FINAL PROPOSED PLAN

FOR THE CAMP SWIFT RANGE COMPLEX MUNITIONS RESPONSE SITE

BASTROP, TEXAS

Prepared by:

U.S. Army Corps of Engineers

MARK YOUR CALENDAR!

Public Comment Period: **October 16 – November 16, 2015**

Public Meeting: **October 29, 2015**

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: **Lost Pines Scout Reservation: Lindsay Lodge**
785 FM 1441, Bastrop, TX 78602

Time: **6 – 8 pm**

For more information, see the Administrative Record file located at:

Bastrop Public Library
1100 Church Street, Bastrop, TX 78602

or visit
www.formercampswift.com

THE U.S. ARMY CORPS OF ENGINEERS ANNOUNCES PROPOSED PLAN

This Proposed Plan summarizes the Remedial Investigation (RI)/Feasibility Study (FS) activities at the Camp Swift Range Complex located in Bastrop, Texas. The Proposed Plan summarizes the remedial alternatives for mitigating hazards at the site, presents the Preferred Alternatives, and solicits public review and comment on the alternatives.

This document is issued by the U.S. Army Corps of Engineers (USACE), the lead agency for site activities with Texas Commission of Environmental Quality (TCEQ) as the supporting agency. USACE, after coordinating with TCEQ, will select a final remedy for the site after reviewing and considering all information submitted during the public comment period. USACE may modify the Preferred Alternative or select another response action presented in this Plan based on new information or public comment. Based on new information or public comments, the Preferred Alternative may be selected, or another remedial alternative presented in this Proposed Plan may be modified. Therefore, the public is encouraged to review and comment on all the alternatives in this Proposed Plan.

Figure 1 depicts the process followed in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) for the Camp Swift Range Complex**.** This figure also illustrates the importance of public participation in the selection of the remedial alternative for this site. The process includes identification, investigation, decision, remediation, and close out of a site. Several areas have been identified as potential contaminated sites within the Camp Swift Range Complex. There have been several previous investigations, with the most recent being an RI/FS. These sites have been evaluated and preferred alternatives have been recommended for each of these sites.

An Engineering Evaluation/Cost Analysis performed on the site in 2002 identified 13 munitions and explosives of concern (MEC) items and 648 individual pieces of munitions debris. The Remedial Investigation further investigated the areas, which were grouped into 17 proposed munitions response sites. The team cleared 2,571 targets and disposed of 1 MEC item. The proposed alternatives for the MRSs that have been determined to pose a potential risk involve a combination of land use controls, and clearance to at least 0.5 foot below anticipated or confirmed MEC depths in each munitions response site (MRS).

This Proposed Plan is being issued as part of the public participation responsibilities under Section 117 (a) of the Comprehensive Environmental Response, Compensation, and Liability Act [42 USC § 9617(a)] and 40 Code of Federal Regulations (C.F.R.) § 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 this site. USACE, encourages the public to review these documents to gain a more comprehensive understanding of the former Camp Swift Range Complex and preferred alternatives that have been proposed for the site.

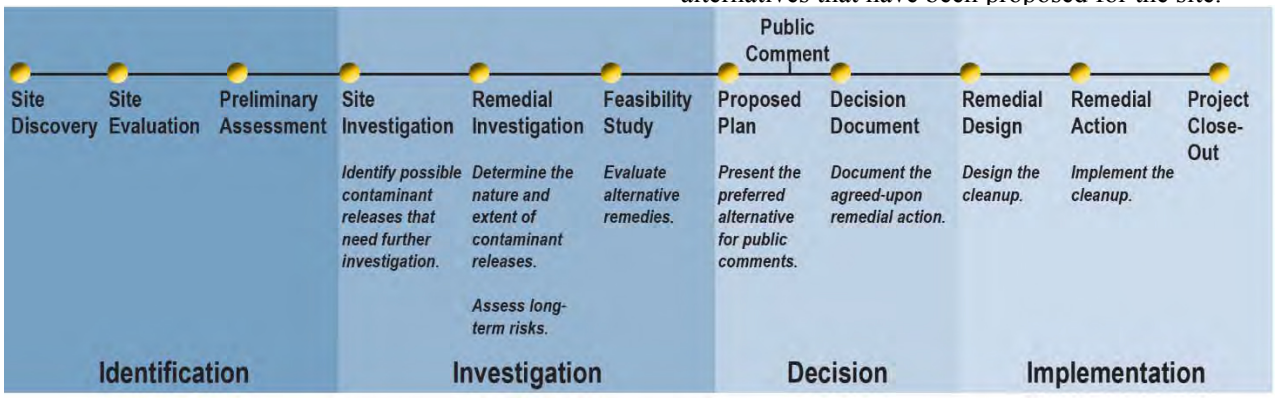


Figure 1. CERCLA Process

Note: A glossary and list of acronyms is provided at the end of this document.

SITE HISTORY AND BACKGROUND

The Camp Swift Range Complex Munitions Response Site (MRS) consists of approximately 29,280 acres of the original 52,191.26 acres acquired by the U.S. Government in 1942. The property consists of a range complex comprising overlapping small arms ranges, grenade courts, a mortar range, artillery impact areas, training maneuver areas, and a demolition area. The Camp Swift Range Complex is bordered to the north by Federal Highway 290, to the east by State Highway 21, and to the west by State Highway 95 (Figure 2). Figure 2 also shows previous use of areas (bordered in red) that will be discussed throughout this section.

There are 11,862 acres within the 29,280-acre Camp Swift Range Complex that are currently used by the Texas Army National Guard (TXARNG), an active facility not eligible for the Formerly Used Defense Sites (FUDS) program. Therefore, only the remaining 17,418 acres of the current Munitions Response Sites (MRS) were subject to the FUDS MRS RI. Additionally, on review of historical use of all areas within the boundary, the RI area included areas outside of the Camp Swift Range Complex MRS. Meetings were held with stakeholders to gain agreement on the MRSs and Areas of Interest (AOIs) to be investigated. The investigation areas include MRS North 1 through 4, MRS East, MRS South, and AOIs 1 through 8, as shown on Figure 3.

The RI was conducted in these areas to evaluate the nature (type of contamination) and extent of contamination both horizontally and vertically, and evaluate the need for environmental cleanup. After the RI was completed the site was delineated into 17 proposed MRSs (Figure 4). Additionally, various remedial alternatives were evaluated for each of the MRSs to address the cleanup of site contamination and mitigate the potential hazards resulting from past training activities. The results of this RI and the alternative evaluation are summarized in the RI/FS Report (TtEC 2015), available in the Administrative Record. These prior investigations have culminated in the proposed alternatives presented in this Proposed Plan.

SITE CHARACTERISTICS

Current and Future Land Use

As shown on Figure 2, land use at the Camp Swift Range Complex MRS varies widely, but agricultural and private rural residential areas dominate. Current land use at the Camp Swift Range Complex MRS and within the FUDS boundary consists of limited industrial, agricultural, rural residential, the TXARNG Camp, a medical research facility, Bastrop Federal Correctional Institute (BFCI), a power plant, two public parks operated by the Lower Colorado River Authority (LCRA), and two Boy Scouts of America areas. Most of the Camp Swift Range Complex MRS acreage, besides the TXARNG Camp, is rural residential and agricultural. There are over 6,000 parcels of land within the MRS and FUDS boundaries (Bastrop County Appraisal District 2001).

PUBLIC COMMENT PERIOD:
October 16 – November 16, 2015

The U.S. Army Corps of Engineers will accept written comments on the Proposed Plan during the public comment period. Comment letters must be postmarked by November 16, 2015 and should be submitted to:

Mr. Steve Martin
US Army Corps of Engineers
CESWF-PEC-TE
819 Taylor Street, Suite 3A12
Fort Worth, Texas 76012
Email: Steven.G.Martin@usace.army.mil

To request an extension of the public comment period, send a written request to Mr. Steve Martin by **November 9, 2015.**

PUBLIC MEETING:
October 29, 2015, 6:00 – 8:00 pm

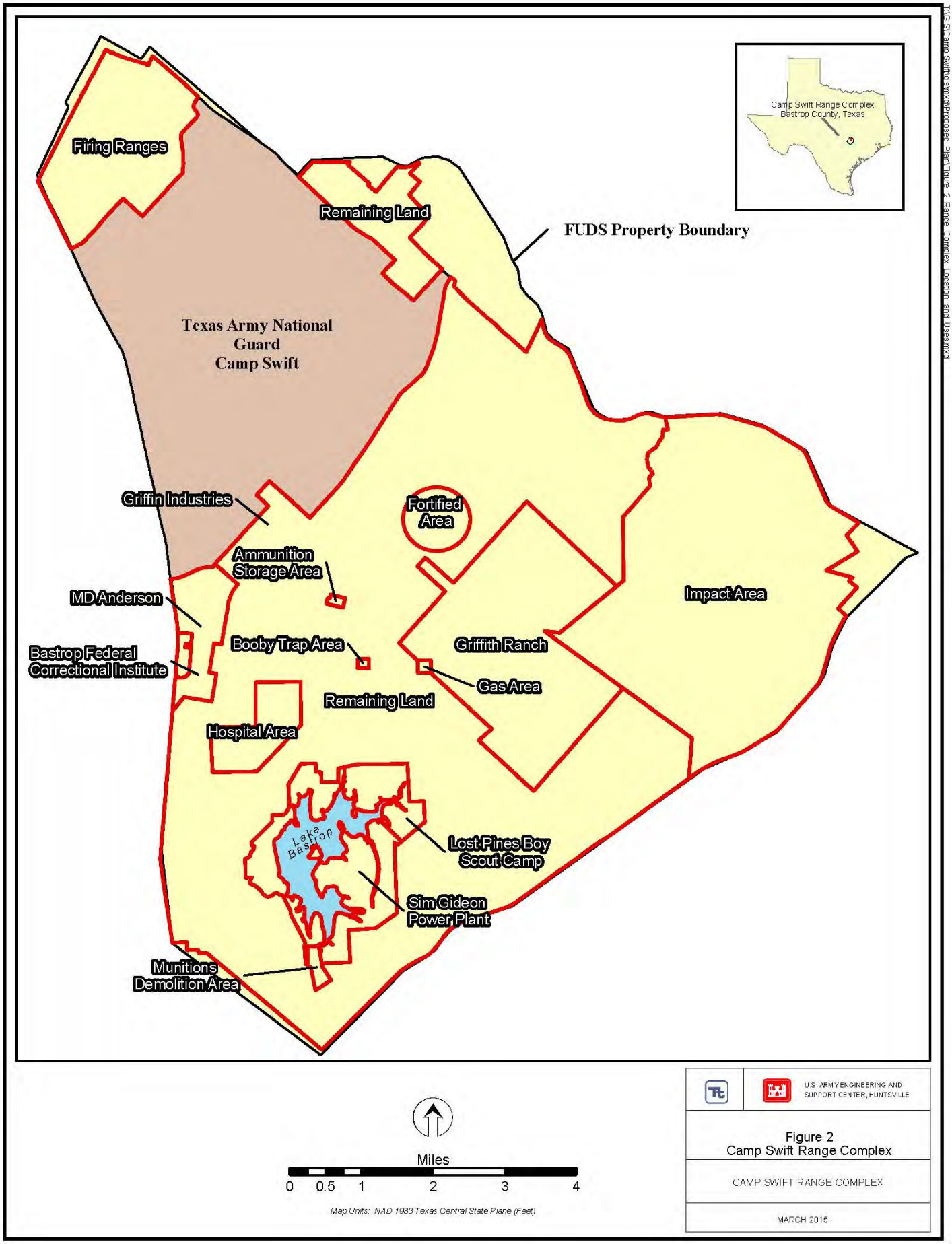
The U.S. Army Corps of Engineers will host a public meeting to explain the Proposed Plan and all of the alternatives resulting from the Feasibility Study (the study completed prior to this Proposed Plan). Oral and written comments will be accepted at the meeting, held at the following location:

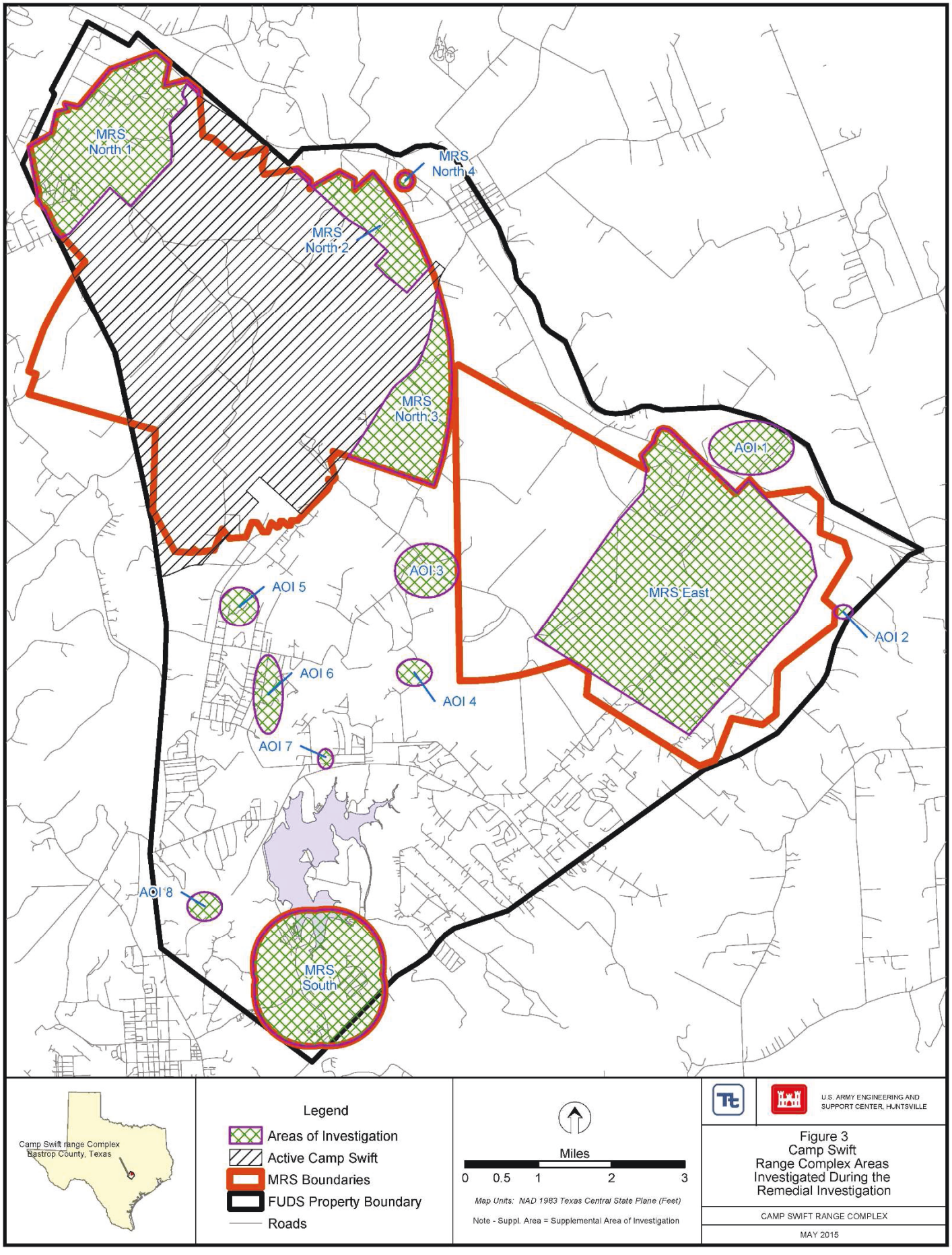
Lost Pines Scout Reservation: Lindsay Lodge
785 FM 1441 Bastrop, TX 78602

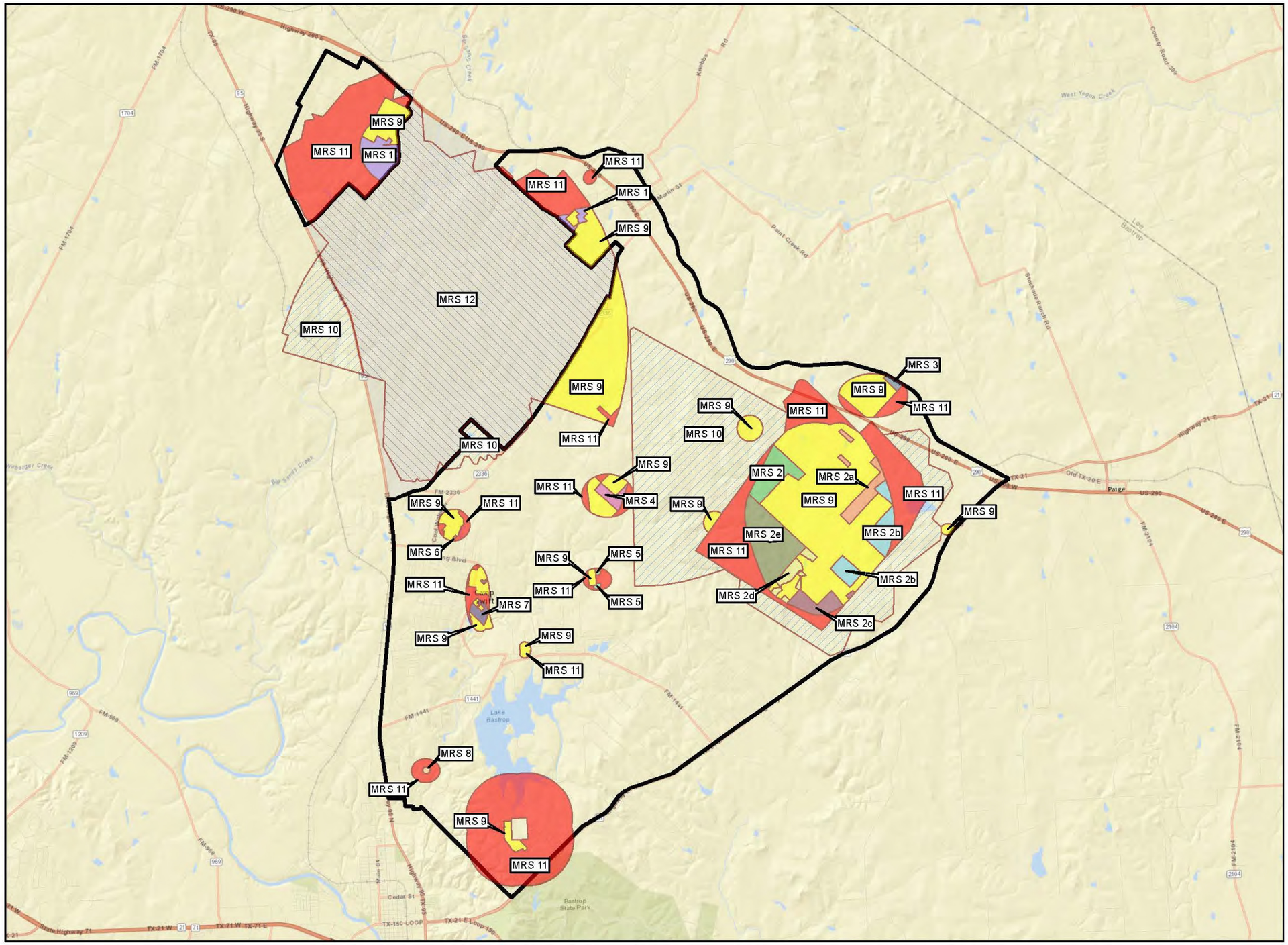
For more information, see the Administrative Record file, which includes a copy of the Remedial Investigation/Feasibility Study, at the following location:

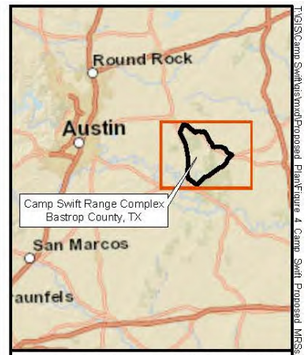
Bastrop Public Library
1100 Church St,
Bastrop, TX 78602

or visit www.formercampswift.com


Camp Swift Range Complex
Bastrop County, Texas
Firing Ranges
Remaining Land
FUDS Property Boundary
Texas Army National Guard Camp Swift
Griffin Industries
Fortified Area
Ammunition Storage Area
MD Anderson
Impact Area
Booby Trap Area
Griffith Ranch
Bastrop Federal Correctional Institute
Gas Area
Remaining Land
Hospital Area
Lake Bastrop
Lost Pines Boy Scout Camp
Sim Gideon Power Plant
Munitions Demolition Area
Miles
0 0.5 1 2 3 4
Map Units: NAD 1983 Texas Central State Plane (Feet)
U.S. ARMY ENGINEERING AND SUPPORT CENTER, HUNTSVILLE
Figure 2
Camp Swift Range Complex
CAMP SWIFT RANGE COMPLEX
MARCH 2015


MRS North 1
MRS North 4
MRS North 2
MRS North 3
AOI 1
AOI 3
AOI 5
MRS East
AOI 2
AOI 6
AOI 4
AOI 7
AOI 8
MRS South
Camp Swift range Complex
Bastrop County, Texas
Legend
Areas of Investigation
Active Camp Swift
MRS Boundaries
FUDS Property Boundary
Roads
Miles
0 0.5 1 2 3
Map Units: NAD 1983 Texas Central State Plane (Feet)
Note - Suppl. Area = Supplemental Area of Investigation
U.S. ARMY ENGINEERING AND SUPPORT CENTER, HUNTSVILLE
Figure 3
Camp Swift
Range Complex Areas
Investigated During the
Remedial Investigation
CAMP SWIFT RANGE COMPLEX
MAY 2015





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Legend

- FUDS Property Boundary
- **Proposed FS MRS Boundaries**
  - MRS 1
  - MRS 2
  - MRS 2a
  - MRS 2b
  - MRS 2c
  - MRS 2d
  - MRS 2e
  - MRS 3
  - MRS 4
  - MRS 5
  - MRS 6
  - MRS 7
  - MRS 8
  - MRS 9
  - MRS 10
  - MRS 11
  - MRS 12

0 1 2
Miles

U.S. ARMY ENGINEERING AND SUPPORT CENTER, HUNTSVILLE

TETRA TECH

CAMP SWIFT RANGE COMPLEX

Figure 4
Camp Swift
Proposed MRSs

MARCH 2015

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SCOPE AND ROLE OF THE RESPONSE ACTION

A response plan and/or action is being developed to address potential MEC at the proposed MRSs. The scope of the response action is to address the potential hazards posed by the presence of MEC at the proposed MRSs**,** ultimately removing these hazards and allowing unrestricted reuse of the land for the intended future use.

The alternatives being considered in this Proposed Plan complement the overall strategy, following EPA guidance, for clearing the property and allowing future use.

SUMMARY OF PREVIOUS INVESTIGATION RESULTS AND SITE BACKGROUND

Extensive historical research, surveys, inspections, investigations, and removal actions have been performed at the Camp Swift Range Complex. The investigations have ranged from review of historical documents to physical characterization of the MRS. There have been 11 previous site investigations, which are listed chronologically below:

- Site Visits and SI (1991)
- Archives Search Report (ASR) (1994)
- Supplement to the ASR (1994)
- Cultural Resources Survey (1996)
- Site Visit (2000)
- Historical Photograph Analysis (2000)
- Engineering Evaluation/Cost Analysis (EE/CA) (2002)
- Phase I Archaeological Investigation (2002)
- Time-Critical Removal Action (TCRA) (2003)
- MMRP Project Realignment (2008)
- Property Owners' Discovery (2009)
- RI (2015)

Site Visits and Site Inspection (USACE 1991): In 1991, two investigations were performed addressing a building demolition/debris removal project and an investigation focused on MEC. The goal of this site visit was to assess the potential for MEC at the Camp Swift Range Complex MRS.

Archives Search Report (USACE 1994a): An evaluation of historical records, interviews, and on-site visual inspections was conducted to characterize the site for potential MEC contamination, including conventional munitions and chemical warfare materiel (CWM). According to the ASR, a study conducted in 1948 recommended specific real estate tracts for surface use only based on historical operations. The ASR divided the Camp Swift Range Complex MRS into eight areas. The potential for munitions hazards was evaluated for each of the areas to assign a classification of confirmed, potential, or unconfirmed munitions presence for each. Confirmed munitions presence was based on verifiable historical evidence or direct witness of munitions since site closure. Based on the information available for the ASR, two of the areas were identified as potentially contaminated and another area was identified as confirmed contaminated.

Supplement to the ASR (USACE 1994b): The supplement to the 1994 ASR concluded that "certain areas appear to require further investigation to determine their suitability for continued use." The ASR Supplement also agreed with the ASR conclusions that further action was necessary at the Camp Swift Range Complex.

Cultural Resources Surveys (Espey 1996, LCRA 1996): There have been two cultural resource surveys with the first identifying ten prehistoric sites and four historic sites and the second identified a total of 18 sites ranging in age from the late Paleo-Indian/Early Archaic period up to and including the mobilization effort for World War II.

Site Visit (Parsons 2000): A site visit was performed in preparation for the EE/CA. According to a summary of the event a live 75mm was discovered and numerous craters were discovered in two areas. No MEC items were observed in a third area visited.

Historical Photograph Analysis (ERDC 2000): Historical aerial photographs were examined for land features that could be indicative of potential munitions-related activities. Features identified in these aerial photographs included berms, buildings, cleared areas, debris areas, depressions, disturbed ground, excavations, and ground scars.

Engineering Evaluation/Cost Analysis (Parsons 2007): An EE/CA field investigation was conducted in 2002. The Camp Swift Range Complex MRS was divided into 16 areas for site characterization purposes, based on past munitions use and land use information.

The total area surveyed measured approximately 214 acres. Digital Geophysical Mapping (DGM) surveys were conducted over a series of meandering paths distributed throughout the site to provide representative coverage. DGM surveys provide data

to identify potential MEC or munitions debris (MD) items in the subsurface. The DGM locates "anomalies" normally caused by buried metal at the site; some of these anomalies have the potential to be buried MEC or an MD item.

A total of 3,124 anomalies were investigated: 13 MEC items and 648 individual pieces of MD were discovered. The remaining 2,476 magnetic anomalies were determined to have been caused by buried utilities, other metal scrap such as barbed wire or metal tent pegs, metal-bearing rocks, and other non-MEC items.

For the EE/CA risk evaluation, the areas were further subdivided into AOIs using land use designations, property ownership boundaries, and the sample locations and results of the EE/CA investigation.

In addition to the items recovered during the EE/CA investigation, landowners have discovered an unexploded 105mm projectile, an unexploded rifle grenade, expended antitank mines, and unexpended antitank mines. The EE/CA Report contained a recommendation to perform investigation in these areas to support granting of potential rights of entry (ROE) in the future. If land is privately owned, written ROE must be obtained before any investigation can occur.

Based on EE/CA investigation results, the highest MEC density was anticipated to be within the former impact area, impact area buffer zone, and demolition area. Since these areas had such a high occurrence of MEC and munitions debris (MD), removal to depth of ordnance and explosives (OE) with land-use controls (LUCs) was recommended for the entire area for each of these areas.

All items were recovered on the surface or at depths of 6 inches or less, and the MEC items were mostly practice antitank mines.

Removal to depth of OE with LUCs was recommended as the response alternative for the 500-foot radius areas around past MEC findings as well as the land within the areas that was formerly part of a firing range. However, these recommended response actions were not implemented because the areas moved to the RI/FS phase.

Public outreach was recommended to help inform visitors and residents of MEC hazards and prevent them from encountering MEC. However, most of these actions have not been implemented because the areas moved to the RI/FS phase. A website was created as part of the RI/FS project (www.formercampswift.com).

A total of approximately 7,000 acres were recommended for response action. Because removal action was recommended for a large number of acres, the site was divided into 14 physically practical and manageable operable units. A prioritization system was recommended to identify the order in which removal actions should be accomplished.

Phase I Archaeological Investigation (Parsons 2003): A Phase I archaeological investigation of selected geophysical anomalies was conducted as part of the EE/CA. Collectively, these data assisted in the determination of high-, medium-, and low-probability areas within the Camp Swift Range Complex MRS for further investigation.

Time-Critical Removal Action (EODT 2003): A 2.36-inch rocket was discovered in one of the areas of the Camp Swift Range Complex. Because of the construction of an elementary school within this area, a TCRA was determined to be required. Although the ordnance and explosive (OE) item found was a practice 2.36-inch rocket, its presence established the potential that other unexploded rockets could be present. The geophysical survey activities covered the entire 21-acre site area and identified 303 anomalies to be intrusively investigated. In addition to the anomalies, several trash pits were discovered during the investigation. The intrusive investigation recovered 9,899 pounds of non-munitions debris and 14 munitions debris items. All of the munitions debris consisted of practice 2.36-inch rockets. The total weight of the 14 rockets was 40 pounds. The munitions debris was submitted to an approved metal-recycling facility, while the non-munitions debris was left stockpiled on the property at the owner's request.

MMRP Project Realignment (USACE 2008): In 2009, the MMRP project was realigned in accordance with the recommendations contained in the MMRP Project Realignment Summary, dated 27 August 2008. After 2009, the MMRP project consisted of a range complex composed of small arms ranges, grenade courts, a mortar range, artillery impact areas, training and maneuver areas, and a demolition area that were identified as eight distinct MRAs.

Based on the planned munitions response, the eight MRAs were combined into a single MRA/MRS to proceed through the RI/FS, which further evaluated potential risks and exposures to determine appropriate response actions. Although the MRA

was investigated as a whole during the RI, the previous investigation data were used to focus the investigation. The sites identified in the EE/CA were used to distinguish areas of the MRA.

Property Owners' Discovery: On June 26, 2009, private property owners discovered an intact, fuzed 75mm high explosive (HE) projectile on their property during routine maintenance activities. The Fort Hood Explosives, Ordnance, and Disposal (EOD) team collected the item and destroyed it at the TXANG Camp.

SUMMARY OF REMEDIAL INVESTIGATION/FEASIBILITY STUDY

The RI/FS was conducted in order to obtain thorough and accurate information to support decision-making regarding future uses of each area. The primary objective of the RI was to accurately characterize the nature and extent of MEC and MC soil contamination within the boundaries of the Camp Swift Range Complex MRS as well as within eight areas of interest (AOIs) (Figure 3) where MEC and/or MD were recovered prior to or during the EE/CA.

Once the field data were collected and analyzed, each area was evaluated for potential future actions in the FS. The FS evaluated remedial alternatives to reduce the potential explosives safety hazards to property owners and the general public. Rights of Entry (ROEs) were obtained for as many areas as possible, but several private land owners did not grant ROEs. The areas where ROEs were not granted were not investigated as part of this RI.

Field Investigation: The intent of the 2013 field effort was to identify areas of higher impact based upon "anomaly count." (Anomaly count is the use of geophysics to locate potential MEC/MD items indicative of historic target training areas.) The field team performed an intrusive investigation in the areas where the anomaly counts were higher in order to determine the extent of potential MEC/MD contamination. Overall, the field team collected DGM and detector-aided reconnaissance (DAR) data over 195.03 acres.

Data were collected in areas where ROEs were acquired and within the boundaries of the agreed-upon investigation areas. The collected data were then analyzed, and grids were placed in areas where a high incidence of subsurface contacts were encountered.

After mapping and data processing, the team performed an intrusive investigation. During intrusive activities, the team cleared 2,571 targets, and disposed of 1 MEC item. The team transported 261 pounds of material documented as safe (MDAS) to American EOD Services, Inc. for final disposition. The soil was sampled for potential contamination in areas that were based on the MD and MEC findings during the RI intrusive investigation and from the previous EE/CA study. Background samples were also taken in areas where MD or MEC was not encountered during the RI and previous investigations.

Only soil was sampled. All samples were analyzed for explosives and targeted metals associated with the munitions used at the range (aluminum, antimony, arsenic, barium, chromium, cobalt, copper, lead, manganese, mercury, molybdenum, nickel, vanadium, and zinc).

No MC explosives compounds were detected within any of the investigated areas where soil sampling was performed. No MC metals compounds were found at levels above background anywhere within the Camp Swift Range Complex MRS during the EE/CA or RI. Accordingly, it is very unlikely that significant releases of MC explosives compounds have occurred within any other parts the MRS.

A total of 13 MC soil samples were collected at 11 locations during the RI. No MC explosives compounds were detected within any of the MRSs or AOIs where soil sampling was performed. These areas included those within the Camp Swift Range Complex MRS where the greatest amount of munitions training activity was historically performed. No MC (metals) were found at levels above background anywhere within the Camp Swift Range Complex MRS during the EE/CA or RI; accordingly, it is very unlikely that significant releases of MC explosives compounds have occurred within any other parts the MRS.

Hazards/Risk Assessments: Three types of hazard and risk assessments were undertaken for the MRSs and AOIs of the Camp Swift Range Complex MRS relative to the observed MEC and/or MC soil contamination and land use in each area: Munitions and Explosives of Concern Hazard Assessments (MEC Has), human health risk assessments, and ecological risk assessments. A MEC HA is performed to analyze the baseline level of potential explosive hazard posed to people from the MEC found in each area.

MEC Has were performed for all areas where MEC was found by private landowners, during the EE/CA investigation, and/or during the RI (i.e., MRS East, MRS South, AOI 1, AOI 5, AOI 6, and AOI 8). MRS East was the only area that scored the highest possible Hazard Level Category of 1. MRS South, AOI 5, and AOI 6 received a Hazard Level Category score of 2, and AOI 1 and AOI 8 had the lowest Hazard Level Category score (i.e., a 3) of the MRSs.

Area of Investigation	MEC HA Score
MRS East	1
MRS South, AOI 5, and AOI 6	2
AOI 1 and AOI 8	3

Screening level human health and ecological risk assessments were performed for all areas for which MC soil sampling data were collected (i.e., MRS North [comprising MRS North 1 and MRS North 2], MRS East, MRS South, AOI 1, AOI 4, AOI 6, and AOI 7). No significant risks to human health or ecological receptors were identified for any of these areas based on the absence of detection of any MC explosives compounds and the low levels of metals detections in the soil that were either lower than the applicable risk-based screening thresholds and/or were consistent with the background levels of the Camp Swift Range Complex MRS.

In summary, the results of the MEC HA alone indicated that MRS East should be assigned the highest priority for further MEC remedial response.

Proposed MRSs: The Camp Swift Range Complex was subdivided into proposed MRSs based upon historical data, field investigation results, and explosive hazard and chemical risk assessments for each area investigated.

During the history of this project, the site has gone through multiple naming nomenclatures for each investigated area. Initially the Formerly Used Defense Sites Management Information System (FUDSMIS) contained 8 MRAs that comprised the Camp Swift Range Complex. FUDSMIS is an online database of quality, up-to-date, and accurate information to support environmental cleanup and restoration projects on FUDS.

In 2009, the MRAs were consolidated into 1 MRA. This MRA, which was then the original Camp Swift Range Complex, was subdivided using different nomenclature during the EE/CA. This nomenclature was carried through the RI. During the RI, MRSs were delineated and renamed for clarity in discussion of each area (Figure 3). At the conclusion of the RI, proposed FUDMIS MRSs were recommended.

Table 1 summarizes the RI MRSs and the revised proposed MRS nomenclature. The MRSs are proposed until accepted and entered into the FUDSMIS.

Basically, the areas that were investigated in the RI that could potentially contain additional MEC and/or MD were retained and renamed with the proposed new MRS nomenclature (Table 1 and Figure 3). If no ROEs were granted, those areas were renamed MRS 9. If no further investigation was warranted, those areas were renamed MRS 11. Areas that were not investigated were renamed either MRS 10 (available for the FUDs program but not evaluated in the FS) or MRS 12 (not available for FUDS funding and recommended for no further action within the FUDS Program).

Almost all of MRS North 3, AOI 2, AOI 7, and portions of the other MRSs and AOIs addressed in the RI, except for MRS North 4 and AOI 8, were combined into MRS 9. As mentioned above, these sites were combined because they remained uncharacterized during the RI because no ROEs were granted by the landowners to allow the planned RI investigation to be performed. These areas will require further characterization due to discovery of MEC and/or MD (AOIs 2 and 7) or because an adjacent area was a range safety fan (MRS North 3) that could contain MEC and/or MD. The footprint of MRS South was reduced significantly because there were no indications of hazardous items during the RI, and its central portion, including the majority of the former demolition area, was grouped into MRS 9 for consideration for further investigation if and when ROEs are obtained.

The no right of entry (NROE) MRS 9 will be established in the FUDSMIS as a separate project and managed under the interim risk management program. Accordingly, this MRS was not evaluated in the FS. MRS 9 comprises privately held land where the property owner refused access for an investigation, rendering these areas NROE.

The EE/CA and RI investigations were focused in the areas that were most likely to have potential contamination. The remaining areas that were not investigated, and were not adjacent to investigated areas where conditions were characterized (therefore, results could not be confidently extrapolated for these areas) were consolidated and renamed MRS 10. These areas were not recommended for evaluation in the FS.

Table 1. Historic and Proposed MRS Nomenclature

Current RI/FS Proposed MRS Nomenclature	Future Proposed FUDSMIS Nomenclature	Previous Area Nomenclature
1	MRS 2: Small Arms Training/Artillery Ranges	MRS North 1 and MRS North 2
2	MRS 4: Main artillery range and impact area/buffer zone	MRS East
2 a	MRS 5: Main artillery range and impact area/buffer zone	MRS East
2 b	MRS 6: Main artillery range and impact area/buffer zone	MRS East
2 c	MRS 7: Main artillery range and impact area/buffer zone	MRS East
2 d	MRS 8: Main artillery range and impact area/buffer zone	MRS East
2 e	MRS 9: Main artillery range and impact area/buffer zone	MRS East
3	MRS 10: Training/Maneuver Area	AOI 1
4	MRS 11: Artillery Range	AOI 3
5	MRS 12: Artillery Range and Gas Training Area	AOI 4
6	MRS 13: Artillery Range and Training/Maneuver Area	AOI 5
7	MRS 14: Artillery Range and Training/Maneuver Area	AOI 6
8	MRS 15: Training/Maneuver Area	AOI 8
9	MRS 16: Uncharacterized Areas NROE	Portions of all MRS/AOI areas (except MRS North 4 and AOI 8)
10	MRS 17: Uncharacterized Areas	Areas not investigated in the EECA or RI
11	MRS 18: No Further Action	Portions of all MRS/AOI areas (including all of MRS North 4)
12	MRS 19: Active Camp Swift	Active Camp Swift boundaries

MRS 11 includes all of the portions of the MRSs and AOIs that did not demonstrate MEC/MD contamination during the EE/CA and RI and were therefore recommended for the no action alternative. MRS 11 contains some acreage from each of the MRSs and AOIs defined for the RI and all of MRS North 4. In addition, the portion of RI MRS South that is southeast of Highway 21 and located outside the FUDS boundary showed no indication of potential hazardous items being present, based on the review of the historical records for this area and the EE/CA findings in adjacent areas northwest of Highway 21. This area was also included in the acreage that should be considered for the no action alternative.

Multiple additional areas were located within the active Camp Swift Range Complex boundaries and were not investigated during the RI. These areas were combined and renamed MRS 12. MRS 12 was recommended for the no action alternative because these areas are ineligible for the FUDS program at this time and will be coordinated with the active component.

SUMMARY OF SITE RISKS / HAZARDS

An encounter with MEC has the potential to result in injury or death. Direct contact (i.e., handling) increases the likelihood that an encounter will result in injury or death. No accepted method exists for establishing the incremental probability for injury or death from an encounter with MEC. If the potential for an encounter with MEC exists, the potential that the encounter will result in death or injury also exists. Consequently, if MEC is known or suspected to be present, some response action will be required to address the MEC.

Results of the RI indicate the potential for MEC items to be present in proposed MRSs 1, 2 (a-e), 3, 4, 5, 6, 7, and 8. All sampling results for MC were below regulatory action limits.

Based on an analysis of the munitions used and the soil type at the proposed MRSs, the estimated maximum penetration depth is 24 inches. MRS 1 has an estimated maximum penetration depth of 24 inches, and MRS 2 (a,b,c,d,e) has an estimated maximum penetration depth of 20 inches; the rest of the MRSs have an estimated penetration depth of 12 inches or less.

REMEDIAL ACTION OBJECTIVES

Remedial Action Objectives (RAOs) are broad administrative goals established for the protection of human health and the environment. The RAO is a result of the remedial action goals developed during the RI.

For the Camp Swift Range Complex, the following RAOs were identified:

1. Ensure protectiveness of site workers and the public during the response action operations.
2. Ensure overall protectiveness of the public after completion of the response action by minimizing, to the extent practical, the potential for the public to be exposed to MEC.
3. Comply with ARARs.

After analysis of the field investigation results, MRS-specific RAOs were developed as summarized in Table 2.

Table 2. Proposed MRS Remedial Action Objectives

MRS	Land Use	Items Found	RAO*
1	Residential, Agricultural	**MD**: expended 4.2-inch mortars; expended 60mm mortars; various mortar fragments; one expended 105mm projectile; expended 2.36-inch rockets; rifle grenades; a cannonball; unspecified fragments confirmed to depth of 24 inches	Perform clearance to remove presence of MEC to depth of 24 inches.
2 (a-e)	Residential, Agricultural	**MEC (UXO or DMM):** 4.2-inch mortars; 81mm mortars; 75mm and 105mm projectiles; 2.36-inch rockets; and antitank mines **MD:** expended 4.2-inch mortars; expended 60mm mortars; expended 81mm mortars; various mortar frag; expended 37mm, 75mm and 105mm projectiles; expended 2.36-inch rockets; rifle grenades; antitank mines; fuzes; multiple unidentifiable fragments confirmed to depth of 20 inches	Perform clearance to remove presence of MEC to a depth of at least 20 inches.
3	Residential, Agricultural	**MEC (UXO or DMM):** an antitank mine and fuze **MD:** many expended antitank mines and associated components confirmed to depth of 12 inches	Perform clearance to remove presence of MEC to a depth of at least 12 inches.
4	Residential, Agricultural	**MEC (UXO or DMM):** No MEC were historically reported or found during the EE/CA or RI. **MD:** 60mm mortars, a rifle grenade, and unidentifiable munitions debris confirmed to depth of 12 inches.	Perform clearance to remove presence of MEC to a depth of at least 12 inches.
5	Residential, Agricultural	**MEC (UXO or DMM):** No MEC were historically reported or found during the EE/CA or RI. **MD:** Expended rifle grenades, expended smoke grenades, and 2.36-inch rockets confirmed to depth of 12 inches.	Perform clearance to remove presence of MEC to a depth of at least 12 inches.
6	Residential, Agricultural	**MEC (UXO or DMM):** 60mm and 81mm mortars and antitank mines **MD:** 60mm mortars and antitank mines confirmed to depth of 12 inches	Perform clearance to remove presence of MEC to a depth of at least 12 inches.
7	Residential, Agricultural	**MEC (UXO or DMM):** Rifle grenades and an antitank mine **MD:** Practice rifle grenades; practice antitank mines; and 2.36-inch rockets confirmed to depth of 12 inches.	Perform clearance to remove presence of MEC to a depth of at least 12 inches.
8	Residential, Agricultural	**MEC:** antitank mines **MD:** an antitank mine confirmed to depth of 12 inches	Perform clearance to remove presence of MEC to a depth of at least 12 inches.
10	Residential, Agricultural	These areas were not part of the focused investigations of the EE/CA and RI.	The RAO is to obtain more data about this MRS in order to properly characterize it.

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs)

Section 121(d) of the Comprehensive Environmental Response, Compensation and Liability Act [42 USC § 9621(d)] states that remedial actions on Comprehensive Environmental Response, Compensation, and Liability Act sites must comply with, or have a waiver for, any 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 and off-site response actions, but administrative requirements (such for permits or record keeping) are not ARARs for on-site response actions.

ARARs identification considers a number of site-specific factors, including the potential remedial action, chemicals at the site, site physical characteristics, and site location.

There are no chemical-specific ARARs requiring removal of MEC to regulatory levels.

While portions of the MRSs are designated as potential critical habitat for the Houston toad, and incidental takes could occur during surface clearance or during detonation of MEC, the incidental takes are not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat as long as "reasonable and prudent measures" are followed and terms and conditions of the Biological Opinion from U.S. Fish and Wildlife Service (Consultation No. 21450-2011-F-0105) are followed and implemented. The prohibition on "take" also applies to other listed species that may be present in the MRSs, though no critical habitat has been designated.

The action-specific ARAR, 40 CFR 264 Subpart X, is applicable for clearance alternatives if a consolidated demolition of MEC items for treatment by OB/OD or blast chamber is performed. There is no indication that performance standards for treatment under RCRA Subpart X in a manner that is protective of human health and the environment could not be achieved through proper engineering and operation. The clearance alternatives are capable of achieving location- and action-specific ARARs.

SUMMARY OF REMEDIAL ALTERNATIVES

Eight response action alternatives were initially identified in the FS (see Section 5.0 of the RI/FS, Tetra Tech EC 2015) as "reasonable measures" for protecting the public and the environment from potential exposure to MEC. These alternatives were initially screened based on effectiveness, implementability, and relative cost. Mass excavation and sifting was considered an Unlimited Use/ Unrestricted Exposure (UU/UE) alternative during the FS; however, it was eliminated because property owners would not be expected to be accepting of the destructive impact this technology would have on their property, especially wooded areas. The eight viable response alternatives were then compared against the NCP nine criteria. Based on this initial screening, alternatives that remained for further consideration as the potential remedy for the Camp Swift Range Proposed MRSs are listed below and are further described in the paragraphs that follow:

- Alternative 1 – No Action
- Alternative 2 – LUCs
- Alternative 3 – Surface Clearance with LUCs
- Alternative 4A – Subsurface Clearance to 1 Foot with LUCs
- Alternative 4B – Subsurface Clearance to 1.5 Feet with LUCs
- Alternative 4C – Subsurface Clearance to 2 Feet with LUCs
- Alternative 4D – Subsurface Clearance to 3 Feet
- Alternative 5A – Subsurface Clearance to 1 Foot Using Digital Electromagnetic Induction (EMI) Systems in Conjunction with Advanced Classification with LUCs
- Alternative 5B – Subsurface Clearance to 1.5 Feet Using Digital EMI Systems in Conjunction with Advanced Classification with LUCs
- Alternative 5C – Subsurface Clearance to 2 Feet Using Digital EMI Systems in Conjunction with Advanced Classification with LUCs
- Alternative 5D – Subsurface Clearance to 3 Feet Using Digital EMI Systems in Conjunction with Advanced Classification

Alternative 1 – No Action: The No Action alternative requires no action at the site. This alternative was evaluated for the Camp Swift Range Complex as a baseline for comparing other alternatives.

Alternative 2 – LUCs: Regulation of land (zoning and deed restrictions) use has not been legislatively delegated to Bastrop County, as such LUCs are reduced to institutional controls and Alternative 2 includes the implementation of a public outreach and education program to provide information to educate the public on the hazards associated with MEC. As required by CERCLA, reviews of the potential hazards to the public and the environment will be performed every 5 years following the completion of the remedial response.

If Alternative 2 is paired with a removal/clearance alternative that provides at least 0.5-foot clearance below the expected or confirmed depth of MEC at that MRS and if after the second review, there is no unacceptable risk, the selected remedy is still protective, and no additional action is warranted, then USACE will recommend that the remedy has met the criteria for UU/UE and no further 5-Year Reviews will be required..

CERCLA and the NCP require a review and reassessment be performed at a site every 5 years once the remedy is complete, for situations where hazardous substances, pollutants, or contaminants were left at levels that do not support UU/UE. The date of the Decision Document (DD) signature will be used to trigger the 5-Year Review period.

The purpose of these reviews is to:

- Ensure public health, safety, and the environment are being protected as a result of the response action implemented.
- Assess new information and determine if additional action is warranted.
- Determine if there are any immediate threats to the public or the environment that may require an immediate or accelerated response.
- Identify new technologies and assess technical practicability in addressing any remaining potential explosive safety hazards.

The results of the 5-Year Review will be documented in a report and presented to the public. If no significant changes have occurred, the site will continue to be monitored at this specified interval. The 5-Year Reviews could continue for 30 years based on the selection of the preferred alternative. During the 5-Year Reviews, if there is concurrence of the stakeholders that UU/UE is met, the 5-Year Reviews will conclude after 10 years if the remedy continues to be protective of human health, safety, and the environment and continues to minimize explosive safety hazards. UU/UE will be recommended if no MEC is discovered during the 5-Year Review.

An expedited 5-Year Review can be performed to evaluate the effects of the 2014 floods on the MRSs at the Camp Swift Range Complex. This review will focus on the impacts the flood may have had upon the RI characterization of each MRS. If the MRS was effected by flooding there is potential for a revision to the preferred alternative. If there are no effects from the flooding on an MRS, the preferred alternative will be implemented. If no MEC is discovered during the 5-Year Review following implementation of the remedial action, UU/UE will be recommended.

Alternative 3 – Surface Clearance with LUCs: Alternative 3 includes surface clearance of all accessible areas within the individual MRS areas. This alternative will require landowners to grant ROE in order for it to be executed. Teams of unexploded ordnance (UXO) technicians will conduct a systematic survey over the area using analog detectors to detect and remove MEC items in the ground surface. MEC items discovered will either be blown-in-place (BIP) or disposed via a consolidated demolition based on acceptability to move. Consolidated demolition will be performed within the area of concern (AOC) (e.g., the grid or close proximity to the location of discovery) and will not require the crossing of public roadways. This alternative will include the LUCs as discussed in Alternative 2.

Alternative 4A – Subsurface Clearance to 1 Foot with LUCs: Alternative 4A includes surface clearance and subsurface clearance to a depth of 1 foot over all accessible areas within the Camp Swift Range Complex MRS. This alternative will require landowners to grant ROEs in order for it to be implemented. Teams of UXO technicians will conduct a systematic survey over the area using analog detectors to detect and remove MEC from the ground surface. Vegetation clearance will be required in some areas, and then a geophysical survey using digital EMI systems will be performed over the entire area. Data collected during the geophysical survey will be processed, and dig sheets will be generated. The UXO teams will then reacquire and intrusively investigate the anomalies identified on the dig sheets. Excavation of the anomalies identified on the dig sheets will be performed by hand. MEC discovered will either be BIP or disposed via a consolidated demolition based on the acceptability to move the discovered item. Consolidated demolition will be performed within the AOC (e.g., the grid or close proximity to the

location of discovery) and will not require the crossing of public roadways. LUCs will be implemented as previously discussed.

Alternative 4B – Subsurface Clearance to 1.5 Feet with LUCs: This alternative includes all of the same elements as Alternative 4A, except the clearance depth is increased to 1.5 feet.

Alternative 4C – Subsurface Clearance to 2 Feet with LUCs: This alternative includes all of the same elements as Alternative 4A, except the clearance depth is increased to 2 feet.

Alternative 4D – Subsurface Clearance to 3 Feet: This alternative includes all of the same elements as Alternative 4A, except the clearance depth is increased to 3 feet and does not include LUCs.

Alternative 5A – Subsurface Clearance to 1 Foot Using Digital EMI Systems in Conjunction with Advanced Classification with LUCs: This alternative includes the surface and subsurface clearance of MEC to a 1-foot depth. This alternative differs from Alternatives 4A – D due to the advanced classification technology that would be employed to identify and classify the anomalies. The advanced classification system will identify the most probable MEC/MD anomalies, thus focusing the intrusive investigation and making it more efficient. Performance of this alternative is dependent upon landowner approval and the granting of an ROE. This alternative will reduce the impact upon the property and expedite the intrusive investigation time. This reduced time in the field and impact upon landowner property could assist with landowner approval of ROEs. Future land uses have the potential for excavations associated with agricultural and construction activities to exceed 2 feet in depth.

Alternative 5B – Subsurface Clearance to 1.5 Foot Using Digital EMI Systems in Conjunction with Advanced Classification with LUCs: This alternative includes all of the same elements as Alternative 5A, except the clearance depth is increased to 1.5 feet.

Alternative 5C – Subsurface Clearance to 2 Feet Using Digital EMI Systems in Conjunction with Advanced Classification with LUCs: This alternative includes all of the same elements as Alternative 5A, except the clearance depth is increased to 2 feet.

Alternative 5D – Subsurface Clearance to 3 Feet Using Digital EMI Systems in Conjunction with Advanced Classification: This alternative includes all of the same elements as Alternative 5A, except the clearance depth is increased to 3 feet and does not include LUCs.

SUMMARY OF PREFERRED ALTERNATIVE

The preferred alternative to address potential MEC contamination within the boundaries of MRS 1, and MRS 2 (a-e) is Alternative 5D (Subsurface Clearance to 3 Feet Using Digital EMI Systems in Conjunction with Advanced Classification) and Alternative 2 (Land Use Control). The preferred alternative for MRS 3, 4, 5, 6, 7, and 8 is Alternative 5B (Subsurface Clearance to 1.5 Feet Using Digital EMI Systems in Conjunction with Advanced Classification with LUCs). The preferred alternative for MRS 11 is Alternative 1 (No Action). A summary of the MRSs and preferred alternatives is presented in Table 3.

Table 3. Preferred Alternatives for the Camp Swift Range Complex MRSs

Proposed MRS	Preferred Alternative
MRS 1 and MRS 2 (a-e)	Alternative 5D and Alternative 2
MRS 3, 4, 5, 6, 7, and 8	Alternative 5B
MRS 11	Alternative 1

MRSs 1 and 2 (a-e) have potential or confirmed MEC/MD findings up to 20 inches and 2 feet. Alternative 5D includes a subsurface clearance to 3 feet using Digital EMI Systems in conjunction with advanced classification. Alternative 5D provides the most long-term effectiveness and permanence for MRSs 1 and 2 (a-e) because it removes MEC to a depth below the deepest MEC/MD found during the previous EE/CA and RI. Alternative 5D includes surface and subsurface clearance to a 3-foot depth over the MRSs.

Although this Alternative was evaluated as the UU/UE alternative because it provides a clearance an additional foot deeper than MEC was confirmed or anticipated, a public outreach component will be added. In addition to the subsurface removal, Alternative 2 (Land Use Controls) will also be implemented focusing on minimizing or controlling potential exposures to the public by informing them of the dangers and educating them on the procedures to follow to avoid and report discovered MEC.

Alternative 2 is paired with a removal/clearance Alternative that provides at least 0.5-foot clearance below the expected or confirmed depth of MEC at that MRS. If after the second review, the selected remedy is still protective and no additional action is warranted,

then the remedy has met the criteria for UU/UE and no further 5-Year Reviews will be recommended.

MRSs 3, 4, 5, 6, 7, and 8 have potential or confirmed MEC/MD findings up to 1 foot. Alternative 5B includes a subsurface clearance to 1.5 feet using Digital EMI Systems in conjunction with advanced classification with LUCs. Alternative 5B provides the most long-term effectiveness and permanence for MRSs 3, 4, 5, 6, 7, and 8 because it removes MEC to a depth below the deepest MEC/MD found during the previous EE/CA and RI. Alternative 5B includes surface clearance and subsurface clearance to a 1.5-foot depth over the MRSs. The subsurface removal and LUCs would follow the same steps as listed above.

Alternative 2 is paired with a removal/clearance Alternative that provides at least 0.5 foot clearance below the expected or confirmed depth of MEC at that MRS. If after the second review, there is no unacceptable risk, the selected remedy is still protective, and no additional action is warranted, then USACE will recommend that the remedy has met the criteria for UU/UE and no further 5-Year Reviews will be required.

MRS 11 was investigated and there were no discoveries of MEC, MD, or soil MC contamination. There was no impact from former Camp Swift activities and MRS 11 is recommended for no further action.

EVALUATION OF ALTERNATIVES

Based on information currently available, it is the lead agency's current judgment that the Preferred Alternatives for each MRS 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 Alternative to satisfy the following statutory requirements of CERCLA Section 121 (b):

- Be protective of human health, safety, and the environment and continue to minimize explosive safety hazards
- Comply with ARARs (or justify a waiver)
- Be cost-effective
- Utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable
- Satisfy the preference for treatment as a principal element (or justify not meeting the preference)

The preferred alternatives for MRSs 1, 2 (a-e), 3, 4, 5, 6, 7, and 8 include a clearance utilizing advanced classification methodology to at least 0.5 foot below anticipated or confirmed MEC depths in each MRS, in addition to a public outreach program. The preferred alternatives for these MRSs would effectively reduce the potential for direct contact with MEC and would resolve the potential for MEC exposure in undisturbed areas in the future.

The preferred alternative for MRS 11 allows the acreage to be returned to full use.

A summary of each proposed MRS, the proposed FUDMIS MRS title, the nomenclature for previous investigations, proposed MRS acreage, recommendation from the RI, the preferred alternative(s), and alternative cost is provided in Table 4.

Table 4. Proposed MRS Alternatives and Costs

Proposed MRS	Acres	Preferred Alternative	Preferred Alternative Cost
1	263.93	Subsurface clearance to 3 feet using digital EMI systems in conjunction with advanced classification with LUCs	$4,009,748
2	237.79	Subsurface clearance to 3 feet using digital EMI systems in conjunction with advanced classification with LUCs	$3,634,697
2 a	157.26	Subsurface clearance to 3 feet using digital EMI systems in conjunction with advanced classification with LUCs	$2,700,040
2 b	264.74	Subsurface clearance to 3 feet using digital EMI systems in conjunction with advanced classification with LUCs	$4,023,754
2 c	145.90	Subsurface clearance to 3 feet using digital EMI systems in conjunction with advanced classification with LUCs	$2,618,936
2 d	107.13	Subsurface clearance to 3 feet using digital EMI systems in conjunction with advanced classification with LUCs	$1,891,757
2 e	495.1	Subsurface clearance to 3 feet using digital EMI systems in conjunction with advanced classification with LUCs	$6,857,453
3	23.05	Subsurface clearance to 1.5 feet using digital EMI systems in conjunction with advanced classification with LUCs	$919,038
4	69.22	Subsurface clearance to 1.5 feet using digital EMI systems in conjunction with advanced classification with LUCs	$1,351,278
5	9.47	Subsurface clearance to 1.5 feet using digital EMI systems in conjunction with advanced classification with LUCs	$826,866
6	1.26	Subsurface clearance to 1.5 feet using digital EMI systems in conjunction with advanced classification with LUCs	$792,571
7	46.02	Subsurface clearance to 1.5 feet using digital EMI systems in conjunction with advanced classification with LUCs	$1,239,715
8	7.09	Subsurface clearance to 1.5 feet using digital EMI systems in conjunction with advanced classification with LUCs	$811,103
9	5016.95	Due to No Right of Entry (NROE), MRS 9 will be established in FUDSMIS as a separate project and ROE will be managed under the interim risk management program and will not be evaluated in the FS.	NA
11	5,645.01	No Action alternative due to characterization around the areas	NA
12	11,053.85	No Further Action (not eligible for the program)	NA

COMMUNITY PARTICIPATION

USACE is providing this information regarding the preferred alternatives for the proposed Camp Swift Range Complex MRSs to the public through public meetings, the Administrative Record file for the site, and announcements published in the newspaper. The 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. Community participation during this process is encouraged and may affect the outcome of the Preferred Alternative. 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 October 29, 2015. Representatives from the USACE and the TCEQ will be present at the meeting to explain the Proposed Plan, hear concerns, and answer questions.

Members of the public may also comment in writing. Written comments will be accepted at the public meeting and throughout the public comment period that ends on November 16, 2015. The comment period can be extended if written request is provided to the contact below.

After considering public comments, the USACE will select the final remedy. The Preferred Alternative 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.

Correspondence should be sent to:

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CESWF-PEC-TE
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Fort Worth, Texas 76012

E-mail: Steven.G.Martin@usace.army.mil

If special correspondence or public meeting accommodations are needed, call 303.980.3529.

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GLOSSARY OF TERMS

Administrative Record	The body of documents that "forms the basis" for the selection of a particular response at a site. Documents that are included are relevant documents that were relied on in selecting the response action, as well as relevant documents that were considered but ultimately rejected. Until the Administrative Record is certified, it shall be referred to as the "Administrative Record file."
Anomaly	Any item that is seen as a subsurface irregularity after geophysical investigation. This irregularity should deviate from the expected subsurface ferrous and non-ferrous material at a site (i.e., pipes, power lines, etc.). Geophysical surveys record anomalies as "counts."
AOC	Area of Concern
AOI	Area of Interest
ARARs	Applicable or Relevant and Appropriate Requirements – Applicable requirements means those cleanup standards, standards of control, and other substantive requirements promulgated under federal environmental, state environmental, or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. Only those state standards that are identified by a state in a timely manner and are more stringent than federal requirements may be applicable. Relevant and appropriate requirements means those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental, state environmental, or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site. Only those state standards that are identified in a timely manner and are more stringent than federal requirements may be relevant and appropriate.
ASR	Archives Search Report – An ASR is a detailed investigation report on 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 (DERP) Formerly Used Defense Site (FUDS). There are four general steps in an archives search: records search phase, Site Safety and Health Plan, site survey, and ASR, including risk assessment. The ASR has since been replaced in the Military Munitions Response Program process by the Historical Records Review.
BFCI	Bastrop Federal Correctional Institute
BIP	Blown-in-Place

BRAC	Base Realignment and Closure – BRAC is a program governing the scheduled closing of DoD sites (Base Closure and Realignment Act of 1988, Public Law 100-526, 02 Stat. 2623, the Defense Base Closure and Realignment Act of 1990, Public Law 101-510, 104 Stat. 1808, etc.).
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act – A statute, commonly known as "Superfund," that provides broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment.
CWM	Chemical Warfare Materiel – An Item Configured as a Munition That Contains a Chemical Substance Intended to Kill, Injure, or Incapacitate.
DAR	Detector-Aided Reconnaissance – Use of a metal detector or another detection device to aid in the visual survey of an investigation area.
DDESB	DoD Explosives Safety Board – The DDESB is the DoD organization charged with promulgating ammunition and explosives safety policy and standards and reporting on the effectiveness of the implementation of such policy and standards.
Decision Document	The Department of Defense has adopted the term Decision Document for the documentation of remedial action (RA) decisions at non-National Priorities List (NPL) FUDS Properties. The decision document shall address the following: Purpose, Site Risk, Remedial Alternatives, Public/Community Involvement, Declaration, and Approval and Signature. A Decision Document for sites not covered by an interagency agreement or Federal facility agreement is still required to follow a CERCLA response. All Decision Documents will be maintained in the FUDS Property/Project Administrative Record file. An Action Memorandum is the decision document for a removal response action.
Defense Sites	Locations that are or were owned by, leased to, or otherwise used by the Department of Defense. The term does not include any operational range, operating storage or manufacturing facility, or facility that is used for or was permitted for the treatment or disposal of military munitions (10 U.S.C. 2710[e][1]).
DGM	Digital Geophysical Mapping
DGPS	Differential Global Positioning System
DMM	Discarded Military Munitions – 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.
DoD	Department of Defense – A federal department that includes the military services.
EE/CA	Engineering Evaluation/Cost Analysis – An EE/CA is prepared for all non-time-critical removal actions (NTCRAs) as required by the NCP. The goals of the EE/CA are to identify the extent of a hazard, identify the objectives of the removal action, and analyze the various alternatives that may be used to satisfy these objectives for cost, effectiveness, and implementability.

EMI	Electromagnetic Induction
EOD	Explosive, Ordnance, and Disposal – The detection, identification, on-site evaluation, rendering safe, recovery, and final disposal of unexploded ordnance and of other munitions that have become an imposing danger, for example, by damage or deterioration.
EPA	United States Environmental Protection Agency – A federal agency whose mission is to protect human health and the environment.
Explosive Hazard	A condition where danger exists because explosives are present that may react (e.g., detonate, deflagrate) in a mishap with potential unacceptable effects (e.g., death, injury, damage) to people, property, operational capability, or the environment.
FS	Feasibility Study – The study evaluates possible remedies using the information generated from the RI. The FS becomes the basis for selection of a remedy that effectively mitigates the threat posed by contaminants at the site.
FUDS	Formerly Used Defense Sites – A facility or site (property) 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.
FUDSMIS	Formerly Used Defense Sites Management Information System
GPS	Global Positioning System
GSA	General Services Administration
HE	High Explosive
HHRA	Human Health Risk Assessment – An evaluation of the risk posed to humans from exposure to contaminants.
HQUSACE	Headquarters USACE
LCRA	Lower Colorado River Authority
LUCs	Land Use Controls – Physical, legal, or administrative mechanisms that restrict the use of, or limit access to, real property to manage risks to human health and the environment. The physical mechanisms (Engineering Controls) encompass a variety of engineered remedies to contain or reduce contamination and/or physical barriers to limit access to real property, such as fences or signs. The non-engineered mechanisms (Institutional Controls) are established to limit human exposure to contaminated waste, soil, or groundwater.

MC	Munitions Constituents – Any materials originating from unexploded ordnance (UXO), discarded military munitions (DMM), or other military munitions, including explosive and non-explosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions (10 U.S.C. 2710[e][3]).
MD	Munitions Debris – Remnants of munitions (e.g., fragments, penetrators, projectiles, shell casings, links, fins) remaining after munitions use, demilitarization, or disposal.
MDAS	Material Documented As Safe – MPPEH 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 MPPEH.
MEC	Munitions and Explosives of Concern – This term, which distinguishes specific categories of military munitions that may pose unique explosives safety risks means: (A) unexploded ordnance (UXO), as defined in 10 U.S.C. 101©(5); (B) discarded military munitions (DMM), as defined in 10 U.S.C. 2710©(2); or (C) munitions constituents (MC) (e.g., TNT, RDX), as defined in 10 U.S.C. 2710©(3), present in high enough concentrations to pose an explosive hazard.
MEC HA	Munitions and Explosives of Concern Hazard Assessment – The MEC HA was created to promote the consistent evaluation of potential explosive hazards to the public at CERCLA and NCP MRSs. The MEC HA includes an automated scoring workbook to facilitate the consideration of information about the MEC found at or associated with a site and the site itself by quantifying the severity of an outcome should a MEC function, accessibility of the area, and sensitivity of the MEC present. These three categories are represented by the classification and size of the MEC, the likelihood that a person can interact or contact an MEC, and the likelihood that the MEC will function or detonate, respectively.
Military Munitions	All ammunition products and components produced for or used by the armed forces for national defense and security, including ammunition products or components under the control of the Department of Defense, Coast Guard, Department of Energy, and 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, and 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 (10 U.S.C. 101[e][4][A] through [C]).
mm	millimeter
MMRP	Military Munitions Response Program

MPPEH	Material Potentially Presenting An Explosive Hazard – Material owned or controlled by DoD that, prior to determination of its explosives safety status, potentially contains explosives or munitions (e.g., munitions containers and packaging material; munitions debris remaining after munitions use, demilitarization, or disposal; and range-related debris) or potentially contains a high enough concentration of explosives that the material presents an explosive hazard.
MRA	Munitions Response Area – Any area on a defense site that is known or suspected to contain UXO, DMM, or MC. Examples include former ranges and munitions burial areas. A munitions response area comprises one or more munitions response sites.
MRS	Munitions Response Site – A discrete location within an MRA that is known to require a munitions response.
NCP	National Oil and Hazardous Substances Pollution Contingency Plan – Revised in 1990, the NCP provides the regulatory framework for responses under CERCLA. The NCP designates the Department of Defense as the removal response authority for munitions hazards.
NRHP	National Register of Historic Places
NROE	No Right of Entry
OE	Ordnance and Explosives
Preferred Alternative	The alternative that, when compared to other potential alternatives, was determined to best meet the CERCLA evaluation criteria and is proposed for implementation at the site.
Proposed Plan	A document specifically prepared for public review and comment that summarizes the feasible remedial alternatives and preferred remedial alternative.
Range	A designated land or water area that is set aside, managed, and used for range activities of the Department of Defense. The term includes firing lines and positions, maneuver areas, firing lanes, test pads, detonation pads, impact areas, electronic scoring sites, buffer zones with restricted access, and exclusionary areas. The term also includes airspace areas designated for military use in accordance with regulations and procedures prescribed by the Administrator of the Federal Aviation Administration (10 U.S.C. 101[e][1][A] and [B]).
RAO	Remedial Action Objective
RI	Remedial Investigation – An investigation to determine the nature and extent of contamination, assess human health and environment risks posed by the contaminants, and provide a basis for the development of response action alternatives.
ROE	Right of Entry
SI	Site Inspection

TCEQ	Texas Commission on Environmental Quality
TCRA	Time-Critical Removal Action – TCRA is a removal action where, based on the site evaluation, a determination is made that removal is appropriate and that less than 6 months exist before on-site removal activity must begin (40 CFR 300.5).
TPWD	Texas Parks and Wildlife Department
TXARNG	Texas Air National Guard
USACE	United States Army Corps of Engineers – A federal agency whose authority includes response to releases or threatened releases of hazardous substances at FUDS.
UU/UE	Unlimited Use/Unrestricted Exposure
UXO	Unexploded Ordnance – Military munitions that (A) have been primed, fuzed, armed, or otherwise prepared for action; (B) have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material; and (C) remain unexploded whether by malfunction, design, or any other cause (10 U.S.C. 101[e][5][A] through [C]).

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