United States Department of the Army

PROPOSED PLAN
Military Munitions Response Program

Former Camp Laguna (Site YPG-003-R-01), Yuma Proving Ground, Arizona
Contract No. W912BV-19-D-0012. Task Order No. W912BV20F0166 September 2022

Text in bold italics indicates that a word or phrase is included in the glossary at the end of this Proposed Plan.

INTRODUCTION AND PURPOSE

The United States Department of the Army (the Army) has prepared this Proposed Plan for public review and comment on the remedial alternatives for the Former Camp Laguna Munitions Response Site (MRS) [the Site] at the Yuma Proving Ground (YPG) in Arizona, including the preferred alternative (Alternative 4—Surface and Subsurface Removal Across Entire MRS and Land Use Controls [LUCs]). This ***Military Munitions Response Program (MMRP)*** site encompasses approximately 40.3 acres and is a potential former munitions disposal area located within the YPG in southwestern Arizona (Figure 1). The Site footprint is within the Former Camp Laguna Encampment (Figure 2), which is designated as a cultural site. The current Site use is undeveloped and located within an active military installation. Future land use of the property comprising the Site is unlikely to change.

Based on the findings of the ***Remedial Investigation*** (RI) and previous studies, there is unacceptable site risk associated with **Munitions and Explosives of Concern** (MEC) present within the MRS boundary. Because MEC and **munitions debris** (MD) were identified at the Site, the ***Feasibility Study*** (FS) (Ayuda Auxilio Joint Venture LLC [AAJV] 2022) presented five remedial alternatives for development and analysis to satisfy the requirements of the ***Comprehensive Environmental Response, Compensation, and Liability Act*** (CERCLA). ***Munition constituents*** (MC) detected during the RI and Site Inspection (SI) were present at concentrations less than the Arizona Department of Environmental Quality (ADEQ) Soil Remediation Levels; therefore, no unacceptable risk/hazard associated with the presence of MC was identified, and MC was excluded from the FS.

The MMRP was established under the Defense Environmental Restoration Program to address MEC [unexploded ordnance (UXO), discarded military munitions (DMM) and MC] located on current and former defense sites. The Army is the lead agency for the Site and is responsible for investigating, reporting, and implementing remedial action related to Department of Defense activities at the Site.

IMPORTANT DATES AND LOCATIONS

Public Comment Period:

September 12, 2022—October 12, 2022

Comments on the Proposed Plan will be accepted during the public comment period. Please submit your comments by emailing: donnett.brown2.civ@army.mil, calling 928-328-2754, or mailing them to the following address:

Attention: Donnett Brown
USAG Yuma Proving Ground
Directorate of Public Works
Environmental Sciences Division (AMIM-YMP-E)
Bldg 307, Rm 2
Yuma, AZ 85365

Comments received by **midnight** on **October 12, 2022**, or postmarked by that day, will be reviewed and considered.

Public Meeting:

The Proposed Plan will be presented at a public meeting on **September 21, 2022, at 6:00 p.m. at the Main Library – Yuma County District, 2951 S 21st Dr., Yuma, AZ 85364**

Oral and written comments will be accepted at the meeting. For more information and to view project documents, see the **Administrative Record** file at the following locations:

Main Library - Yuma County Library District
2951 S 21st Dr
Yuma, AZ 85364

Foothills Branch Library - Yuma
13226 E South Frontage Rd
Yuma, AZ 85367-7416

This Proposed Plan provides a brief description of the RI and provides the basis for supporting the remedial alternatives proposed in the FS. The following remedial alternatives were developed and analyzed as part of the FS to offer a range of remedial approaches as required by United States Environmental Protection Agency guidance, assuming that the Site would remain as an undeveloped cultural site within an active military installation:

- Alternative 1: ***No Action***
- Alternative 2: LUCs Only
- Alternative 3: Surface Removal Across Entire MRS and LUCs
- Alternative 4: Surface and Subsurface Removal Across Entire MRS and LUCs (**Limited Subsurface Removal**)
- Alternative 5: Complete Surface and Subsurface Removal Across Entire MRS (***UU/UE Alternative***).

These actions are explained in more detail in the sections that follow along with an explanation of how the preferred alternative was selected.

The Army will review and consider the information submitted during the public comment period. The Army may modify the proposed remedial alternatives based on new information or public comments. Therefore, the public is encouraged to review and comment on the proposed remedial alternatives presented in this Proposed Plan.

The Army is required under the CERCLA to issue this Proposed Plan and seek public comment and participation under Section 300.430(f)(2) of the ***National Oil and Hazardous Substances Pollution Contingency Plan*** (NCP). The fieldwork for the RI, which took place in 2019, forms the basis for the Proposed Plan recommendation. This Proposed Plan summarizes information that can be found in greater detail in the RI report (EA 2020), the FS report (AAJV 2022) and other project documents available for review at the Environmental Sciences Division – Directorate of Public Works, Building 307.

PUBLIC INVOLVEMENT PROCESS

Community members and other interested parties are encouraged to review this Proposed Plan and submit comments. The Army will consider public comments on the proposed remedial alternatives before making a final determination for the Former Camp Laguna Munitions MRS.

The ADEQ is the regulatory agency for this project. Representatives from the ADEQ have been involved throughout the RI and FS process.

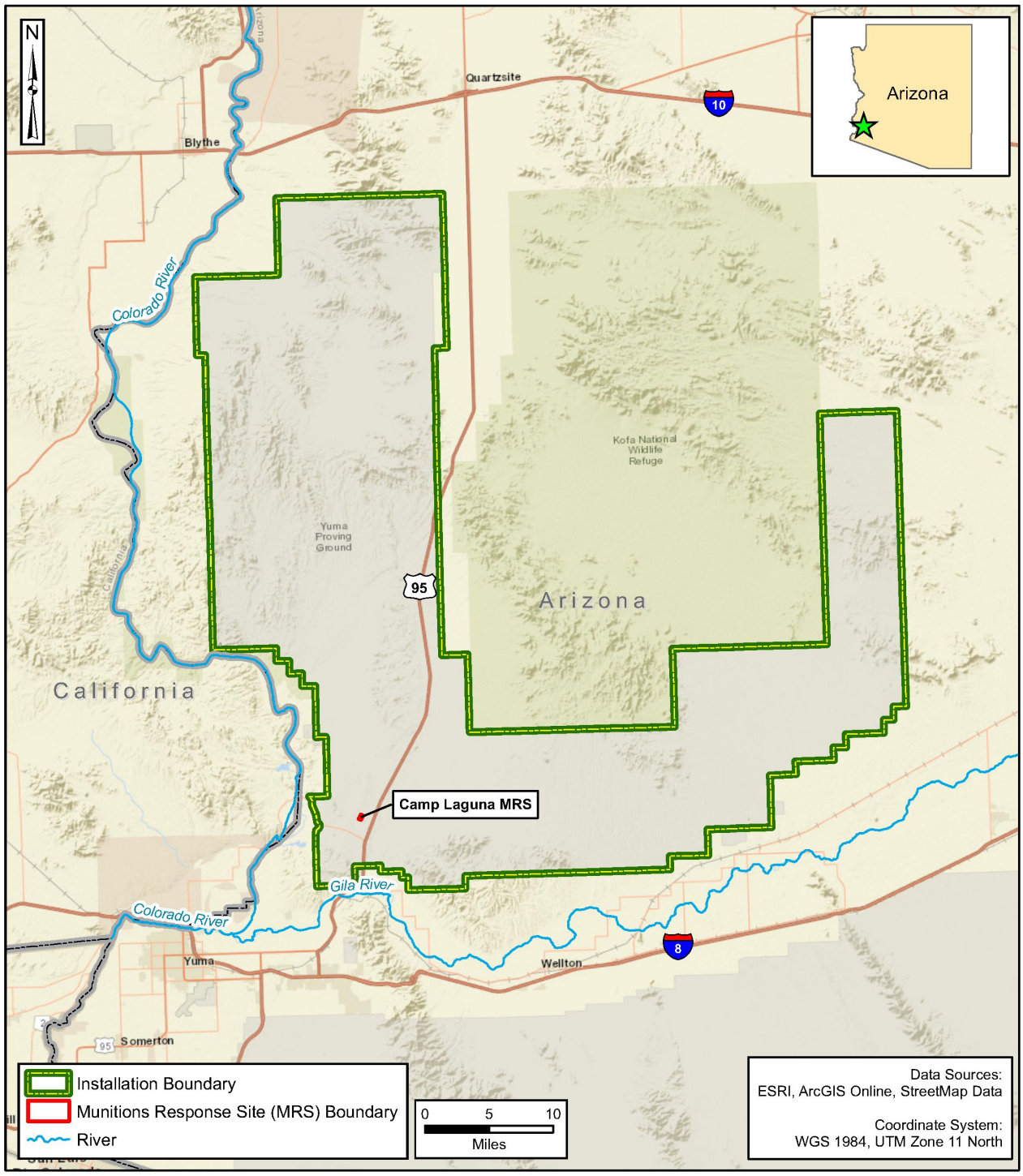
The RI Report and the FS Report are part of the ***Administrative Record*** file that contains the documents used in making decisions for the Site. The Administrative Record file is available for review at the Environmental Sciences Division – Directorate of Public Works, Building 307.

This Proposed Plan identifies and provides the basis for the proposed remedial alternatives. The purposes of this Proposed Plan are to:

- Provide information about the site, its history, and current and future use.
- Provide a summary of past investigation findings.
- Identify and describe the proposed remedial alternatives and explain the information supporting them.
- Encourage public review and comment on the proposed remedial alternatives.
- Provide information on how the public can be involved in the environmental process.

The Army will present its final decision in the ***Decision Document***. Responses to public comments on this Proposed Plan will appear in the “Responsiveness Summary” section of the Decision Document. The flow chart shown as Figure 3 summarizes the various steps in the development and approval process for the Former Camp Laguna Munitions MRS Decision Document.

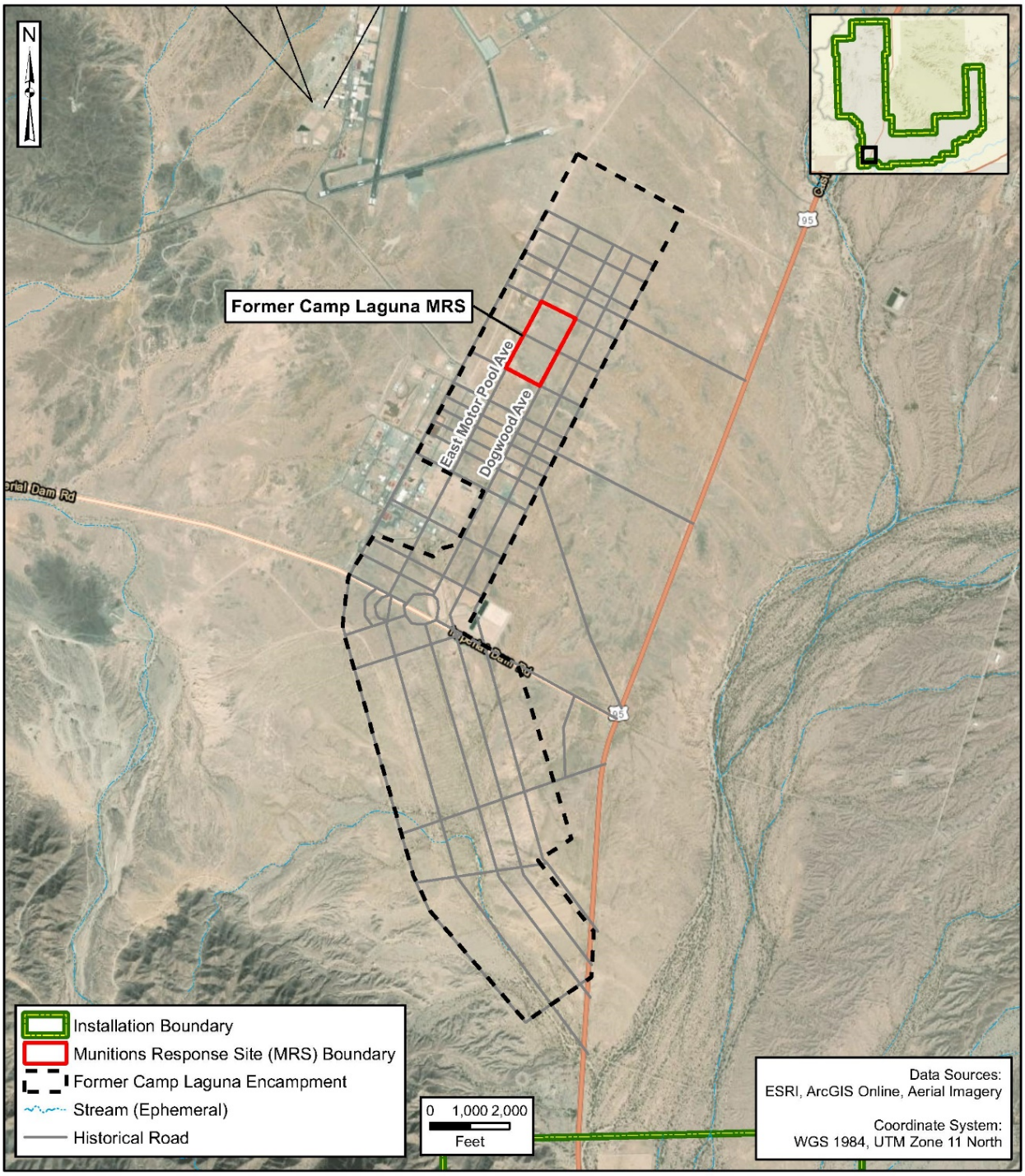
Figure 1: Site Location



Military Munitions Response Program
Former Camp Laguna U.S. Army Garrison Yuma Proving Ground
Yuma, Arizona
Proposed Plan

Figure 1
Site Location

Figure 2: Site Overview



Military Munitions Response Program
Former Camp Laguna U.S. Army Garrison Yuma Proving Ground
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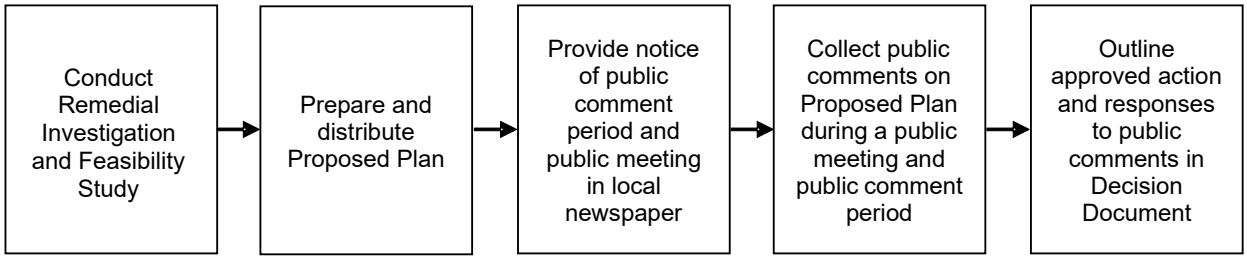
Figure 2
Site Overview

Figure 3: Public Participation Process



SITE BACKGROUND AND CHARACTERISTICS

Site History

The YPG is located in southwestern Arizona, approximately 23 miles northeast of Yuma and 125 miles west of Phoenix. The installation is used for testing military equipment in the northwestern Sonoran Desert. The YPG is one of the Department of Defense's largest installations, encompassing approximately 838,000 acres or roughly 1,300 square miles. The Site is a potential former munitions disposal area (approximately 40.3 acres) within the YPG and the area surrounding the Site is mostly undeveloped.

The Site footprint is within the Former Camp Laguna Encampment, which is believed to have been used by the Desert Training Center (DTC) from 1942 to 1944 (EA Engineering, Science, and Technology, Inc. [EA] 2017). Before the exact location of the encampment was identified, 14,720 acres of land were acquired on July 29, 1942, by the War Department through a memorandum of understanding and use agreement with the U.S. Department of the Interior. The land was acquired to be part of the DTC if expansion was necessary. In March 1943, under the X Corps of the DTC, the Laguna Maneuver Area was added to the DTC. A 1,400- to 2,000-acre area within the 14,720 acres of land acquired was established as the Former Camp Laguna encampment (EA 2017).

The Former Camp Laguna encampment was occupied by the 8th Division and the 3rd and 6th Tank Groups between March 29 and July 23, 1943, and by the 79th Infantry Division from July 23 to November 13, 1943. The 79th Infantry Division used land approximately 2 miles east of the encampment as a 0.50-caliber range, pistol range, 1,000-foot machine gun range, rifle range, and moving vehicle range and the area approximately 2 miles northeast of the Former Camp Laguna encampment as combat ranges, transition ranges, a carbine range, a close combat course, and a tank run and moving target range. The range fans faced east, northeast, or southeast, away from the Former Camp Laguna encampment, and, although these ranges were located nearby, none of them overlap or were immediately adjacent to the Site. The 79th Infantry Division practiced laying mine fields; however, the locations of these mines have not been identified. A proposed rifle range was also identified approximately 3.1 miles southwest of the Site. No additional information on whether the proposed rifle range was used as an active range has been identified (EA 2017).

The "X Corps" and 80th Infantry Division were the last to conduct maneuvers at the Former Camp Laguna encampment. All operations ceased as of May 1, 1944. The use permit for the Former Camp Laguna encampment was relinquished to the U.S. Department of the Interior on February 8, 1945. On April 7, 1947, 640 acres of the Former Camp Laguna encampment land area was reacquired, and on July 1, 1952, an additional 13,482 acres were reacquired by the War Department. The remaining 600 acres were never reacquired. This 600-acre tract is currently being addressed by the Formerly Used Defense Sites Program (EA 2017).

The only historical military activity identified at the Site was use of the encampment for General George Patton's forces, which were training to support activities in northern Africa during World War II (WWII). Camp Laguna is a culturally significant WWII U.S. Army encampment installation DTC/California-Arizona Maneuver Area.

The Site is currently located within an active military installation. The entire Former Camp Laguna MRS is undeveloped and is a designated cultural site. An active test track is located immediately adjacent to the Site; military vehicles run at potentially high speeds in a north-south direction on this test track. Identified site

features are shown on Figure 4. After completion of the RI, signage was installed around the perimeter of the MRS warning of the potential presence of MEC and associated dangers. Future land use of the property comprising the Site is unlikely to change; it will remain under Army control and will be protected under the National Historic Preservation Act because of its status as part of a cultural resource from the WWII era.

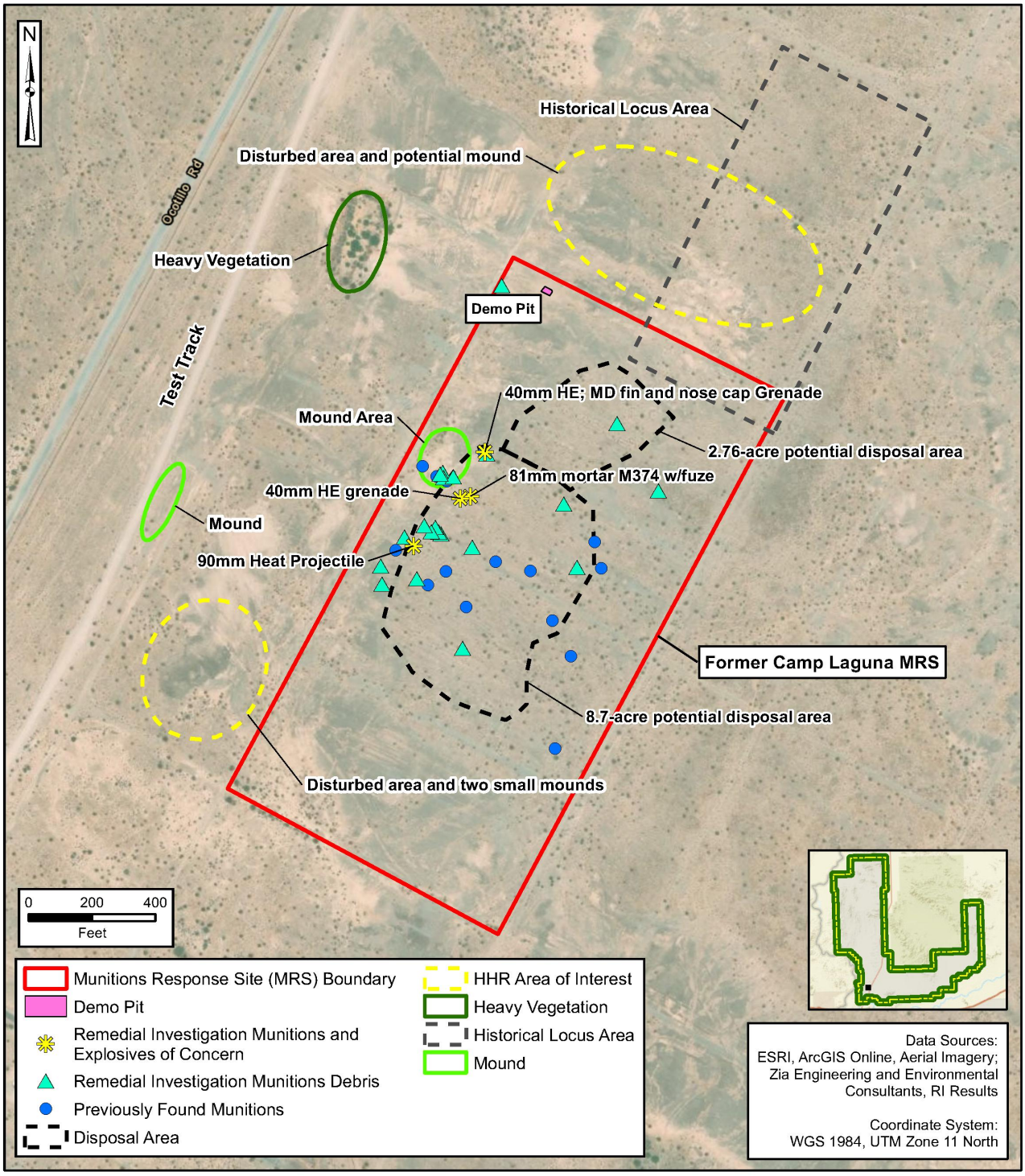
Previous Investigations

Many investigation activities were conducted at the Site; however, until the SI in 2017, they were not specific to the use of the Former Camp Laguna MRS. Table 1, below, presents the investigations performed before the RI, up to and including the SI.

Table 1: Investigations Performed Prior to the Remedial Investigation

Date	Event/Document	Summary
2011	Northland Research Archaeological Investigation	A cultural resource site was identified. Additionally, two potential disposal areas and MD were observed on 12 acres of the Former Camp Laguna MRS. These discoveries prompted an extensive geophysical survey of an approximately 40.3-acre area by the United States Army Corps of Engineers (USACE) Sacramento and Albuquerque Districts in April and June 2013.
2013	Final Geophysical Survey Report, Yuma Proving Ground (USACE Sacramento District 2013)	The geophysical investigation identified various munitions items located on the ground surface. It was suspected that these munitions items had not been fired, only disposed of onsite. In addition to the munition items, five features were identified that may be associated with former trenching or burial activities. A mound on the north side of the Former Camp Laguna MRS, where surface munitions were located and detonated in place, was suspected to be the location of a potential ordnance disposal pit. The mound was observed to be free of ordnance; however, the extent of debris beneath the surface and debris could only be partially identified. Locations of munitions items found prior to the RI and site features are shown on Figure 4 of this Proposed Plan. There was no clear chronological connection between activity at the former encampment and the modern munitions that were observed at the Site.
2015	Field Report, Munitions and Explosives of Concern Surveys, Yuma Proving Ground (EA 2017))	Based on information provide in the SI Report (EA 2017), a hazard assessment was conducted at the Former Camp Laguna MRS in 2015 as a follow up to the geophysical survey performed in 2013. The survey did not identify new MEC discoveries; however, the instruments employed detected both large, dense area anomalies and discreet electromagnetic contacts below the ground surface that may contain intact munitions or MD.
2016	Historical Records Review Report (EA 2016)	No historical activities that related to the use or disposal of munitions at the MRS were found. An encampment identified in the area was used by troops training to support activities in northern Africa during WWII.
2017	Site Inspection, Former Camp Laguna Munitions Response Site (EA 2017)	Instrument-aided visual surveys were conducted in the area surrounding the Former Camp Laguna MRS to evaluate if munitions were present outside the MRS boundaries. Approximately 23 line-miles of visual surveys were conducted, and no MEC or MD were identified within the survey area. MC sampling was also conducted during the SI at the location where surface MEC or MD was identified during the geophysical survey. Samples were analyzed for metals (copper, lead, zinc, and antimony) and explosives, and all results were less than the Arizona soil remediation levels. The majority of munitions identified at the Site are dated after WWII and do not coincide with the operations of the Site as an encampment. There is no historical evidence to suggest that the MRS was ever used as a firing range or munitions disposal area. It is unclear how or why these munitions came to be located on the surface of the Former Camp Laguna MRS.

Figure 4: Site Boundaries and Features



Military Munitions Response Program
Former Camp Laguna U.S. Army Garrison Yuma Proving Ground
Yuma, Arizona
Feasibility Study Report

Figure 4
Site Boundaries and Features

Remedial Investigation

In 2019, an RI was performed at the Site for MEC and MC. A preliminary Conceptual Site Model (CSM) for the Former Camp Laguna MRS was developed which integrated information from the previous investigations and describes the general characteristics of the installation and the specific characteristics of the MRS. The preliminary CSM served as the basis for identifying data collection needs during the RI. Investigations performed prior to the RI found munitions items on the ground surface and site features that may have been associated with disposal activities. Specifically, two potential disposal areas and five features that may be associated with former trenching or burial activities were identified within the Site. The majority of the munitions identified at the Site are dated after WWII and do not coincide with the operations of the Site as an encampment. It is unclear how or why these munitions came to be located on the surface of the Site. Therefore, the purpose of the RI was to collect sufficient data to determine the nature and extent of surface and subsurface MEC and to determine the presence/extent of MC, if any. Because of the presence of suspected disposal areas and site features with potential burial activities, determining the limits of any disposal pits/trenches and their contents was an important RI objective.

During the RI, digital geophysical mapping (DGM) data were collected along transects across the MRS to identify potential concentrated munitions use areas and anomalies for intrusive investigation. The DGM survey was also conducted to identify potential disposal pits or trenches. A total of 19,000 linear meters (4.7 acres) were mapped during the DGM survey. (Note: the area of the survey area was calculated based on the 1-meter footprint of the DGM equipment.) No subsurface disposal features were identified by the DGM; however, 320 targets of interest (TOIs) were identified for intrusive investigation (EA 2020). The data quality objective for the intrusive investigation was to investigate a statistically sufficient number of individual TOIs to ensure with a 95% confidence level that the MRS has less than 1.0 MEC per acre inside the MRS boundary. In addition to the 320 TOIs from the DGM survey identified for intrusive investigation, 9 TOIs identified during the 2013 Geophysical Survey and 14 TOIs identified during the 2017 SI were also selected for intrusive investigation (EA 2020).

During RI intrusive activities, the majority of the TOIs were determined to be scrap metal, cans, and numerous nail beds. However, the UXO team identified several materials potentially presenting an explosive hazard and MD items. All items were identified at a depth of 0 to 6 inches below ground surface (bgs). None of the munition items identified had been fired onsite; they had been fired elsewhere, and it was determined that the items were brought from another location on the YPG and disposed of or stored onsite. Based on the appearance of the items, it is likely that they were disposed of on the surface and were covered by blowing/shifting sands and weather events through the years. Though anticipated, no evidence of subsurface disposal of munitions were indicated as a result of the investigation.

Four MEC items were identified and either blown-in-place or consolidated for demolition activities and removed from the investigation areas. MEC located included two 40 millimeter (mm) HE grenades, one 81 mm M374 mortar, and one 90 mm high-explosive anti-tank (HEAT) projectile. A 105 mm projectile and a 155 mm projectile were also discovered but were classified as MD. The items that were determined acceptable to move were taken to a central disposal area (demolition pit) located at the northwest corner of the Former Camp Laguna MRS for demolition. Any MD remaining after the demolition event were inspected, the explosive hazard was determined to be removed, and the items were certified as material documented as safe (MDAS).

During the RI field work, 351 pounds of MDAS were shipped offsite for final demilitarization. Approximately 304 pounds of non-munitions related debris (NMRD) were identified, recovered, inspected, and disposed of offsite. In total, four MD items were consolidated, 22 MD items were removed, 33 NMRD items were left in place, 311 items NMRD were removed, and one range related debris was removed.

Based on the results of the SI (EA 2017), no unacceptable concentrations of MC were detected in the surface soil. Therefore, the RI MC sampling scope was limited to sampling in the vicinity of breached or leaking munition items identified in the subsurface (if present) and sampling in areas where demolition by detonation took place. During the RI intrusive activities, no breached or leaking munitions were identified. Therefore, incremental sampling methodology (ISM) samples were collected only in the demolition pit and in locations where items were blown-in-place. Thirty increments were collected from each sample unit using a serpentine transect and increments were collected at approximately evenly spaced locations throughout the sample unit. Duplicate and triplicate samples were collected from the demolition pit location, where 155-mm and 105-mm

rounds were disposed of, to evaluate the overall precision of the sampling process. A field duplicate was also collected from this location for laboratory quality control. The ISM samples were analyzed for explosives. Results of analyses for all RI ISM samples were non-detect for explosives.

The data collected during the RI were incorporated into a revised CSM which documents the changes in the CSM based on understanding gained because of the RI field investigation. For the munitions profile, the RI results indicate munitions items are present only at a depth of 0 to 6 inches bgs and that most of the munitions-related material is located within the western portion of the MRS (near the mound and south of the mound), with additional munitions-related material located in the central portion of the MRS. The southern third of the MRS appears to be free of munitions-related material. The RI established final boundaries for the ***concentrated munitions use area*** to be the same as the boundary of the MRS. The MEC exposure pathways for human receptors (installation personnel, contractors, authorized visitors, and trespassers) are complete for Former Camp Laguna MRS, since MEC and munitions debris were found in the near surface during the RI. A MEC risk evaluation was conducted in the RI Report (EA 2020) to evaluate if risks from existing site conditions associated with the presence of MEC explosive hazards are acceptable or unacceptable. This was accomplished by using the risk management methodology (RMM) approach described in the Study Paper: Decision Logic to Assess Risks Associated with Explosive Hazards, and to Develop remedial action objectives (RAOs) for Munitions Response Sites (Army 2016). The MEC risk (hazard) assessment decision logic matrices resulted in the determination of "**Unacceptable**" site conditions. Therefore, the overall summary of the RI Report concluded that there is an unacceptable MEC risk. Additionally, the CSM was updated in the Final RI Report (EA 2020) to reflect that no unacceptable levels of MC contamination were identified during the SI or RI.

The MEC Munitions Response Site Prioritization Protocol (MRSPP) site priority was also developed for the Former Camp Laguna MRS in the Final RI Report (EA 2020). The MRSPP uses three modules to evaluate the source, exposure pathway, and receptors for three hazards (explosive, Chemical Warfare Materiel, and MC health hazard) and the scores from each module are used to calculate a final score and determine the overall hazard ranking for the MRS. The hazard ranking ranges from 1 to 8, with 1 being the highest and 8 being the lowest priority site. The Former Camp Laguna MRS was assigned an overall ranking of 3 (EA 2020).

SCOPE AND ROLE OF THE RESPONSE ACTION

The objective of the FS was to provide decision makers with the information necessary to select a remedy for the Former Camp Laguna MRS. As such, the FS was designed to develop an appropriate range of remedial alternatives to support a final remedial action decision that addresses hazards identified in the Final RI Report (EA, 2020), evaluate those alternatives using the nine NCP criteria, and present the detailed analysis of final remedial action alternatives to support identification of a preferred alternative for implementation.

SUMMARY OF SITE RISKS

Hazards and risks were evaluated based on the potential for people and the environment to be exposed to munitions and explosives of concern and munitions constituents. The potentially exposed population includes all human and ecological receptors that exist, pass through, work in, or visit the area. Based on historical information and the RI findings, there is unacceptable risk for exposure to munitions at the Site. This is supported by the information presented in the Remedial Investigation section above.

> **MEC Risk:** Based on historical information and the RI findings, there exists an unacceptable risk for exposure to MEC at the Site for installation personnel, contractors, authorized visitors, and trespassers.
>
> **MC Risks**: Based on historical information and the RI findings, no unacceptable levels of MC contamination were identified during the SI or RI, based on comparison to the ADEQ Soil Remediation Levels. Therefore, no adverse health effects from human or ecological receptor exposure to MC in soil are expected.

It is the lead agency's current judgment that the Preferred Alternative identified in this Proposed Plan, or one of the other active measures considered in the Proposed Plan, is necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

REMEDIAL ACTION OBJECTIVES

The following MEC RAO was developed for the Site:

To reduce the unacceptable risk due to the presence of MEC, including 40mm Grenade, RAAM Submunition, ADAM Submunition, M73 Dummy Fuze, M500 Series Mech Time Fuze, 60mm Mortar, 81mm Mortar, 2.75-in Rocket Warhead, Hand Grenade, 90mm Projectile, 105mm Projectile, and 155mm Projectile, within the MRS boundary to a depth of 6 inches bgs to address the likelihood of exposure to human receptors (installation personnel, authorized visitors, contractors, and trespassers) such that an acceptable condition of negligible risk as defined by RMM approach (discussed above; U.S. Army 2016) is achieved.

IDENTIFICATION OF APPLICABLE OR RELEVENT AND APPROPRIATE REQUIREMENTS

The proposed response actions at the Former Camp Laguna MRS must identify applicable or relevant and appropriate requirements (ARARs), determined under CERCLA from other federal and state laws. ARARs can be chemical specific, action specific, or location specific. The ARARs for the Site include the following action-specific and location-specific standards/requirements/criteria/limitations:

- Action-Specific. Action-specific requirements set controls or restrictions on the design, implementation, and performance of remedial actions. One action-specific ARAR is potentially applicable during remedial action. In following the Hazardous Waste Operations and Emergency Response (HAZWOPER) – 29 CFR 1910.120, personnel performing work during future site activities will be properly trained in HAZWOPER for hazardous substance removal or other associated activities.
- Location-Specific. Location-specific requirements set restrictions on the types of remedial actions that can be performed based on site-specific characteristics or location. Two location specific ARARs were identified for the Site. In following the National Historic Preservation Act (16 USC. 470) of 1966, if a historical or cultural resource is identified during future site activities, a permit will be acquired to excavate around or remove that resource. Although unlikely, in following the Native American Grave Protection and Repatriation Act (25 U.S. Code 3002(d)), if an archaeological resource is identified during future site activities, the Secretary of the Department or head of any other agency having primary management authority with respect to federal lands and the appropriate Native American tribe with respect to tribal lands will be notified. The remedial action will cease upon discovery and reasonable efforts will be made to protect the items

MC were not identified as a risk to human health or the environment; therefore, there are no chemical-specific ARARs for the Site.

SUMMARY OF REMEDIAL ALTERNATIVES

The following remedial alternatives were developed and analyzed as part of the FS (AAJV 2022) to offer a range of remedial approaches as required by CERCLA guidance:

- **Alternative 1: No Action**

  Alternative 1 involves taking no munitions response action. Under this alternative, no munitions-related items would be removed from the Site. Signage was installed around the perimeter of the MRS warning of the potential presence of MEC and associated dangers after the completion of the RI. However, this alternative will not include additional LUCs beyond those already implemented. This alternative has no associated capital or periodic costs. Alternative 1 serves as the baseline against which the effectiveness of other alternatives is evaluated.

- **Alternative 2: LUCs Only**

  Alternative 2 includes administrative and engineering controls that would be put in place to modify the behavior of people needing access to the MRS and to limit or deny access to those without express permission or authority for cultural research or other military activities. Administrative controls would consist of use permits issued by YPG to ensure compliance with use restrictions. Restrictions may include requiring UXO escort during site entry activities that are surficial only (non-intrusive) and requiring UXO construction oversight during any future intrusive site activities. Additional engineering controls would consist of additional signage in and around the MRS and possible updates to current MRS perimeter signage regarding the risks posed by munitions that may remain at the MRS from historical training activities.

Though land use controls and long-term management (LTM), including annual certification and 5-year reviews, may go on indefinitely, EPA guidance directs the FS cost estimate to cover a 30-year period for FS comparison purposes. The total annual and capital cost estimate for Alternative 2 would be $1,187,000.

- **Alternative 3: Surface Removal Across Entire MRS and LUCs**

  Alternative 3 includes surface removal of MEC in the MRS. Analog geophysical instrument-assisted visual surveys would be conducted by UXO technicians to identify MEC, which would be removed using manual methods. If any MEC items found are safe to move, these items would be consolidated and demolition operations would be conducted in a specified location within the MRS to reduce the number of demolition shots and impacts to the environment. If they cannot be moved, the items would be blown in place (BIP). MD would be handled under chain-of-custody protocols, flashed to remove explosive residues, and properly disposed or recycled. NMRD would be removed from the Site and properly disposed or recycled.

  Cultural/archaeological and ecological resources areas, where present, might be impacted (disturbance of soil and vegetation, potential noise impacts from mechanized operations) depending on the time of year when activities take place, although measures (including a visual survey prior to work beginning) would be taken to mitigate or avoid impacts.

  This alternative involves removal of MEC at the surface only and a MEC hazard will remain because of the potential for MEC in the subsurface. Therefore, LUCs and LTM would be implemented in a manner similar to that described for Alternative 2, except that a UXO escort for non-intrusive site activities would not be required. Though implementation of LUCs and LTM, including annual certification and 5-year reviews, may go on indefinitely, EPA guidance directs the FS cost estimate to cover a 30-year period for FS comparison purposes. The total annual and capital costs for Alternative 3 would be $1,777,000.

- **Alternative 4: Surface and Subsurface Removal Across Entire MRS and LUCs**

  Alternative 4 includes MEC removal within the surface and the subsurface of the MRS. MEC removal activities would include surface and subsurface removal to the detection depth (59 inches bgs) of the largest ordnance (155 mm projectiles) identified during the RI. Alternative 4 also includes implementation of the LUCs described in Alternative 3, except that a UXO escort would not be required. Surface removal activities would be the same as described in Alternative 3. Subsurface removal activities would be performed using DGM and advanced geophysical classification detection technologies, followed by manual excavation of identified MEC. Mechanized excavation may be used to support removal of concentrated anomalous response areas.

  If any discovered MEC items are acceptable to move, these items would be consolidated and demolition operations would be conducted in a specified location with the MRS to reduce the number of demolition shots and impacts to the environment. If they cannot be moved, the items would be BIP. MD would be handled under chain-of-custody protocols and properly disposed or recycled. NMRD, if recovered, would be removed from the Site and properly disposed or recycled.

  Cultural/archaeological and ecological resources areas, where present, might be impacted (disturbance of soil and vegetation, potential noise impacts from mechanized operations) depending on the time of year when activities take place, although measures (including a visual survey prior to work beginning) would be taken to mitigate or avoid impacts.

  Alternative 4 involves removal of MEC to the detection depth of the largest ordnance; therefore, LUCs and LTM would be implemented in a manner similar to that described for Alternative 3, except that a UXO escort for intrusive site activities above 9 inches bgs would not be required. Based on the vertical CSM, 9 inches is the DGM instrument (EM61) detection depth for the smallest MEC item found (40mm grenade); therefore, at depths between 9 and 59 inches bgs, these could be present but not detected by the DGM. Though land use controls and LTM, including annual certification and 5-year reviews, may go on indefinitely, EPA guidance directs the FS cost estimate to cover a 30-year period for FS comparison purposes. The total annual and capital costs for Alternative 4 would be $2,176,000.

- **Alternative 5: Complete Surface and Subsurface Removal Across Entire MRS (UU/UE Alternative)**

  Alternative 5 consists of complete surface and subsurface removal of MEC across 100% of the 40.3 acres of the Former Camp Laguna MRS. Under Alternative 5, the MEC removal activities would be performed by

excavation of soil in lifts to a depth of 48 inches bgs (maximum depth of disposal for the largest MEC). Excavated soil will be sifted to remove MEC and inspected by a UXO technician with an analog geophysical instrument to confirm it is metal free, then a DGM confirmation survey will be performed. All anomalies will be intrusively investigated. This will achieve the complete surface and subsurface removal of all MEC to the maximum depth of disposal for the largest MEC.

Removed metal would be inspected for MEC. If any found MEC items are safe to move, these items would be consolidated and demolition operations would be conducted in a specified location with the MRS to reduce the number of demolition shots and impacts to the environment. If items cannot be moved, BIP operations would be conducted. MD would be handled under chain-of-custody protocols, flashed to remove explosive residues, and properly disposed or recycled. NMRD would be removed from the Site and properly disposed or recycled. Soil will then be backfilled. LUCs and LTM are not required under this alternative because it will meet unrestricted use/unlimited exposure (UU/UE) requirements, if supported by the final data usability assessment.

Sensitive sites and cultural resource areas, where present, will be impacted (disturbance of soil and vegetation, potential noise impacts from mechanized operations) depending on the time of year when activities take place, although measures (including a visual survey prior to beginning work) would be taken to mitigate impacts.

Alternative 5 is the UU/UE alternative and is required for evaluation. However, during the pre-screening of the individual alternatives, Alternative 5 was not retained for the detailed analysis of alternatives. Therefore, the total annual and capital costs for Alternative 5 were not calculated as part of the FS.

EVALUATION OF ALTERNATIVES

A pre-screening of the five remedial alternatives was performed during the FS (EA 2022), using effectiveness, implementability, and cost as criteria. Because Alternative 5 is the most difficult to implement, is significantly more costly than the other alternatives, and poses a higher risk of damage or loss of cultural and ecological resources, it was not retained for detailed analysis. The remaining four proposed remedial alternatives were retained for the detailed analysis of alternatives under a future undeveloped land use with cultural designation scenario. The NCP lists nine criteria against which each remedial alternative must be assessed. The nine NCP criteria are divided into three categories: two threshold criteria (1. Overall Protection of Human Health and the Environment and 2. Compliance with Applicable or Relevant and Appropriate Requirements) that must be met by each alternative; five primary balancing criteria (1. Long-Term Effectiveness and Permanence, 2. Reduction of Toxicity, Mobility, or Volume Through Treatment, 3. Short-Term Effectiveness, 4. Implementability, and 5. Cost) upon which the analysis is based; and two modifying criteria (1. State Acceptance and 2. Community Acceptance) which are applied after the public comment period for this proposed Proposed Plan. The alternatives represent a reasonable range of alternatives that meet the requirements of the Army Remedial Investigation/Feasibility Study guidance. A comparison of each alternative to the NCP criteria are presented below:

Alternative 1: No Action

Overall Protection of Human Health and the Environment: This alternative would not be protective of human health for current and future receptors because no action is taken.

Compliance with Applicable or Relevant and Appropriate Requirements: Because no actions would be taken, an assessment of ARARs is not appropriate.

Short-Term Effectiveness; Long-Term Effectiveness and Permanence: This alternative would not be effective in the short or long-term because no actions would be taken to reduce potential contact with MEC nor does this alternative employ an action that will result in a permanent solution for the Site.

Reduction of Toxicity, Mobility, or Volume Through Treatment: The “volume” or potential hazards associated with MEC would not be reduced with this alternative because no action would be taken.

Implementability: This alternative is easily implementable.

Cost: Costs associated with implementing this alternative would be $0.

State and Community Acceptance: State/community acceptance of the preferred remedial alternative will be addressed in the Record of Decision once comments on the Feasibility Study and Proposed Plan have been received.

Alternative 2: LUCs Only

Overall Protection of Human Health and the Environment: Alternative 2 would provide reasonable protection to potential human receptors because LUCs would be implemented for risk management. The MEC risk assessment demonstrates that an "acceptable" site condition end state is achieved with implementation of Alternative 2.

Compliance with Applicable or Relevant and Appropriate Requirements: Although no remedial action is included in this alternative, if MEC are identified during UXO escort or UXO construction oversight, emergency, waste storage, and treatment protocols would be followed. Also, if MEC are identified during UXO escort or UXO construction oversight in an area within the MRS found to contain cultural/archaeological resources, measures would be taken to mitigate or avoid impacts to those resources.

Short-Term Effectiveness; Long-Term Effectiveness and Permanence: This alternative would be effective in the short-term and long-term (and can be considered a permanent solution) because the use of LUCs (in conjunction with a LTM plan) would help reduce the potential interaction between human receptors and MEC.

Reduction of Toxicity, Mobility, or Volume Through Treatment: This alternative would not result in reduction of the volume of MEC.

Implementability: LUCs are highly implementable.

Cost: Costs associated with implementing this alternative are estimated to be $1,187,000.

State and Community Acceptance: State/community acceptance of the preferred remedial alternative will be addressed in the Record of Decision once comments on the Feasibility Study and Proposed Plan have been received.

Alternative 3: Surface Removal Across Entire MRS and LUCs

Overall Protection of Human Health and the Environment: Alternative 3 would provide reasonable protection to potential human receptors because MEC would be removed from the surface of the MRS and LUCs would be implemented for risk management. The MEC risk assessment demonstrates that an "acceptable" site condition end state is achieved with implementation of Alternative 3.

Compliance with Applicable or Relevant and Appropriate Requirements: This alternative will comply with ARARs. If MEC are identified during the remedial action (surface removal) or during UXO construction oversight, emergency, waste storage, and treatment protocols would be followed. If MEC are identified during the remedial action (surface removal) or during UXO construction oversight in an area within the MRS found to contain cultural/archaeological resources, measures would be taken to mitigate or avoid impacts to those resources.

Short-Term Effectiveness; Long-Term Effectiveness and Permanence: This alternative would be effective in the short-term and long-term because it includes removal of MEC from the ground surface to limit the direct exposure pathway. However, there would be a slight increased short-term risk to workers associated with the MEC removal activities. While MEC would still be present within the MRS at a subsurface level, the use of LUCs would help reduce the potential interaction between human receptors and MEC. LUCs and an LTM plan are typically the best methods to manage residual risk from potential MEC over the short and long-term. Alternative 3 can be considered a permanent solution primarily because of the LUCs and associated LTM plan.

Reduction of Toxicity, Mobility, or Volume Through Treatment: This alternative would reduce the "volume" of MEC and would reduce the Site explosive hazard, as MEC would be removed from the surface where the greatest potential for MEC interaction would occur.

Implementability: This alternative is highly implementable using conventional MEC detection technology, disposal techniques and equipment. LUCs are highly implementable. Specialized equipment and personnel required for UXO construction oversight are present on the installation.

Cost: Costs associated with implementing this alternative are estimated to be $1,777,000.

State and Community Acceptance: State/community acceptance of the preferred remedial alternative will be addressed in the Record of Decision once comments on the Feasibility Study and Proposed Plan have been received.

Alternative 4: Surface and Subsurface Removal Across Entire MRS and LUCs

Overall Protection of Human Health and the Environment: Alternative 4 would provide reasonable protection to potential human receptors since MEC on the surface and in the subsurface would be removed from throughout the MRS and LUCs would be implemented for risk management, except that a UXO escort would not be required. The MEC risk assessment demonstrates that an "acceptable" site condition end state is achieved with implementation of Alternative 4.

Compliance with Applicable or Relevant and Appropriate Requirements: This alternative will comply with ARARs. If MEC are identified during the remedial action (surface and subsurface removal) or during UXO construction oversight, emergency, waste storage, and treatment protocols would be followed. If MEC are identified during the remedial action (surface and subsurface removal) or during UXO construction oversight in an area within the MRS found to contain cultural/archaeological resources, measures would be taken to mitigate or avoid impacts to those resources.

Short-Term Effectiveness; Long-Term Effectiveness and Permanence: This alternative would be effective over the short- and long-term because it would remove MEC from the surface and subsurface, which limits the direct exposure pathways to human receptors. However, there would be a slight increased short-term risk to workers associated with the MEC removal activities. While MEC would still be present within the MRS at a deeper subsurface level, the use of LUCs would help reduce the potential interaction between human receptors and MEC. LUCs and an LTM plan are typically the best methods to manage residual risk from potential MEC over the short and long-term. Alternative 4 can be considered a permanent solution primarily because of the LUCs and associated LTM plan.

Reduction of Toxicity, Mobility, or Volume Through Treatment: This alternative would reduce the "volume" of MEC and would reduce the Site explosive hazard, as MEC would be removed from the surface and subsurface of the MRS where the greatest potential for MEC interaction would occur.

Implementability: This alternative is highly implementable using conventional MEC detection technology, disposal techniques and equipment. LUCs are highly implementable. Specialized equipment and personnel required for UXO construction oversight are present on the installation.

Cost: Costs associated with implementing this alternative are estimated to be $2,176,000.

State and Community Acceptance: State/community acceptance of the preferred remedial alternative will be addressed in the Record of Decision once comments on the Feasibility Study and Proposed Plan have been received.

PREFERRED ALTERNATIVE

Alternative 4 (Surface and Subsurface Removal Across Entire MRS and LUCs) is the preferred remedial alternative identified for implementation at the Former Camp Laguna MRS as it meets the Remedial Action Objective, complies with ARARs, and provides the best balance of trade-offs with respect to the balancing criteria. Alternative 4 is the preferred alternative when compared against other alternatives under the nine criteria. When using the balancing criteria to compare the alternatives, overall, Alternatives 3 and 4 are capable of achieving most of the specified criteria; however, Alternative 4 provides the greatest reduction in the volume of MEC and the most long-term effectiveness of all the alternatives and is a permanent remedy. While Alternative 4 offers a high degree of public protectiveness, it has potentially the most short-term risks to workers performing the remedial action. Alternative 4 is feasible using conventional MEC identification/removal techniques, goods, and services. Alternative 4, is considered to be cost effective, although it has the highest cost of all the alternatives. Alternative 4 is the most likely to be accepted by state/support agencies and the community.

COMMUNITY PARTICIPATION

The Army is requesting public comments on this Proposed Plan. Comments will be accepted at a public meeting, as well as throughout the public comment period. **The public meeting will be held on 21 September 2022 at 6:00 p.m. at the Main Library – Yuma County District, located at 2951 S 21st Dr. in Yuma, AZ 85364**. Representatives from the Army will be present to explain the Proposed Plan, listen to concerns, answer questions, and accept public comments.

The Army will consider comments received during the public meeting and comment period. The final decision that the Army makes will be presented in the Decision Document. The Army's responses to public comments will be included in the Responsiveness Summary section of the Decision Document.

Reports and project documents are available for public review in the Administrative Record file at the:

Main Library - Yuma County Library District
2951 S 21st Dr
Yuma, AZ 85364

Foothills Branch Library - Yuma
13226 E South Frontage Rd
Yuma, AZ 85367-7416

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Environmental Sciences Division (AMIM-YMP-E)
Bldg 307, Rm 2
Yuma, AZ 85365

Information Repository

The documents that comprise the Administrative Record file, including the RI Report, the FS Report and this Proposed Plan, are available for review at the following locations:

Main Library - Yuma County Library District
2951 S 21st Dr
Yuma, AZ 85364

Foothills Branch Library - Yuma
13226 E South Frontage Rd
Yuma, AZ 85367-7416

Donnett Brown
USAG Yuma Proving Ground
Directorate of Public Works
Environmental Sciences Division (AMIM-YMP-E)
Bldg 307, Rm 2
Yuma, AZ 85365

Along with this Proposed Plan, a Fact Sheet for the Site was prepared for public distribution. The Fact Sheet and the Proposed Plan will be available at the Main and Foothills Branch Libraries.

ACRONYMS AND ABBREVIATIONS

AAJV	Ayuda Auxilio Joint Venture LLC
ADEQ	Arizona Department of Environmental Quality
ARAR	applicable or relevant and appropriate requirements
bgs	below ground surface
BIP	blown in place
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CSM	Conceptual Site Model
DERP	Defense Environmental Restoration Program
DGM	digital geophysical mapping
DMM	discarded military munitions
DTC	Desert Training Center
EA	EA Engineering, Science, and Technology, Inc.
FS	Feasibility Study
HAZWOPER	Hazardous Waste Operations and Emergency Response
HEAT	high-explosive anti-tank
LTM	long-term management
LUC	land use control
MC	munitions constituents
MD	munitions debris
MDAS	material documented as safe
MEC	munitions and explosives of concern
mm	millimeter
MMRP	Military Munitions Response Program
MRS	Munitions Response Site
MRSPP	Munitions Response Site Prioritization Protocol
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NMRD	Non-munitions related debris
RAO	remedial action objective
RI	Remedial Investigation
RMM	risk management methodology
SI	site inspection
Site	potential former munitions disposal area at the Former Camp Laguna Munitions Response Site
the Army	The United States Department of the Army
TOI	target of interest
USACE	U.S. Army Corps of Engineers
UU/UE	unrestricted use/unlimited exposure

UXO	unexploded ordnance
WWII	World War II
YPG	Yuma Proving Grounds

GLOSSARY OF TERMS

Administrative Record: The documents that form the basis for the selection of a response action compiled and maintained by the lead agency.

Comprehensive Environmental Response, Compensation, and Liability Act: This federal law was passed in 1980, amended by the Superfund Amendments and Reauthorization Act of 1986, and is commonly referred to as "**Superfund**." It provides for liability, compensation, assessment, remediation, and emergency response in connection with the cleanup of inactive sites that endanger public health and safety or the environment.

Concentrated Munitions Use Area: areas where there is a high likelihood of finding UXO or DMM and that have a high amount of MD within them as a result of historical munitions use. The concentrated munitions use area boundary is a line that differentiates between elevated anomaly density and background anomaly density.

Decision Document: This legal document is signed by the Army. It provides the response action selected for a site, the basis for selecting that response action, public comments, responses to comments, and the estimated cost of the response action.

Digital Geophysical Mapping: A data collection process that employs a metal detector system to digitally record sensor and position data for subsequent data analysis and presentation.

Feasibility Study: A study undertaken by the lead agency to develop and evaluate options for remedial action. The Remedial Investigation data is used to define the objectives of the response action, to develop remedial action alternatives, and to undertake an initial screening and detailed analysis of the alternatives. The term also refers to a report that describes the results of the study.

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

Military Munitions Response Program: The U.S. Congress established the MMRP under the Defense Environmental Restoration Program (DERP) to address sites that may contain MEC (which includes UXO and DMM) or MC that may present a potential hazard to human health or environment. Properties classified as operational military ranges, permitted munitions disposal facilities, or operating munitions storage facilities are not eligible for MMRP. Sites determined to be eligible for the MMRP are referred to as MRSs.

Munitions Constituents: Any materials 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 constituents are the metals, explosives, and related products that comprise munitions.

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

Munitions and Explosives of Concern: A term that distinguishes specific categories of military munitions that may pose unique explosives safety risks, such as:

(1) Unexploded ordnance (i.e., military munitions that have been primed, fused, 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, installations, personnel, or material; and remain unexploded, whether by malfunction, design, or any other cause);

(2) Discarded military munitions (i.e., military munitions that have been abandoned without proper disposal or removed from storage in a military magazine or other storage area for the purpose of disposal); or

(3) Munitions constituents present in high enough concentrations to pose an explosive hazard.

Munitions Response Site: Site determined to be eligible for the Military Munitions Response Program

National Oil and Hazardous Substances Pollution Contingency Plan: The plan revised pursuant to 42 United States Code 9605 and found at 40 Code of Federal Regulation 300 that sets out the plan for hazardous substance remediation under the Comprehensive Environmental Response, Compensation, and Liability Act. These regulations, often referred to as the National Contingency Plan, provide the federal government the authority to respond to the problems of abandoned or uncontrolled hazardous waste disposal sites, as well as to certain incidents involving hazardous wastes (e.g., spills).

No Action: A No Action response is selected for a site when information indicates that no additional investigation/remediation is required by the Department of Defense and no unacceptable risk to human health and/or the environment from the former military use exists or remains.

Proposed Plan: This is a plan that identifies the proposed decision for a site and is made available to the public for comment.

Remedial Action Objective: A Remedial Action Objective is a site-specific, initial clean-up objective that is established based on the nature and extent of impacts, the resources that are currently and potentially threatened, and the potential for human and environmental exposure.

Remedial Investigation: A process undertaken by the lead agency to determine the nature and extent of the problem presented by a potential release. The Remedial Investigation emphasizes site characterization and is generally performed concurrently and in an interactive fashion with the Feasibility Study if one is needed. The Remedial Investigation includes gathering sufficient information to determine the necessity for remedial action and to support the evaluation of remedial alternatives, if necessary.

Superfund Amendments and Reauthorization Act: In addition to certain free-standing provisions of law, it includes amendments to the Comprehensive Environmental Response, Compensation, and Liability Act, the Solid Waste Disposal Act, and the Internal Revenue Code. Among the free-standing provisions of law is Title III of Superfund Amendments and Reauthorization Act, also known as the "Emergency Planning and Community Right-to-Know Act of 1986;" title IV of Superfund Amendments and Reauthorization Act, also known as the "Radon Gas and Indoor Air Quality Research Act of 1986;" and title V of Superfund Amendments and Reauthorization Act amending the Internal Revenue Code, also known as the "Superfund Revenue Act of 1986."

UU/UE Alternative: Unrestricted Use/Unlimited Exposure Alternative. Under DERP guidance, the FS must consider an alternative that remediates the site to a condition that allows unlimited use and unrestricted exposure condition. The UU/UE alternative allows closure of the site without any land use controls.

REFERENCES

AAJV. 2022. Final Feasibility Study Report, Military Munitions Response Program, Former Camp Laguna (Site YPG-003-R-01), Yuma Proving Ground, Arizona. March.

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EA. 2020. Final Military Munitions Response Program Remedial Investigation Report for Former Cap Laguna. U.S. Army Garrison Yuma Proving Ground, Arizona. May.

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