraft by both the Naval Air Station Mojave and the Army.

From November to December 2001 and in March 2002, site visual inspections were conducted on **MGRC** by members of USACE, Rock Island Archives Search Report team, to assess the presence or potential of MEC. Based on the site visual inspections, the FUDS boundary was developed and encompasses approximately 20,908 acres of land. An Archives Search Report was completed in April 2003. In addition, an Aerial Photo Analysis Addendum to the Archives Search Report was completed in April 2007. In accordance with Aerial Photo Analysis, "The Marine Corps closed the airfield in January 1959 and the Marines terminated the leases for **MGRC** effective 31 December 1951."

As previously mentioned, 10 sites within the **MGRC** boundary were identified for investigation during the development of the RI/FS Work Plan based on the Archives Search Report and the Aerial Photo Analysis site visit in 2007. At the time, these sites were identified as Munitions Response Areas. Based on USACE, Los Angeles District, guidance the ten areas within **MGRC** were reclassified as either an MRS (had been previously entered into FUDS Management Information System [FUDSMIS] database) or an AOI (had not been entered into FUDSMIS database).

The resultant reclassification yielded five MRSs: MRS-01 through -05. The remaining five areas were reclassified as AOI-01 through -05, until it is determined whether they will be added to the FUDSMIS database.

Another potential bombing site was identified as AOI-06. This site was not subject to investigation during the RI and was excluded from the development of alternatives under the FS process due to potential use by other parties.

Lands that were not designated as an MRS or an AOI were listed as "remaining lands" (in conformity with the Archives Search Report) to facilitate accounting of all acreage in **MGRC**.

Right-of-Entry was obtained for access to the majority of **MGRC** acres with the exception of 177 acres comprising a portion of AOI-04. As a result of denial of Right-of-Entry, no RI activities were performed at AOI-04.

An RI report and an FS report for the **MGRC** MRS/AOI were completed in December 2011 by MARRS Services, Inc. (MARRS) of Escondido, California.

This Proposed Plan was developed based on findings in the RI and FS reports.

Figure 2 – MGRC Location

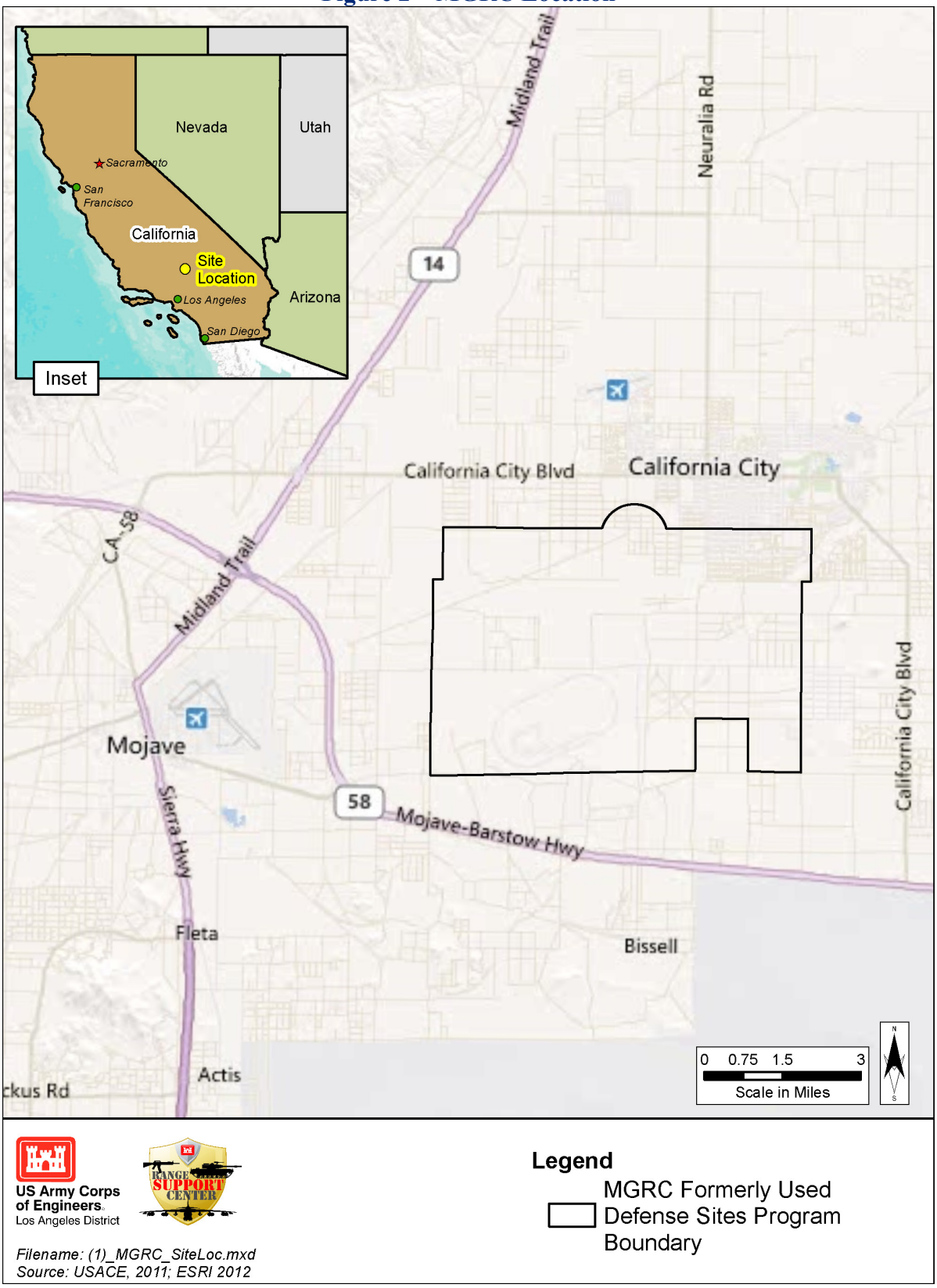
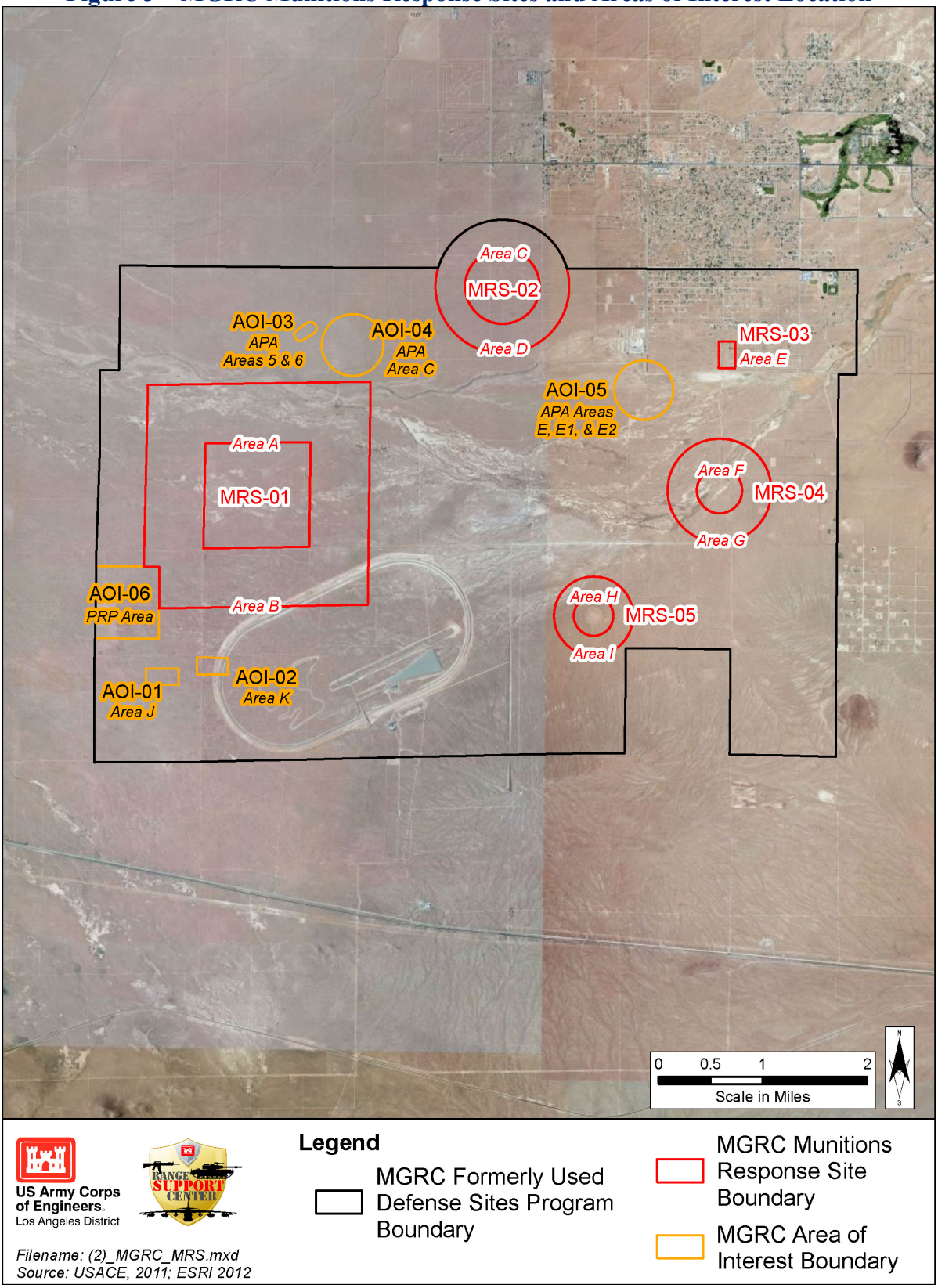


Figure 3 – MGRC Munitions Response Sites and Areas of Interest Location



SITE CHARACTERISTICS

Current and Future Land Use

MGRC is currently an undeveloped site with open access to the public for all areas except for the approximate 3,967 acres that are inside the boundary of the Hyundai-Kia North American Proving Grounds. The majority of the public traffic is restricted to the dirt roads that crisscross the entire area. Most of the traffic that occurs off-highway is on well-used dirt bike trails that are free of debris or in areas immediately adjacent to the dirt roads that are extensively used for illegal dumping of residential garbage.

Future use of **MGRC** is expected to remain the same. Since **MGRC** is located in the vicinity of residential and business locations of California City, California, it makes it very easy for the public to access most of the MRSs and AOIs. However, due to the rough desert terrain and the presence of the Mojave Green rattlesnake, most access appears to be limited to vehicle traffic on the established dirt roads, and any off-highway use is limited to recreational off-highway vehicles (e.g., quad-runners and motorcycles). The occasional foot traffic appears to be limited to those areas immediately adjacent to the dirt roads by people illegally dumping residential garbage or conducting target practice with personal firearms.

Topography

MGRC is located on a level plain in what is considered to be the high basin of the Mojave Desert, sometimes referred to as the Antelope Valley. Less than a mile to the west is the Tehachapi Mountain range, and the nearest named feature in that range is the Horned Toad Hills, located northwest of the site. The land slopes gently upward from southeast to northwest, ranging in elevation from 2,700 feet to 2,800 feet above sea level. The increase in elevation, 100 feet over three miles is barely noticeable.

Climate

The **MGRC** project area is situated in the High Desert Climatic region of Kern County. The climate is characterized by hot summers and cool winters. Winter temperatures in this region generally fall to a few degrees below freezing at night and reach about 60 degrees Fahrenheit (^{o}F) during the day. During the winter months, light snowfall is common on the desert floor. The summers are characterized as hot and dry with daytime temperatures exceeding 100^{o}F and nighttime temperatures that drop to about 60^{o}F. The region is surrounded by several mountain ranges that greatly limit precipitation. The total annual rainfall in Mojave is about 6 inches. The wettest months are generally November through March, during which more than half of the annual rainfall occurs. Rainfall is normally very low from June through August. Winds in the area are predominately from the northwest with an average speed of 12 miles per hour (mph). However, the dry Santa Ana winds can gust up to 100 mph during the winter months.

Another feature of the climate is the large number of clear days and the high percentage of sunshine. The four summer months (June through September) average 25 days per month with clear skies. The winter months (December through March) generally have the larger number of cloudy days. Overall, 65% of the days throughout the year are either clear or partly cloudy.

Soils

Three major rock types or geologic complexes characterize the geologic setting in the region: a basement complex of igneous rocks (rocks that have solidified from a molten state) and metamorphic rocks (rocks created when sediments undergo crystallization due to heat and pressure); an intermediate complex of continental volcanic and sedimentary rocks; and valley fill deposits. The basement complex is of pre-Tertiary age and includes quartz monzonite, granite, gneiss, schist, and other igneous and metamorphic rocks. These rocks crop out in the highlands surrounding the playa areas, which are nearly level areas at the bottom of undrained desert basins and occur beneath the unconsolidated deposits of the playa. The intermediate complex is of Tertiary age and includes a variety of sedimentary and volcanic rock types (MARRS, 2011).

The soil formations in the region are composed of thick, unconsolidated, coarse-textured alluvial sediments composed of gravel, sand, and silt of granitic composition. Alluvial sediment is sediment that is deposited by flowing water, such as in a flood plain. The United States Department of Agriculture classifies the soils as belonging to Cajon-Arizo and Rosamond types. Cajon soils are described as well-drained to excessively drained sands and gravelly loamy (composed of a mixture of sand, clay, silt, and organic matter) sands developed on alluvial fans and alluvial plains. Rosamond soils are very deep, nearly level to moderately sloping, well-drained soils produced on flood plains and in basins (MARRS, 2011). Soil limitations include high susceptibility of the sandy surface layers to soil blowing, shallow soil depth, low available water capacity, and high potential for erosion due to slope and inadequate plant cover. However, these limitations are mostly controlled by low precipitation, deep groundwater and hot climate (MARRS, 2011).

Biological Resources

The Mojave Desert is the smallest of North America's four desert regions, but it is also perhaps the hottest and driest (CalPIF, 2009). The Mojave Desert lies between the Great Basin and Sonoran deserts. High desert plains and hill compose the western Mojave Desert, which is mostly alluvial plain and pediment with relatively small areas of hills and low mountains. The Mojave Desert lies in the rain shadow of the Sierra Nevada Mountains. The hot, moist air from the Pacific Ocean goes up the Sierra Nevada Mountains and is turned back by the cold air in the mountains. Although some of the rain goes over the mountains, most of it is evaporated by the hot air of the desert before it can reach the ground. The Mojave Desert is considered a dry desert because of the rain shadow effect. Rainfall in the Mojave is very changeable from day to night, and can range from 2.23 to 2.5 inches a year. A large amount of the rain that the Mojave receives is in the winter season from October to March. The elevation range of the Mojave Desert biome is broader than other desert scrub biomes; 75% of the area is between 2,000–4,000 feet with a biome range of 985–5,495 feet, hence the term "high desert." Dominant plants of the Mojave include creosote bush, all-scale, brittlebush, desert holly, and white burrobush. The Joshua tree is the most famous endemic species, having a near circular range around the edges of the Mojave Desert.

Plant Resources

The vegetation types and their plant associations that define the animal habitats are dominated by shrubs and some trees. Shrubs are woody perennials that typically have multiple stems growing from the base. With few exceptions, California shrublands comprise associations of species adapted to arid conditions. More specifically, these shrublands are composed of plants that experience regimes of alternating short, wet seasons and long, dry seasons. Desert wash habitats span a transition from upland to riparian habitat, as well as a transition from shrubs to trees. Washes hold physiological traits similar to traditional riparian habitats, in that they collect precipitation and nutrients from the surrounding watershed, promoting greater floral diversity (Dimmitt, 2000). In the Mojave Desert, washes may hold the same species as upland habitats and simply support taller and denser vegetation. For a more detailed presentation of the types of vegetation available at **MGRC**, please refer to the RI/FS report (MARRS, 2011).

Animal Resources

The main wildlife groups include insects, arthropods, fish, amphibians, reptiles, birds, and mammals. Primitive animals rely on water or moist conditions, which are rare in the desert. There are no permanent surface waters within **MGRC** other than those facilities adjacent to California City or outlying residences. For a more detailed presentation of the animal resources available at **MGRC**, please refer to the RI/FS report (MARRS, 2011).

Special Status Listed Taxa

The major purposes of the Endangered Species Act (ESA) are to provide a means to conserve the ecosystems on which endangered and threatened species depend and to provide a program for conservation and recovery of these species. The desert tortoise, a federally threatened species, occupies the **MGRC** project site. The desert tortoise, a threatened species listed under the ESA, is a large terrestrial herbivorous reptile found in portions of the California, Arizona, Nevada, and Utah deserts. In California, desert tortoises occur primarily within creosote, shadscale, and Joshua tree series of Mojave Desert scrub. Desert tortoises are most active in California during the spring and early summer when annual plants are most common. Desert tortoises are known to occupy habitat in northeastern Kern and southeastern Inyo counties, eastern Imperial County, and most of San Bernardino and Riverside counties (Luckenbach, 1982) with a small part of Los Angeles County. On February 8, 1994, the United States Fish and Wildlife Service (USFWS) published its final rule on the status of the desert tortoise in the Federal Register (USFWS, 1994), designating 10,072 square miles of the Desert Wildlife Management Area as critical habitat for the Mojave population of this species. **MGRC** is not listed as critical habitat. The nearest desert tortoise critical habitat is located 2.5 miles east of the center of California City. Even though the habitat within the **MGRC** MRSs and AOIs is not listed, federal action must still take into account the primary constituent elements of the habitat for the actions to occur.

Regardless of the remedial alternatives that are chosen in this Proposed Plan, project actions will ensure the protection of the desert tortoise and its habitat through avoidance minimization measures to the extent that it does not compromise safety or loss of life.

Mojave Ground Squirrel

The Mojave ground squirrel is listed as threatened under the California ESA. In September 2005, the Defenders of Wildlife petitioned USFWS to list the Mojave ground squirrel, endemic to California, as an endangered species pursuant to the federal ESA, including the designation of critical habitat to be concurrent with the listing (Defenders of Wildlife, 2005). Currently, there is no official federal protection status for the Mojave ground squirrel.

The Mojave ground squirrel occupies all major desert scrub habitats in the western Mojave Desert. There are no records to indicate that the Mojave ground squirrel has been observed in **MGRC** habitats, such as creosote bush scrub, saltbush scrub, desert sink scrub, and Joshua tree woodland. The **MGRC** project sites are within the home range of the Mojave ground squirrel, thus regardless of the remedial alternatives that are chosen in this Proposed Plan, project actions will ensure the protection of the Mojave ground squirrel and its habitat through avoidance minimization measures to the extent that it does not compromise safety or loss of life.

Hydrology

There are no active rivers or streams cutting through **MGRC**. Rainwater is quickly absorbed into the ground without collecting on the surface. The presence of wetlands in the study area was assessed through several methods: The National Wetlands Inventory was consulted to determine whether any wetlands were recorded in the area, and no wetlands were noted. The area was also assessed for potential wetlands using high resolution aerial photographs, and no wetlands or potential wetlands were noted. The area was also spot checked during a two-day field reconnaissance, and no potential wetlands were noted. The project biologist monitored for wetlands during the RI field work with negative results.

Groundwater

The first discernible groundwater at **MGRC** is found at 370 feet (average) below ground surface.

Prehistoric and Historic Cultural Resources

There are no known recorded prehistoric and historic cultural resources located or encountered during previous investigations on **MGRC** MRSs and AOIs. During the planning process for the **MGRC** RI, a records check was conducted by MARRS to determine known locations of cultural resource sites and to identify areas where cultural resource surveys have been previously conducted (MARRS, 2008). The project area is located within a sensitive region of the Mojave Desert in Kern County. There have been 13 cultural resource surveys conducted within the project area and approximately 150 cultural resource sites have been recorded. For the most part these sites are small lithic scatters and other temporary encampments. There are no known prehistoric cultural resources that are listed in the National Register of Historic Places, the California Register, California Inventory of Historic Resources, California State Historic Landmarks, or California Points of Historic Interest (MARRS, 2008).

SUMMARY OF PREVIOUS INVESTIGATION RESULTS

Previous investigations, conducted at **MGRC**, are summarized below.

Inventory Project Report under the Defense Environmental Restoration Program / Formerly Used Defense Sites, 29 September 1999 - Conducted by Science Applications International. The Findings and Determination of Eligibility, dated 10 January 2000, recommended a further ordnance and explosives investigation of this site due to its former military use (USACE, 1999).

Archives Search Report, April 2003 - The Archives Search Report for **MGRC** presents the findings of the historical records search and site inspection for the presence of ordnance and explosives located at **MGRC** (USACE, 2003). Five areas of concern were initially identified as a result of these actions and documented in the Archives Search Report. The site visit team recommended revising the **MGRC** boundary to include the top portion of Areas C and D. There were no other previous investigations of this site (other than the Inventory Project Report) uncovered during the archive search. During the documentation of the Archives Search Report, the five MRSs were entered into the FUDSMIS database.

Aerial Photo Analysis Addendum to Archives Search Report for the Former Mojave Gunnery Range "C," April 2007 - The Aerial Photo Analysis Addendum was performed to identify other potential areas of concern / interest that were not included in the Archives Search Report that could represent potential MEC sites (USACE, 2007). A field assessment was conducted on 6-7 February 2007 by the project team at sites identified in the Aerial Photo Analysis that had not been visited during previous investigations to assess whether there was sufficient evidence to support adding them to the RI/FS. Based on the site visit, five additional areas/sites (identified as AOIs) were included in the RI/FS.

Former Mojave Gunnery Range "C" Site Visits - Site visits to **MGRC** were conducted on August 15-16 and August 30-31, 2006.

These investigations and site visits were performed in order to assess whether MEC are present and located at **MGRC**. These documents are available at the **MGRC** Information Repository located at the California City Branch Library on 9507 California City Blvd., California City, CA 93505. The contact number is (760) 373-4757.

SUMMARY OF REMEDIAL INVESTIGATION RESULTS

Remedial Investigation / Feasibility Study, December 2011 - The RI was performed to characterize the site for MEC and Munitions Constituents (MC), fill data gaps, and assess explosives safety hazards for **MGRC**. The FS evaluated remedial alternatives to reduce the potential explosives safety hazards to property owners and the general public.

MARRS conducted the RI and FS, on behalf of USACE, Los Angeles District, at **MGRC**. The RI field work was conducted in 2011.

Results from the RI field effort for MEC characterization confirmed the munitions information obtained from the past historical use data, investigations, and site visits for all the MRSs and AOIs except MRS-03, AOI-01, and AOI-02. The results for these three sites did not match the

previous historical data. Previous information on MRS-03 indicated it was a potential strafing target; however, there was little evidence to support this conclusion. The munitions debris that was encountered in MRS-03 was mostly bomb casing fragmentation that could have come from bombs dropped in the nearby AOI-05 target area.

AOI-01 and AOI-02 were identified, through historical documentation, as potential bombing targets. The field investigation did not support their use as targets of any kind because very little munitions debris was found in these two areas. The few pieces of munitions debris encountered in these two AOIs may have resulted from its proximity to MRS-01.

The results in MRS-01, -02, -04, and -05 and AOI-03 and -05 indicated these targets were used extensively. AOI-04 was not investigated due to the lack of Rights-of-Entry received to enable sufficient coverage. The total number of anomalies investigated was approximately two times more than the number of targets anticipated. The initial estimated number of anticipated anomalies was 5,600. By the end of the RI field effort, 11,337 anomalies were investigated. Additional detailed information is provided in the RI/FS Report (MARRS, 2011). A summary of the items found during the intrusive investigation is presented in **Table 1** below.

Table 1 – MGRC Intrusive Investigation Item Summary
MK 23 3-pound practice bombs
20-millimeter Target Practice projectiles
2.25-inch practice rockets
2.75-inch practice rockets
5-inch practice rockets
High explosive bombs
Small arms ammunition (.22, .30, .50 caliber)

A complete detailed listing of the intrusive results for the project is contained in Appendix E of the RI/FS Report (MARRS, 2011). **Table 2**, below, presents a summary of the findings from previous investigations and findings of the RI field effort for each MRS and AOI within **MGRC**.

According to the approved Final RI/FS Report (MARRS, 2011), analytical test results indicate that explosives were not detected above reporting limits in any of the soil samples collected at **MGRC**. Analytical test results for metals in soil indicated metals concentrations in field samples were above reporting limits but below soil screening levels. Metals concentrations were similar to the background concentrations noted in the Preliminary Endangerment Assessment Report produced for the Mojave Unified School District (MUSD, 2005). The RI Report concludes that results from the RI field investigation and the MC soil sampling indicate there is no threat of contamination of MC in the portions of the **MGRC** project site which were sampled (MARRS, 2011).

SCOPE AND ROLE OF THE RESPONSE ACTION

USACE is developing a response plan and/or action to address contaminants at **MGRC** MRSs and AOIs. The scope of the response action is to address the potential explosive safety hazard posed by the presence of MEC at **MGRC**, ultimately removing or reducing such hazard and allowing for the current use of the land to continue (for landowners to have access to their properties and for use by recreational vehicles).

The alternatives being considered in this Proposed Plan complement USACE's overall strategy, following the United States Environmental Protection Agency (USEPA) guidance to address MEC at the property and allow for the current use of the land to continue.

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Table 2 – MGRC Historic and Remedial Investigation Findings

Site	Description	Previous Historic Findings	Remedial Investigation Findings
Munitions Response Site 01	***Area A: Bombing Target*** Area A is a cluster of targets in the center of **MGRC**, consisting of approximately 640 acres, three bombing rings, and three strafing targets. ***Area B: Bombing Target buffer Zone*** This site is a 1,000-yard radius buffer zone surrounding Area A.	***Area A: Bombing Target*** There have been numerous subsurface anomalies noted in this area according to archive data and surface munitions debris was observed during the site visits. ***Area B: Bombing Target buffer Zone*** Previous inspections have revealed some sporadic munitions and explosive-related items such as rocket igniters and bomb fins. Surface munitions debris was observed during the site visits.	During the RI field effort the following was encountered in this area: • 2 Unexploded Ordnance (UXO) – Unfired signal cartridges from MK 23 3-pound practice bombs. • 3,541 Munitions Debris comprising items such as 20-millimeter Target Practice projectiles, practice rockets (2.25-inch, 2.75-inch, and 5-inch series), and practice bombs (3-pound and sand-filled series). • 322 fragments associated with high explosive bomb casings. • 133 assorted small arms ammunition (.22, .30, .50 caliber). According to the approved Final RI/FS Report, analytical test results indicate that explosives were not detected above reporting limits in any of the soil samples collected at **MGRC**. Analytical test results for metals in soil indicated metals concentrations in field samples were above reporting limits but below soil screening levels. Metals concentrations were similar to the background concentrations noted in the Preliminary Endangerment Assessment Report produced for the Mojave Unified School District in May 2005 (MARRS, 2011).
Munitions Response Site 02	***Area C: Bombing Target*** Target area of Area C is located within the city limits of California City near the northeast corner of **MGRC**. Although the target area itself is void of structures, there are numerous private homes within one mile of the target's center. The target area is approximately 250 acres and is suspected to have been a convoy target made up of tanks and vehicles. ***Area D: Bombing Target Buffer Zone*** This buffer zone is a 500-yard radius buffer zone surrounding Area C.	***Area C: Bombing Target*** The site is littered with fragments from high explosive bombs and rockets. It was reported in archive data that numerous larger subsurface anomalies were found and recorded using a magnetometer. Surface munitions debris was observed during the site visits. ***Area D: Bombing Target Buffer Zone*** Surface munitions debris such as rocket motors and bomb fins was observed during the site visits.	During the RI field effort the following was encountered in this area: • 2 UXO – Fuzed/armed 100-pound high explosive general purpose bombs • 145 Munitions Debris comprising items such as 20-millimeter Target Practice projectiles, practice rockets (2.25-inch, 2.75-inch, and 5-inch series), and practice bombs (3-pound, and sand-filled series) • 1,894 fragments associated with high explosive bomb casings • 3,041 assorted small arms ammunition (.22, .30, .50 caliber) According to the approved Final RI/FS Report, analytical test results indicate that explosives were not detected above reporting limits in any of the soil samples collected at **MGRC**. Analytical test results for metals in soil indicated metals concentrations in field samples were above reporting limits but below soil screening levels. Metals concentrations were similar to the background concentrations noted in the Preliminary Endangerment Assessment Report produced for the Mojave Unified School District in May 2005 (MARRS, 2011).

Munitions Response Site 05	***Area H: Rocket Target*** Area H consists of approximately 75 acres. It is 3 miles southwest of California City and 10 miles east of Mojave City in the eastern half of **MGRC**. ***Area I: Rocket target Buffer Zone*** This zone is a 1000-yard radius buffer zone surrounding Area H.	***Area H: Rocket Target*** Observations have found this area to contain practice sub-caliber aerial rockets (SCAR), 2.75-inch rockets, pieces of ballistite wrapping and various other munitions debris. Previous USACE inspection teams reported to have also located an intact practice VS-50 antipersonnel landmine and several pieces of other mines in the northwest sector of the target area. These items were the only post World War II era munitions found on or near the target. It was noted that these mines were most likely the result of an error with coordinates for another range, the "Viper Range" (Area M). ***Area I: Rocket target Buffer Zone*** Surface munitions debris such as rocket igniters and bomb fins were observed within this area during site visits.	During the RI field effort the following was encountered in this area: • 1 UXO – 20-millimeter Target Practice with tracer element, unfired cartridge. • 341 Munitions Debris composed of 20-millimeter Target Practice projectiles, practice rockets (2.25-inch, 2.75-inch, and 5-inch series), and practice bombs (3-pound series). • 15 fragments associated with high explosive bomb casings. • 82 assorted small arms ammunition (.22, .30, .50 caliber). According to the approved Final RI/FS Report, analytical test results indicate that explosives were not detected above reporting limits in any of the soil samples collected at **MGRC**. Analytical test results for metals in soil indicated metals concentrations in field samples were above reporting limits but below soil screening levels. Metals concentrations were similar to the background concentrations noted in the Preliminary Endangerment Assessment Report produced for the Mojave Unified School District in May 2005 (MARRS, 2011).
Area of Interest 01	***Area J: Bombing Target*** This target area is approximately 30 acres of land located 4 miles directly east of the runway intersection of the Mojave Airport. It is listed in historical records as the Bombing Target #74.	***Area J: Bombing Target*** Archive information and visual inspections have revealed no evidence of munitions and/or explosive materials or subsurface anomalies within this area.	This area was identified through historical documentation as a potential bombing target. The field investigation did not support its use as a target of any kind because very little Munitions Debris was found in this area. The few pieces of Munitions Debris encountered in this area (8 Munitions Debris comprising of 20-millimeter Target Practice projectiles) may have resulted from its close proximity to Munitions Response Site-01. According to the approved Final RI/FS Report, analytical test results indicate that explosives were not detected above reporting limits in any of the soil samples collected at **MGRC**. Analytical test results for metals in soil indicated metals concentrations in field samples were above reporting limits but below soil screening levels. Metals concentrations were similar to the background concentrations noted in the Preliminary Endangerment Assessment Report produced for the Mojave Unified School District in May 2005 (MARRS, 2011).
Area of Interest 02	***Area K: Bombing Target*** Area K is approximately 30 acres of land located 5 miles directly east of the runway intersection of the Mojave Airport. It is listed in the historical records as Bombing Target #75.	***Area K: Bombing Target*** Archive information and visual inspections have revealed no evidence of munitions and/or explosive materials or subsurface anomalies within this area.	This area was identified, through historical documentation as a potential bombing target. The field investigation did not support its use as a target of any kind because very little Munitions Debris was found in this area. The few pieces of Munitions Debris encountered in this area may have resulted from its close proximity to MRS-01. Items encountered during the RI field effort include 9 Munitions Debris comprising of 20-millimeter Target Practice projectiles, and practice bombs (3-pound series); and 3 assorted small arms ammunition (.22, .30, .50 caliber). According to the approved Final RI/FS Report, analytical test

			results indicate that explosives were not detected above reporting limits in any of the soil samples collected at **MGRC**. Analytical test results for metals in soil indicated metals concentrations in field samples were above reporting limits but below soil screening levels. Metals concentrations were similar to the background concentrations noted in the Preliminary Endangerment Assessment Report produced for the Mojave Unified School District in May 2005 (MARRS, 2011).
Area of Interest 03	***Aerial Photo Analysis Areas 5 and 6*** Aerial Photo Analysis Areas 5 and 6 were described in the Aerial Photo Analysis Addendum as "Target with concentric rings measuring 100- and 250-feet in diameter", and were reported to be approximately 2 acres each. During the visual inspection of the area, munitions debris was observed in both areas. After analysis of the data it was determined that Aerial Photo Analysis Areas 5 and 6 were probably used as practice bombing targets and were combined due to their close proximity and recommended as an additional Munitions Response Area with the addition of a 150 foot buffer, and designated as Munitions Response Area-08 (***reclassified in the RI as Area of Concern 3***). The area of the resultant Munitions Response Area -08 is approximately 16 acres.	***Aerial Photo Analysis Areas 5 and 6*** During the visual inspection of the area, 2.25-inch rocket igniter leads and water/sand filled practice bomb debris were observed throughout the areas.	During the RI field effort the following was encountered in this area: • 19 UXO – Unfired signal cartridges from MK 23, 3-pound practice bombs. • 781 Munitions Debris comprised of 20-millimeter Target Practice projectiles, practice rockets (2.25-inch, 2.75-inch, and 5-inch series), and practice bombs (3-pound and sand-filled series). • 28 fragments associated with high explosive bomb casings. • 26 assorted small arms ammunition (.22, .30, .50 caliber). According to the approved Final RI/FS Report, analytical test results indicate that explosives were not detected above reporting limits in any of the soil samples collected at **MGRC**. Analytical test results for metals in soil indicated metals concentrations in field samples were above reporting limits but below soil screening levels. Metals concentrations were similar to the background concentrations noted in the Preliminary Endangerment Assessment Report produced for the Mojave Unified School District in May 2005 (MARRS, 2011).
Area of Interest 05	***Aerial Photo Analysis Areas E, E1, and E2*** Area E was described in the Aerial Photo Analysis Addendum as "Hill 2443 In Section 31 Township 12 North, Range 10 West" encompassing approximately 39 acres. During the visual inspection of the area, a large amount of bomb fragments and lighter fragments representative of a target were observed. Rock similar to that used to mark other **MGRC** targets, was observed on the hill and thought to have been used as a target marker. After analysis of the data it was determined that the Aerial Photo Analysis Areas E/E1/E2 may be an indication of a former bombing target. Aerial Photo Analysis Areas E/E1/E2 was recommended as an additional Munitions Response Area with 1,500-foot radius from center of apparent target, and was designated as Munitions Response Area -10 (***reclassified in the RI as Area of Concern 5***). The area of the resultant Munitions Response Area -10 is approximately 163 acres.	***Aerial Photo Analysis Areas E, E1, and E2*** During the visual inspection of the area, a large amount of bomb fragments and lighter fragments representative of a target were observed.	During the RI field effort the following was encountered in this area: • 67 Munitions Debris comprised of 20-millimeter Target Practice projectiles, practice rockets (2.25-inch, 2.75-inch, and 5-inch series), and practice bombs (3-pound and sand-filled series) were observed. • 598 fragments associated with high explosive bomb casings were also observed. • 29 assorted small arms ammunition (.22, .30, .50 caliber) were also observed. According to the approved Final RI/FS Report, analytical test results indicate that explosives were not detected above reporting limits in any of the soil samples collected at **MGRC**. Analytical test results for metals in soil indicated metals concentrations in field samples were above reporting limits but below soil screening levels. Metals concentrations were similar to the background concentrations noted in the Preliminary Endangerment Assessment Report produced for the Mojave Unified School District in May 2005 (MARRS, 2011).

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SUMMARY OF SITE RISKS / HAZARDS

According to the approved Final RI/FS Report (MARRS, 2011), analytical test results indicate that explosives were not detected above reporting limits in any of the soil samples collected at **MGRC**. Analytical test results for metals in soil indicated metals concentrations in field samples were above reporting limits but below soil screening levels. Metals concentrations were similar to the background concentrations noted in the Preliminary Endangerment Assessment Report produced for the Mojave Unified School District (MUSD, 2005). The RI Report concludes that results from the RI field investigation and the MC soil sampling indicate there is no threat of contamination of MC in the portions of the **MGRC** project site which were sampled (MARRS, 2011). Detailed information on analytical results can be found in the RI/FS Report (MARRS, 2011).

A hazard assessment utilizing the Ordnance and Explosives Risk Impact Assessment (OERIA) for MEC was conducted during the RI/FS phase for each of the MRSs and AOIs at **MGRC**. **Tables 3a through 3e**, below, present the overall rank for each remedial alternative based on the results of the OERIA assessment for each MRS and AOI. The tables present the conditions related to potential hazards at each MRS: the top row represents the current conditions at the MRS and the subsequent rows show effects of each remedial alternative for reducing potential hazard due to these conditions. These rankings were based on the finding of munitions items during the RI field effort and the potential for an area to have additional munitions items because it was used as a Strafing Range and/or a Bombing Range. The rankings are also based on the probability that humans may contact MEC. This probability is determined by factors including site accessibility, site stability, and expected human activities at the sites. A ranking of "A" represents an alternative that has the greatest impact for hazard reduction while an alternative with a ranking of "E" has the least impact. The OERIA ranking is used as one of the inputs to the alternative evaluation and is considered, along with the other nine criteria, in the determination of the Preferred Alternative.

The No Action Alternative is recommended for AOI-01 and AOI-02. Also, as noted previously, this Proposed Plan includes MRS-01, -02, and -05 and AOI-01, -02, -03, and -05 only. MRS-03 and -04 and AOI-04 will be addressed under separate RI/FS programs and will ultimately have their own stand-alone Proposed Plan, apart from this document.

It is USACE's current judgment that the Preferred Alternatives identified in this Proposed Plan, for each MRS and AOI, or one of the other alternatives considered in the Proposed Plan, is necessary to protect public health or welfare from potential MEC explosive safety hazards at the **MGRC** MRSs and AOIs.

REMEDIAL ACTION OBJECTIVES

Remedial Action Objectives (RAOs) drive the formulation and development of response actions. The primary RAOs for **MGRC** MRSs and AOIs are based on the OERIA Hazard Assessment results presented in the RI Report (MARRS, 2011) and on the United States Army Munitions Response Remedial Investigation / Feasibility Study Guidance (United States Army, 2009). The aim is to achieve the USEPA's threshold criteria of "Overall Protection of Human Health and the Environment" and "Compliance with Applicable or Relevant and Appropriate Requirements."

Because no MC related to historical Department of Defense operations were detected within **MGRC**, the RAOs do not address chemical contamination and, instead, focus on MEC-related explosive safety hazards. Unlike RAOs for most hazardous chemical contaminants, for which cleanup levels have been set by USEPA or state agencies based on a specified acceptable risk, at present no regulatory guidelines have been announced specifying an acceptable hazard level associated with MEC contamination.

The following RAO was developed for the protection of human health and the environment:

"Reduce or eliminate the potential for receptors to come in direct contact with Munitions and Explosives of Concern items possibly remaining at MGRC."

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 have a waiver for) any Applicable or Relevant and Appropriate Requirements (ARARs), which include regulations, standards, criteria, or limitations promulgated under federal environmental, or more stringent state environmental or state facility siting laws. An ARAR may be either applicable or relevant and appropriate, but not both. 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: chemical-specific, location-specific, and action-specific. Each is described as follows.

Chemical-Specific Applicable or Relevant and Appropriate Requirements

For **MGRC**, the potential medium of concern is soil. However, no MC contamination was detected above background, indicating no chemical risk to human health or the environment exists at **MGRC**. Consequently, there is no requirement to establish cleanup levels, evaluate remedial alternatives for chemical contamination, or identify chemical-specific ARARs.

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 **MGRC include:**

1. ***Endangered Species Act***, 16 USC §1536(a)(2); 50 CFR §402.01(a), (prohibition on jeopardy) and 16 USC §1538(a); 50 CFR §402.14(i) (prohibition on take). The substantive requirement under the ESA is to ensure that any action taken is not likely to jeopardize the continued existence of any threatened or endangered species or result in the destruction or adverse modification of designated critical habitat, see 16 USC §1536(a)(2); 50 CFR §402.01(a), and that no action that results in a "take" of a

threatened or endangered species be undertaken without a determination that any "take" is not likely to jeopardize the continued existence of any threatened or endangered species, see 16 USC §1538(a); 50 CFR §402.14(i). This ARAR is applicable because the desert tortoise, a threatened species in accordance with 16 USC §1532(20), is found in the project area. Alternatives must not jeopardize the continued existence of the desert tortoise. Coordination with respect to the California desert tortoise will occur with the USFWS, Ventura Field Office.

2. ***California Endangered Species Act***, California Fish and Game Code §2051 and §2080 (prohibition on take). The requirement under the California ESA provides that no person shall take, possess, purchase, or sell within the state, any species, or any part or product thereof, that the commission determines to be an endangered species or a threatened species. The Mojave ground squirrel is listed as threatened under the California ESA. This ARAR is applicable because the Mojave ground squirrel is found in the project vicinity and may be present on some of the MRSs of **MGRC**. Alternatives must not jeopardize the continued existence of the Mojave ground squirrel.
3. ***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. Many species of birds subject to the MBTA are anticipated to be found in the area. The breeding season for birds subject to the MBTA in the western Mojave Desert Region is generally February to August.

Action-Specific Applicable or Relevant and Appropriate Requirements

For the **MGRC** FUDS project, no action-specific ARARs have been identified.

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Table 3a – MGRC OERIA Hazard Assessment for Munitions Response Site-01										
Remedial Alternatives	**PRESENCE OF MEC FACTORS**					**SITE CHARACTERISTICS**		**HUMAN FACTORS**		**OVERALL RANK**
	Item	**MEC Type**	**MEC Sensitivity**	**MEC Density**	**MEC Depth (below ground surface)**	**Accessibility**	**Stability**	**Contact Level**	**Population**	
Existing Conditions Munitions Response Site-01	3-pound Practice Bomb (MK 4 Signal Cartridge)	Moderately Severe	Less Sensitive	2	3 – 25 Inches	No Restrictions – 2,332 acres Restricted – 574 acres (Hyundai controlled property)	Moderate	Moderate	Unknown	D
Alternative 1 – No Action.	-	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	D
Alternative 2 – Institutional Controls.	-	No Impact	No Impact	No Impact	No Impact	A	No Impact	A	A	C
Alternative 3 – MEC Removal from the Surface with Institutional Controls.	-	No Impact	No Impact	No Impact at Sub-surface, B at Surface	No Impact	A	No Impact	A	A	B
Alternative 4 – Digital Geophysical Mapping and Surface/Subsurface Removal of MEC with Institutional Controls.	-	No Impact	No Impact	B	B	A	No Impact	A	A	B
Alternative 5 – Excavation, Sifting, and Restoration.	-	No Impact	No Impact	A	A	A	No Impact	A	A	A

Note: A ranking of "A" represents an alternative that has the greatest impact for hazard reduction while an alternative with a ranking of "E" has the least impact.

Table 3b – MGRC OERIA Hazard Assessment for Munitions Response Site-02										
Remedial Alternatives	**PRESENCE OF MEC FACTORS**					**SITE CHARACTERISTICS**		**HUMAN FACTORS**		**OVERALL RANK**
	Item	**MEC Type**	**MEC Sensitivity**	**MEC Density**	**MEC Depth (below ground surface)**	**Accessibility**	**Stability**	**Contact Level**	**Population**	
Existing Conditions Munitions Response Site-02	100-pound General Purpose High Explosive Bomb .50 Caliber Target Practice Projectile	Most Severe Least Severe	Less Sensitive	2	Bombs: 24 - 36 Inches .50 Caliber: 1 Inch	No Restrictions	Moderate	Moderate	Unknown	E
Alternative 1 – No Action.	-	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	E
Alternative 2 – Institutional Controls.	-	No Impact	No Impact	No Impact	No Impact	A	No Impact	A	A	D
Alternative 3 – MEC Removal from the Surface with Institutional Controls.	-	No Impact	No Impact	No Impact at Sub-surface, B at Surface	No Impact	A	No Impact	A	A	C
Alternative 4 – Digital Geophysical Mapping and Surface/Subsurface Removal of MEC with Institutional Controls.	-	No Impact	No Impact	B	B	A	No Impact	A	A	B
Alternative 5 – Excavation, Sifting, and Restoration.	-	No Impact	No Impact	A	A	A	No Impact	A	A	A

Note: A ranking of "A" represents an alternative that has the greatest impact for hazard reduction while an alternative with a ranking of "E" has the least impact.

Table 3c – MGRC OERIA Hazard Assessment for Munitions Response Site-05										
Remedial Alternatives	**PRESENCE OF MEC FACTORS**					**SITE CHARACTERISTICS**		**HUMAN FACTORS**		**OVERALL RANK**
	Item	**MEC Type**	**MEC Sensitivity**	**MEC Density**	**MEC Depth (below ground surface)**	**Accessibility**	**Stability**	**Contact Level**	**Population**	
Existing Conditions Munitions Response Site-05	20 millimeter Target Practice Projectile	Least Severe	Less Sensitive	N/A	6 Inches	No Restrictions	Moderate	Moderate	Unknown	C
Alternative 1 – No Action.	-	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	C
Alternative 2 – Institutional Controls.	-	No Impact	No Impact	No Impact	No Impact	A	No Impact	A	A	B
Alternative 3 – MEC Removal from the Surface with Institutional Controls.	-	No Impact	No Impact	No Impact at Sub-surface, A at Surface	No Impact	A	No Impact	A	A	B
Alternative 4 – Digital Geophysical Mapping and Surface/Subsurface Removal of MEC with Institutional Controls.	-	No Impact	No Impact	A	A	A	No Impact	A	A	A
Alternative 5 – Excavation, Sifting, and Restoration.	-	No Impact	No Impact	A	A	A	No Impact	A	A	A

Note: A ranking of "A" represents an alternative that has the greatest impact for hazard reduction while an alternative with a ranking of "E" has the least impact.

Table 3d – MGRC OERIA Hazard Assessment for Area of Interest-03										
Remedial Alternatives	**PRESENCE OF MEC FACTORS**					**SITE CHARACTERISTICS**		**HUMAN FACTORS**		**OVERALL RANK**
	Item	**MEC Type**	**MEC Sensitivity**	**MEC Density**	**MEC Depth (below ground surface)**	**Accessibility**	**Stability**	**Contact Level**	**Population**	
Existing Conditions Area of Interest-03	3-pound Practice Bomb (MK 4 Signal Cartridge)	Moderately Severe	Less Sensitive	19	2–18 Inches	No Restrictions	Moderate	Moderate	Unknown	D
Alternative 1 – No Action.	-	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	D
Alternative 2 – Institutional Controls.	-	No Impact	No Impact	No Impact	No Impact	A	No Impact	A	A	C
Alternative 3 – MEC Removal from the Surface with Institutional Controls.	-	No Impact	No Impact	No Impact at Sub-surface, A at Surface	No Impact	A	No Impact	A	A	B
Alternative 4 – Digital Geophysical Mapping and Surface/Subsurface Removal of MEC with Institutional Controls.	-	No Impact	No Impact	B	B	A	No Impact	A	A	B
Alternative 5 – Excavation, Sifting, and Restoration.	-	No Impact	No Impact	A	A	A	No Impact	A	A	A

Note: A ranking of "A" represents an alternative that has the greatest impact for hazard reduction while an alternative with a ranking of "E" has the least impact.

Table 3e – MGRC OERIA Hazard Assessment for Area of Interest-05										
Remedial Alternatives	**PRESENCE OF MEC FACTORS**					**SITE CHARACTERISTICS**		**HUMAN FACTORS**		**OVERALL RANK**
	Item	**MEC Type**	**MEC Sensitivity**	**MEC Density**	**MEC Depth (below ground surface)**	**Accessibility**	**Stability**	**Contact Level**	**Population**	
Existing Conditions Area of Interest-05	N/A	N/A	N/A	N/A	N/A	No Restrictions	Moderate	Moderate	Unknown	B
Alternative 1 – No Action.	-	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	B
Alternative 2 – Institutional Controls.	-	No Impact	No Impact	No Impact	No Impact	A	No Impact	A	A	A
Alternative 3 – MEC Removal from the Surface with Institutional Controls.	-	No Impact	No Impact	No Impact	No Impact	A	No Impact	A	A	A
Alternative 4 – Digital Geophysical Mapping and Surface/Subsurface Removal of MEC with Institutional Controls.	-	No Impact	No Impact	No Impact	No Impact	A	No Impact	A	A	A
Alternative 5 – Excavation, Sifting, and Restoration.	-	No Impact	No Impact	No Impact	No Impact	A	No Impact	A	A	A

Note: A ranking of "A" represents an alternative that has the greatest impact for hazard reduction while an alternative with a ranking of "E" has the least impact.

Source: December 2011 Remedial Investigation/Feasibility Study Report from MARRS Services, Inc.

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SUMMARY OF REMEDIAL ALTERNATIVES

To satisfy the RAO, USACE has developed and conducted a detailed analysis of the following five remedial alternatives and selected distinct alternatives as the Preferred Alternative for each MRS and AOI. It is important to note that the Estimated Present Worth Costs were developed for all 10 MRSs and AOIs at **MGRC**. The cost associated with implementing the Preferred Alternative for each MRS/AOI is presented in **Table 5**.

Alternative 1: No Action.

Estimated Present Worth Cost: $0

The No Action Alternative assumes no remedial action would be taken to address potential MEC explosive safety hazard for those receptors identified in the RI. This alternative is provided as a baseline for comparison with the other remedial alternatives, as required under CERCLA and the NCP.

Alternative 2: Institutional Controls to Further Protect Future Site Users.

Estimated Present Worth Cost: $4,461,962

This alternative assumes that Institutional Controls (ICs) would be implemented without MEC removal to address potential hazards associated with future intrusive activities (for example, digging, construction, etc.).

ICs are measures undertaken to limit public exposure to residual explosive materials. These measures will consist of educational awareness and training programs, printed media awareness programs, and physical access controls. Behavior modification depends on the awareness and personal responsibility of the site user. There is negligible potential risk/hazard to a potential receptor if an individual's behavior is appropriate for the site conditions.

As part of the ICs, Long-term Management would be implemented, including five-year reviews, to assess whether conditions have changed significantly enough to re-evaluate the alternatives for the site. With the majority of **MGRC** privately owned and the high ownership turnover rate of the properties, the risk to new potential receptors increases due to unawareness of the potential explosive hazards. ICs considered for **MGRC** are listed below:

1. Access Control: These measures would limit or direct potential receptors' future usage of the sites by implementing various restrictions or dedicating the property to compatible use. If approved by the property owner, access controls are expected to take the form of warning signage.

2. Educational Awareness Program: USACE will provide educational awareness program information and initial training to California City and Kern County team members. An educational awareness program will educate the public about potential hazards associated with **MGRC** and will aim to modify their behavior through awareness. Behavior modification is dependent upon the awareness and personal responsibility of the public who have access to the areas of concern. If members of the public are receptive to the awareness programs and are willing to modify their behavior appropriately for site conditions, then the risk can be negligible.

Education of the local community about the potential exposure risks associated with a MEC-contaminated site may be done through a variety of methods. Formal education seminars may include periodic public education classes. Presentations may be given to a number of different audiences, such as local government agencies, emergency responders, property owners, private developers, real estate agents, and students at local schools. The training seminars would be tailored to meet the specific potential hazards associated with MEC known or suspected to be encountered and the precautions to be taken. The training classes may either be provided by UXO personnel knowledgeable in the specific conditions of the site or through the distribution of training videos to local civic organizations.

To be effective, educational efforts need to be continual so that people do not forget or become complacent about the potential hazards associated with MEC and newcomers are informed.

3. Printed Media Awareness Program: USACE will provide media awareness program information to California City and Kern County. Munitions awareness and education, acknowledgement of the potential explosive safety hazards involved, and reinforcement of the message will minimize the risk of exposure to MEC. The avenue recommended for this education and awareness of MEC is through printed media in the form of brochures, fact sheets, newspaper articles, and other information packages. The opportunity to disseminate information through the printed media is readily available and can be easily facilitated through the numerous media outlets. The local community can also be educated through the implementation of a wide-ranging public notice campaign that may include mass mailings of brochures, public service announcements on local radio or television stations, or periodic notices in local newspapers. This type of education control will also serve to educate newcomers and visitors to the area. One method that has been used effectively is to notify new residents via local utilities. For example, the utility companies may include a brochure outlining the site-specific potential hazards and what should be done in the event of an emergency in their initial mailing to new customers.

In addition, when construction is performed within **MGRC**, it is recommended that it would be conducted under the direct supervision of munitions-trained experts. Construction is considered to be any development on land parcels that require intrusive excavation below the ground surface. It is the landowners' choice to employ construction support personnel and the cost would not be borne by USACE.

Alternative 3: Munitions and Explosives of Concern Removal from the Surface with Institutional Controls to Further Protect Future Site Users.

Estimated Present Worth Cost: $34,875,604

This alternative consists of utilizing specialized UXO personnel to search for and remove any MEC that is visible in part or completely on the surface. Where needed, instrumentation may be used to aid detection of surface MEC in vegetated areas. During the search, qualified UXO personnel will mark each MEC item for removal or disposal. In addition to removal or destruction of MEC, all munitions debris would be collected and removed from the site for disposal. A Surface Clearance combined with ICs, discussed in Alternative 2, would provide a broad management strategy. This alternative would be warranted where hazards exist or potentially exist on the surface and intrusive activities are not indicated in the foreseeable future.

Alternative 4: Digital Geophysical Mapping and Surface/Subsurface Removal of Munitions and Explosives of Concern with Institutional Controls to Further Protect Future Site Users.

Estimated Present Worth Cost: $94,972,115

This alternative consists of civil surveying, vegetation clearance, surface clearance (as discussed in Alternative 3), Digital Geophysical Mapping (DGM), and subsurface removal of MEC. Removal depth would be down to the depth of detection. It is anticipated that the majority, but not all, of the MEC would be detected and removed.

Implementation of this alternative would require reduction and/or removal of vegetation that may impede or limit the effectiveness of the DGM equipment and subsurface removal actions. Upon completion of the civil surveying and vegetation clearing, a surface clearance will be required to remove any munitions debris and other metallic items located on the surface that would interfere with the DGM, thus enhancing the discrimination capability of the geophysical surveying equipment. Any MEC items encountered during the surface sweep will be disposed of appropriately. Munitions debris will be taken off site and turned in to a scrap metal recycler for final disposition.

Once the surface clearance is complete, DGM will be performed on the entire site to identify any subsurface magnetic anomalies. The DGM data will be analyzed by a qualified geophysicist to identify all the potential targets. The DGM data will also provide a permanent record of the geophysical surveying results conducted in these areas. The potential targets will then be provided to the specialized UXO teams to be re-acquired and intrusively investigated, removed, and disposed of appropriately.

This alternative, combined with ICs, discussed under Alternative 2, would be warranted where potential hazards exist in the subsurface and intrusive activities are occurring or anticipated in the foreseeable future.

Alternative 5: Excavation, Sifting, and Restoration.

Estimated Present Worth Cost: $105,085,477

This alternative would incorporate the excavation and restoration of areas where (1) MEC were identified and would pose the greatest hazard to human receptors and (2) very high densities of munitions debris could cause the cost of other alternatives to be too high. Vegetation removal would be required prior to the excavation. If this alternative were used, due to the high density of munitions debris within 12 inches below ground surface, DGM would be required to ensure that there are no MEC items deeper than 12 inches. The sifted soil would be reused at the site for backfill of the excavated area.

If this measure were used solely to remove the hazard associated with MEC, and not part of a construction project, re-vegetation would be required to restore the area as close to original condition as possible. A DGM and subsurface removal, as described under Alternative 4, would be performed for the site as a whole in conjunction with the excavation and restoration activities. MEC items encountered would be disposed of appropriately.

No ICs would be required under this alternative because it would be considered a permanent remedy.

Waste Associated with Alternative Selection

The only waste expected from the implementation of Alternatives 3, 4, and 5 is scrap metal. All scrap metal would be thoroughly inspected to ensure there is no residual explosive hazard and shipped to a local metals recycler.

EVALUATION OF ALTERNATIVES

Nine criteria were used to evaluate the five remedial alternatives individually and against each other in order to select a remedy. This section of the Proposed Plan 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 (USEPA, 1988). 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 Proposed Plan.

The nine evaluation criteria are discussed below. The "Detailed Analysis of Alternatives" can be found in the FS.

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 Proposed Plan.

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 workers, residents, 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 present worth cost for implementing the alternative.

8. State/Support Agency Acceptance - Considers whether the State agrees with USACE's analyses and recommendation based on the RI/FS and Proposed Plan.

9. Community Acceptance - Considers whether the local community agrees with USACE's analyses and Preferred Alternative. Public comments on the Proposed Plan are an important indicator of community acceptance.

The five remedial alternatives developed for **MGRC** MRSs and AOIs were evaluated and compared to the nine criteria specified above based on the publication entitled *Guidance for Conducting Remedial Investigations and Feasibility Studies under Comprehensive Environmental Response, Compensation, and Liability Act* (USEPA, 1988).

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 USEPA criteria; and (2) evaluation of the remedial alternatives relative to each other, based on their ability to achieve the evaluation criteria. A detailed comparison of each alternative to the nine criteria may be found in the RI/FS Report (MARRS, 2011).

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 FS Report provides a comprehensive analysis of the remedial alternatives, based on their ability to achieve the nine evaluation criteria specified in the United States Army Military Munitions Response Program *Munitions Response Remedial Investigation / Feasibility Study Guidance* (U.S. Army, 2009). A summary of the comparison of alternatives relative to each other, as they pertain to **MGRC** as a whole, is provided in **Table 4**. The selected Preferred Alternative for each MRS and AOI is presented in **Table 5**.

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TABLE 4 - EVALUATION OF REMEDIAL ALTERNATIVES FOR MGRC

Evaluation Criteria	Remedial Alternatives				
	Alternative 1 – No Action.	**Alternative 2** – Institutional Controls to Further Protect Future Site Users.	**Alternative 3** – Munitions and Explosives of Concern Removal from the Surface with Institutional Controls to Further Protect Future Site Users.	**Alternative 4** – Digital Geophysical Mapping and Surface/Subsurface Removal of Munitions and Explosives of Concern with Institutional Controls to Further Protect Future Site Users.	**Alternative 5** – Excavation, Sifting, and Restoration.
Overall Protection of Human Health and the Environment	□	■	■	■	■
Compliance with Applicable or Relevant and Appropriate Requirements	N/A	■	■	■	□
Long-term Effectiveness and Permanence	□	♦	♦	◘	◘
Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment	□	□	♦	◘	◘
Short-term Effectiveness	□	♦	◘	◘	◘
Implementability	◘	◘	◘	◘	◘
Cost (Present Worth) for all MRSs/AOIs considered at **MGRC**	$0	$4,461,962	$34,875,604	$98,429,001	$105,085,477
State / Support Agency Acceptance	TBD	TBD	TBD	TBD	TBD
Community Acceptance	TBD	TBD	TBD	TBD	TBD

Ranking:

■ Meets Criteria ◘ High ability to meet the criteria ♦ Moderate ability to meet the criteria □ Does not meet the criteria

N/A: Not Applicable

TBD: To Be Determined. These criteria would be further evaluated following the comment period for the Proposed Plan.

Note: The cost information presented in Table 4 is site-wide information and pertains to the MRSs and AOIs under consideration at **MGRC**. Detailed costs per MRS/AOI are presented in Table 5, below.

TABLE 5 – MGRC MUNITIONS RESPONSE SITES AND AREAS OF INTEREST PREFERRED ALTERNATIVES / COST/ OERIA RANKING					
	Munitions Response Sites and Areas of Interest Preferred Alternatives				
Site	**Alternative 1** – No Action.	**Alternative 2** – Institutional Controls to Further Protect Future Site Users.	**Alternative 3** – Munitions and Explosives of Concern Removal from the Surface with Institutional Controls to Further Protect Future Site Users.	**Alternative 4** – Digital Geophysical Mapping and Surface/Subsurface Removal of Munitions and Explosives of Concern with Institutional Controls to Further Protect Future Site Users.	**Alternative 5** – Excavation, Sifting, and Restoration.
Munitions Response Site 01	$0 / D	$511,364 / C	**$16,164,236 / B**	$46,966,679 / B	$70,981,199 / A
Munitions Response Site 02	$0 / E	$499,787 / D	$6,739,371 / C	**$18,228,040 / B**	$17,975,222 / A
Munitions Response Site 05	$0 / C	$494,914 / B	**$2,259,784 / B**	$6,377,931 / A	$4,039,191 / A
Area of Interest 01	**$0 / NA**	$491,635 / NA	$408,819 / NA	$864,069 / NA	NA / NA
Area of Interest 02	**$0 / NA**	$490,462 / NA	$335,137 / NA	$460,027 / NA	NA / NA
Area of Interest 03	$0 / D	$491,868 / C	**$2,548,699 / B**	$4,182,039 / B	$4,884,958 / A
Area of Interest 05	$0 / B	$493,742 / A	**$4,196,549 / A**	$8,002,955 / A	$1,817,464 / A

Note:
NA – Not Available
Preferred Alternative is presented in **Bold Underline**.
OERIA Ranking lists the relative impact to hazard reduction of the response action alternative with 'A' having the greatest impact and 'E' having the least impact of the alternatives.
Although Alternative 5 would ostensibly have the highest relative impact, the likelihood of its acceptance is minimal due to the significant detrimental impacts to the cultural and ecological resources of the areas.
The estimated costs include costs for operations and maintenance and those for printed educational media (including escalation).

SUMMARY OF PREFERRED ALTERNATIVE

Based on a detailed analysis of each alternative and the evaluation comparing the alternatives, it is USACE's current judgment that the alternatives presented in **Table 5** above, for each MRS and AOI, are the Preferred Alternatives identified in this Proposed Plan. The selected alternatives or one of the other alternatives considered in the Proposed Plan (other than Alternative 1) are considered necessary to protect public health or welfare and the environment from actual or threatened presence or releases of hazards and hazardous substances into the environment. In this case, the hazards at the **MGRC** MRSs and AOIs are due to the potential presence of MEC.

Alternatives presented in **Table 5** are recommended because each alternative would achieve substantial hazard reduction by removing MEC constituting principal threats at each MRS and AOI. Alternatives presented in **Table 5** are also (1) protective of human health and the environment; (2) effective in both the short- and long-term at mitigating potentially remaining MEC explosive hazards to receptors conducting intrusive activities during development and reuse of the site; (3) administratively and technically feasible to implement; and (4) have moderate costs associated with their implementation relative to the other alternatives that have been evaluated.

Based on information currently available, USACE believes the Preferred Alternatives both meet the threshold criteria and provide the best balance of tradeoffs among the other alternatives with respect to the balancing and modifying criteria. USACE expects the Preferred Alternatives to satisfy the following statutory requirements of Section 121(b) of CERCLA: (1) be protective of human health and the environment, (2) comply with ARARs, (3) be cost-effective, and (4) provide an effective remedial solution. In the case of MRS-02, Alternative 4 has been chosen as the Preferred Alternative due to its high ability to meet all of the evaluation criteria. Although Alternative 5 costs are slightly lower than Alternative 4, Alternative 5 does not meet the Compliance with ARARs criteria. The selection of Alternative 4 over Alternative 5 was based on the ability of Alternative 4 to comply with all the evaluation criteria, and the potential detrimental environmental impacts that Alternative 5 would have on the site. The complete vegetation and soil removal with the associated loss of site biological and ecological resources required under Alternative 5 is unlikely to be accepted by the public and government resources agencies. In addition, it is unclear whether the flora and fauna at the site could be restored to a pre-remediation state and true costs associated with such a restoration, while undetermined at this time, are believed to likely drive the overall cost for Alternative 5 beyond the current cost estimated for Alternative 4. In the case of MRS-05, Alternative 2 had been initially chosen as the Preferred Alternative but USACE agreed to a request by the Bureau of Land Management to select Alternative 3 as the Preferred Alternative.

The supporting agency, DTSC, concurs with the selection of the alternatives presented in **Table 5** for each MRS and AOI as the Preferred Alternatives and that they are appropriate and provide the best balance of tradeoffs.

COMMUNITY PARTICIPATION

USACE will provide information regarding the remedial alternatives of **MGRC** to the public through public meetings, the Administrative Record file for the site, and announcements published in the Mojave Desert News and/or Antelope Valley Press (local newspapers). 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 Proposed Plan 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 November 7, 2012. Representatives from USACE and DTSC will be present at the meeting to explain the Proposed Plan, hear concerns, and answer questions.

Members of the public may comment in writing during the public comment period (November 7, 2012, to December 7, 2012). Written comments will also be accepted at the public meeting and throughout the public comment period that ends on December 7, 2012.

Correspondence should be sent to:

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United States Army Corps of Engineers
Los Angeles District
915 Wilshire Boulevard, 13th Floor
Los Angeles, CA 90017-3401
Phone: (213) 452-3669
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E-mail: roland.r.tabije@usace.army.mil

If special correspondence or public meeting accommodations are needed, please call Mr. Tabije at **(213) 452-3669**.

After considering public comments, USACE will select the final remedy (or remedies) for each MRS or AOI at **MGRC**. The Preferred Alternatives for each MRS and AOI may be modified based on public comment or new information. The final chosen remedy will be described in the Decision Document (the next step after this Proposed Plan). 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

CalPIF, (California Partners in Flight). 2009. The Desert Bird Conservation Plan; A Strategy for Protecting and Managing Desert Habitats and Associated Birds in the Mojave and Colorado Deserts, Version 1.0, California Partners in Flight and PRBO, Conservation Science.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 United States Code (USC) §§9601-11050, Public Law (PL) 96-510 as amended by the Superfund Amendment and Reauthorization Act (SARA). 4 August 1986.

Defenders of Wildlife. 2005. 2005 Annual Report.

Dimmitt. 2000. A Natural History of the Sonoran Desert. (S.J. Phillips, and P.W. Comus, eds.), ASDM Press/University of California Press.

Luckenbach. 1982. Ecology and Management of the Desert Tortoise (*Gopherus agassizii*) in California. Pp. 1-37 in North American tortoises: conservation and ecology (R. B. Bury, ed.). Wildlife Research Report 12, U.S. Fish and Wildlife Service, Washington, DC.

MARRS (MARRS Services). 2008. Final Remedial Investigation/Feasibility Study Work Plan, Former Mojave Gunnery Range "C", Kern County, California. Prepared for United States Army Corps of Engineers, Los Angeles District. January.

MARRS Services. 2011. Final Remedial Investigation/Feasibility Study Report, Former Mojave Gunnery Range "C", Kern County, California. Prepared for United States Army Corps of Engineers, Los Angeles District. December.

MUSD (Mojave Unified School District). 2005. Preliminary Endangerment Assessment Report. May.

National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR §300.

United States Army. 2009. Military Munitions Response Program, Munitions Response RI/FS Guidance. November.

USACE (U.S. Army Corps of Engineers). 1999. Inventory Project Report for the Former Mojave Gunnery Range "C", California City, California, Project Number JO9CA728101, prepared for USACE Engineering and Support Center, Huntsville, prepared by Science Applications International Corporation. September.

USACE. 2003. Archives Search Report Findings for the Former Mojave Gunnery Range "C", California City, California, Project Number JO9CA728101, prepared for USACE Engineering and Support Center, Huntsville, prepared by the USACE Rock Island District. April.

USACE. 2007. Aerial Photo Analysis Addendum to Archives Search Report, Former Mojave Gunnery Range "C", California City, California, Project Number JO9CA728101, Final Report, prepared for USACE Engineering and Support Center, Huntsville, prepared by the USACE St. Louis District. April.

USEPA (United States Environmental Protection Agency). 1988. Guidance for Conducting Remedial Investigations and Feasibility Studies under Comprehensive Environmental Response, Compensation, and Liability Act. October.

USFWS (U.S. Fish and Wildlife Service). 1994. Federal Register.

GLOSSARY OF TERMS

Administrative Record File

The official collection of documents related to investigation and cleanup activities at **MGRC** considered, or relied on, in selecting the response action supporting the Decision Document for remedial action at **MGRC**.

Anomaly

An anomaly is 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.).

Archives Search Report

An Archives Search Report is a detailed investigation report of past munitions activities conducted on an installation. The principal purpose of the archives search is to assemble historical records and available field data, assess potential ordnance presence, and recommend follow-up actions at a Defense Environmental Restoration Program Formerly Used Defense Site.

Comprehensive Environmental Response, Compensation, and Liability Act 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

Decision Documents serve to provide the reasoning for the selection of or changes to a site cleanup plan. Decision Documents are required by Section 117 of Comprehensive Environmental Response, Compensation, and Liability Act, as amended by the Superfund Amendments and Reauthorization Act, for remedial actions taken pursuant to Sections 104, 106, 120, and 122 (42 USC §§9604, 9606, 9620, and 9622). 40 CFR §300.430(f)(2) of the National Oil and Hazardous Substances Contingency Plan establishes the regulatory requirements for these Decision Documents.

Formerly Used Defense Sites

A FUDS is defined as a facility or site (property) 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. By the Department of Defense Environmental Restoration Program (DERP) policy, the FUDS

program is limited to those real properties that were transferred from DoD control prior to 17 October 1986. FUDS properties can be located within the 50 States, District of Columbia, Territories, Commonwealths, and possessions of the United States.

Geophysical Survey

A process used to identify subsurface metallic objects utilizing magnetic and electromagnetic technologies.

Intrusive Investigation

Investigating buried objects or material by excavation. Intrusive Investigation may include excavating, identifying, and removing buried ordnance or other metallic debris by an Unexploded Ordnance technician.

Institutional Control

Institutional Controls means 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.

Material Potentially Presenting an Explosive Hazard

Material owned or controlled by the Department of Defense that, prior to determination of its explosives safety status, potentially contains explosives or munitions (for example, munitions containers and packaging material; munitions debris remaining after munitions use, demilitarization, or disposal; range-related debris) or potentially contains a high enough concentration of explosives that the material presents an explosive hazard (for example, equipment, drainage systems, holding tanks, piping, or ventilation ducts that were associated with munitions production, demilitarization, or disposal operations).

Material Documented As Safe

Material Documented as Safe is Material Potentially Presenting an Explosive Hazard that has been assessed and documented as not presenting an explosive hazard and for which the chain of custody has been established and maintained. This material is no longer considered to be Material Potentially Presenting an Explosive Hazard.

Munitions and Explosives of Concern

This term, which distinguishes specific categories of military munitions that may pose unique explosive safety risks, includes Unexploded Ordnance, as defined in 10 USC §101(e)(5); Discarded Military Munitions, as defined in 10 USC §2710(e)(2); or Munitions Constituents (for example, TNT, RDX), as defined in 10 USC §2710(e)(3), present in high enough concentrations to pose an explosive hazard.

Munitions and Explosives of Concern Hazard Assessment

A tool developed by the U.S. Environmental Protection Agency to assess the explosive hazards posed by Munitions and Explosives of Concern.

Munitions Constituents

Munitions Constituents include 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

Remnants of munitions (for example, fragments, penetrators, projectiles, shell casings, links, fins) remaining after munitions use, demilitarization, or disposal.

Munitions Response

Response actions, including investigation, removal actions, and remedial actions to address the explosives safety, human health, or environmental risks presented by Unexploded Ordnance, Discarded Military Munitions, or Munitions Constituents, or to support a determination that no removal or remedial action is required.

Munitions Response Area

Any area on a defense site that is known or suspected to contain Unexploded Ordnance, Discarded Military Munitions, or Munitions Constituents. Examples include former ranges and munitions burial areas. A Munitions Response Area is composed of one or more Munitions Response Sites.

Munitions Response Site

A discrete location within a Munitions Response Area that is known to require a munitions response.

National Oil and Hazardous Substances Contingency Plan

The National Oil and Hazardous Substances Contingency Plan provides the regulatory framework (see NCP 40 CFR §300) for responses under Comprehensive Environmental Response, Compensation, and Liability Act. The National Oil and Hazardous Substances Contingency Plan provides that the Department of Defense has the responsibility to take actions to respond to releases from or on Department of Defense facilities or vessels [40 CFR §300.175(a)(4)].

Proposed Plan

The Preferred Remedial Alternative for a site is presented to the public in a Proposed Plan. The Proposed Plan 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 Proposed Plan, 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 / Feasibility Study

A Remedial Investigation is performed to collect data to characterize site conditions, delineate the nature and extent of contamination (in this case Materials and Explosives of Concern) and assess risk/hazard to human health and the environment. The Feasibility Study is the evaluation process for the development, screening, and detailing alternatives for remedial actions.

Removal Action

A removal action is the interim cleanup or removal of released hazardous substances from the environment 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 any exposure to hazardous substances. The term includes, without being limited to, security fencing or other measures to limit access and provide post-removal site control, where appropriate.

Unexploded Ordnance

Unexploded Ordnance includes military munitions that have been primed, fuzed, armed, or otherwise prepared for action; 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 remain unexploded either by malfunction, design, or any other cause.

APPENDIX A

3Rs Safety Slide

Remember the 3Rs of Military Munitions Safety:

- **Recognize:**
  you may have encountered a munitions item.
- **Retreat:**
  from the munitions item. Do not touch or disturb it; instead move away carefully, walking out the same way you entered the area. Do not use two-way radios or cell phones within 100 feet of the item.
- **Report:**
  what you saw and where you saw it by calling 911.

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USE THIS SPACE TO WRITE YOUR COMMENTS

Your input on the Proposed Plan for the **Former Mojave Gunnery Range "C"** 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 a final remedial alternative for the site.

You may use the space below to write your comments, then fold and mail. Comments must be post marked by December 7, 2012. If you have any questions about the comment period, please contact Mr. Randy Tabije by phone at (213) 452-3669, by fax at (213) 452-4213, or by email at roland.r.tabije@usace.army.mil.

Name: _____

Address: _____

City: _____

State: _____ **Zip:** _____

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The Post Office will not deliver mail without postage.

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