DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (ACC)
HOLLOMAN AIR FORCE BASE NEW MEXICO

15 November 2017

ADAM M. KUSMAK, GS-13, USAF
Chief, Installation Management Flight (49 CES/CEI)
49th Civil Engineer Squadron (49 CES)
Holloman Air Force Base, NM

Attn: Mr. Chuck Hendrickson, Project Manager
RCRA Corrective Action Section (6MM-RC)
U.S. Environmental Protection Agency
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

SUBJECT: Draft-Final Record of Decision SR864 Poorman Range Munitions Response Site Holloman Air Force Base, NM

Dear Mr. Hendrickson,

Holloman AFB is pleased to submit the Draft-Final Record of Decision for the SR864 Poorman Range Munitions Response Site for your review.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have any questions regarding this submittal, please contact me at (575) 572-6675.

Sincerely,

Digitally signed by
KUSMAK.ADAM.M.1263331806
DN: c=US, o=U.S. Government, ou=DoD, ou=PRI, ou=USAF,
 cn=KUSMAK.ADAM.M.1263331806
 Date: 2017.11.15 13:31:13 -07'00'

ADAM M. KUSMAK, GS-13, USAF

Attachment: Draft-Final Record of Decision SR864 Munitions Response Site, Holloman Air Force Base, NM.

cc:
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Santa Fe NM 87505-6303
Albuquerque NM 87102-3400

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RECORD OF DECISION

SR864 POORMAN RANGE MUNITIONS RESPONSE SITE

PERFORMANCE-BASED REMEDIATION
HOLLOMAN AIR FORCE BASE
Contract Number: FA8903-13-C-0008

Prepared for:

AIR FORCE CIVIL ENGINEER CENTER
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Prepared by:

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Oneida, NY 13421

November 2017
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Appendix A  Public Notice
LIST OF ABBREVIATIONS AND ACRONYMS

% percent
°F Fahrenheit
AAAF Alamogordo Army Air Field
AFB Air Force Base
BEEF Prime Base Engineer Emergency Force
bgs below ground surface
CERCLA Comprehensive Environmental Response, Compensation, and Liability Act
CFR Code of Federal Regulations
CHE Chemical Hazard Evaluation
CSE Comprehensive Site Evaluation
CSM Conceptual Site Model
DERP Defense Environmental Restoration Program
DGM Digital Geophysical Mapping
EHE Explosives Hazard Evaluation
EO Executive Order
ESL Ecological Screening Level
FPM FPM Remediations, Inc.
ft foot/feet
HDR HDR Environmental, Operations and Construction, Inc.
HHE Human Health Hazard Evaluation
HHSLS Human Health Screening Levels
HSTT High Speed Test Track
lb pound
LOD Level of Detection
MC Munitions Constituents
MD Munitions Debris
mg/kg milligram per kilogram
MEC Munitions and Explosives of Concern
mm millimeter
MMRP Military Munitions Response Program
MPPEH Material Potentially Presenting an Explosive Hazard
MRA Munitions Response Area
MRS Munitions Response Site
MRSPP Munitions Response Site Prioritization Protocol
NCP National Contingency Plan
NFA No Further Action
PAH Polynuclear Aromatic Hydrocarbons
PP Proposed Plan
ppm parts per million
RCRA Resource Conservation Recovery Act
RI Remedial Investigation
ROD Record of Decision
SARA Superfund Amendments and Reauthorization Act
Shaw Shaw Environmental, Inc.
**LIST OF ABBREVIATIONS AND ACRONYMS (continued)**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>TDS</td>
<td>Total Dissolved Solids</td>
</tr>
<tr>
<td>U.S.</td>
<td>United States</td>
</tr>
<tr>
<td>USAF</td>
<td>United States Air Force</td>
</tr>
<tr>
<td>USEPA</td>
<td>United States Environmental Protection Agency</td>
</tr>
<tr>
<td>WSMR</td>
<td>White Sands Missile Range</td>
</tr>
<tr>
<td>WWII</td>
<td>World War II</td>
</tr>
<tr>
<td>XRF</td>
<td>X-Ray Fluorescence</td>
</tr>
</tbody>
</table>
1.0 DECLARATION

1.1 Site Name and Location

Site Name: Poorman Range

Site Location: Holloman Air Force Base (AFB)

New Mexico, 88330

Enterprise Environmental, Safety, and Occupational Health – Management Information System
Identification Number: SR864.

1.2 Statement of Basis and Purpose

This Record of Decision (ROD) presents the selected remedy for the SR864 Poorman Range Munitions Response Site (MRS), at Holloman AFB, New Mexico, which was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the MRS investigation documents contained in the Administrative Record for this site.

This document is issued by the United States Air Force (USAF), as the lead agency. The USAF is managing remediation of the Munitions and Explosives of Concern (MEC)/Material Potentially Presenting an Explosive Hazard (MPPEH) and Munitions Constituents (MC) at SR864 in accordance with CERCLA as required by the Defense Environmental Restoration Program (DERP) and Executive Order (EO) 12580.

As the lead agency, the USAF has selected the remedy. The United States Environmental Protection Agency (USEPA) concurs with the selected remedy. Regulatory review and concurrence with this decision document is performed by the USEPA, Region 6 - Resource Conservation Recovery Act (RCRA) Corrective Action Section (6MM-RC).

1.3 Assessment of the Site

A baseline risk assessment which describes the nature and extent of the risks posed to human health and the environment by the contamination of the site was not performed as part of the Remedial Investigation (RI). RI included 100% surface clearance, 100% coverage Digital Geophysical Mapping (DGM) to detect subsurface anomalies, and excavation and removal of all subsurface DGM anomalies with responses above the site-specific threshold. Since surface and subsurface clearance was performed across the entire MRS, and since all MEC items discovered during the RI were destroyed, there is no explosive hazard at the MRS associated with MEC. In addition, based on RI MC soil sampling results, there are no human health and ecological risks associated with MC (metals and explosive constituents) at the SR864 MRS, as levels of MCs detected were lower than the residential screening level and were present at levels well within Basewide background concentrations.

1.4 Description of the Selected Remedy

Based on the results of the RI, no unacceptable risks to human health or the environment remain at SR864. Therefore, the USAF has determined that No Further Action (NFA) is required at SR864.
1.5 Statutory Determinations

The previous munitions responses at the SR864 MRS eliminated the need to conduct further remedial action, therefore supporting the NFA determination. The NFA determination is protective of human health and the environment, complies with promulgated federal and state requirements that are applicable or relevant and appropriate to the remedial action, and is cost effective.

NFA results in the SR864 MRS being left in its present condition with no requirement for remedial actions or land use controls. The NFA designation requires no capital or operational and maintenance costs, as well as annual inspections and five-year reviews.

1.6 Data Certification Checklist

The following information is included in the Decision Summary section of this ROD (Section 2.0).

- Current and reasonably anticipated future land use assumptions (Section 2.4)
- Summary of site risks (Section 2.5)
- Selected Remedy (Section 2.7)

Additional information for the SR864 MRS, Holloman AFB, New Mexico can be found in the Administrative Record file for SR864 at the following web address: http://afcec.publicadmin-record.us.af.mil/Search.aspx.
1.7 Authorizing Signatures

This signature sheet documents the USAF approval of the remedy selected in this ROD for the SR864 Poorman Range MRS, Holloman AFB, New Mexico.

SUZANNE W. BILBREY, P.E., GS-15, DAF
Director, Environmental Management Directorate
Air Force Civil Engineer Center

Date
2.0 DECISION SUMMARY

The Decision Summary provides an overview of the site characteristics and previous investigations, identifies the selected remedy, explains how the remedy fulfills statutory and regulatory requirements, and provides a substantive summary of the Administrative Record documents that support the remedy selection decision.

2.1 Site Name, Location and Brief Description

Holloman AFB is located in south-central New Mexico, seven miles west of the city of Alamogordo in Otero County (Figure 2-1). Holloman AFB occupies approximately 50,763 acres of land and is adjacent to the much larger (2.2 million acre) White Sands Missile Range (WSMR). A portion of the Base in the southwest is also contiguous with the White Sands National Monument. The southern portion of Holloman AFB contains the flight line, composed of a series of runways running north-south, east-west, and northeast-southwest. The Main Base is located in the southeast corner of the installation, where Route 70 borders the site. The Main Base contains housing and administrative buildings. The High Speed Test Track (HSTT) runs north-south and is located southwest of the airfield.

The SR864 Poorman Range MRS is 22.80-acre site located east of the Jeep Target Area (Figure 2-2).

2.1.1 Site History

Holloman AFB began nine months after the U.S. entered World War II (WWII), and was an integral facility in the early stages of the U.S. space program throughout the Cold War. On 6 February 1942, construction began on an extensive bombing and gunnery range later known as the Alamogordo Bombing and Gunnery Range. On 10 August 1942, the Alamogordo Army Air Field (AAAF) was officially established. Because the facility was initially intended to be used by Great Britain as part of their WWII British Training Program for bomber crews, the Base was designed after Royal Air Force bases. The first atomic bomb was detonated at the Trinity Site in the northwest corner of the Alamogordo Bombing and Gunnery Range (now the WSMR) on 16 July 1945. In 1946, as more lands became available within the Tularosa Basin, the AAAF was reassigned to be a missile development facility. With the creation of the USAF as a separate service, the facility came under the direction of the Air Materiel Command, which decided that the facility would be used to conduct guided missile programs. On 13 January 1948, the Base was renamed Holloman AFB, after Col. George V. Holloman, an early pioneer in guided missile development.

To support the Holloman mission of developing guided missiles, the Army Ordnance Corps built White Sands Proving Grounds at about this time. The combination of the White Sands Proving Grounds and Alamogordo Bombing Range was 100 miles long and 40 miles wide. On 1 September 1952, the two ranges were combined to form the Integrated White Sands Range. From 1952 to 1970, missile development and testing at White Sands included the Snark Matador, Mace, Falcon, Aerobee, JB-2 Loon, and Firebee missiles. High speed sled tests, high altitude balloon projects, and Aeromedical Field Laboratory experiments were also conducted. Testing activities included the Central Inertial Guidance Test Facility and the Radar Target Scatter Test Facility. In 1972, the Base was taken over by Tactical Air Command and became primarily a fighter base with some continued developmental testing. On 15 November 1991, command responsibility passed from the 833rd Air Division to the 49th Wing. Today, the 49th Wing
provides leadership to the installation. Two projects begun during the Cold War era continue on the Base: the HSTT and the Primate Research Lab (both considered tenant organizations).

Initially, the Poorman Range was identified as 5.40-acre Munitions Response Area (MRA) 864; however, based on the presence of MEC, Munitions Debris (MD), and small arms debris east and west of the original MRA boundary, the size of the area was increased to 22.80 acres and the entire MRA was identified as SR864 MRS at the conclusion of the Comprehensive Site Evaluation (CSE) Phase II (HDR Operations and Construction, Inc., [HDR] 2013).

The MRA 864 is visible on aerial photography from as early as 1945. The Laboratory of Anthropology Site Record describes it as a feature located southeast of the Jeep Target Area consisting of 25 gun placement stations. Each firing station is composed of a constellation of seven concrete pads, including one gun mount pad. The area was used for training using .50 caliber guns and ammunition.

### 2.1.2 Previous Investigations

Previous investigations performed under Military Munitions Response Program (MMRP) at the Poorman Range included:

- Modified CSE Phase I (Shaw Environmental, Inc. [Shaw], 2010),
- CSE Phase II (HDR, 2013), and
- RI (FPM Remediations, Inc [FPM], 2016).

A summary of the previous investigation results is provided below and a summary of MEC and MD found at the SR864 MRS during the CSE Phase II and RI is provided in Table 2-1. As required by the NCP [40 Code of Federal Regulations (CFR) 300.800(a)], each of these technical documents are on file as part of the Administrative Record.

#### 2.1.2.1 Modified CSE Phase I

A Modified CSE Phase I was completed in 2010. Prior to the start of the CSE Phase I, no MRAs had been discovered at Holloman AFB and it was believed that there was a low probability of a significant number of MRAs being found at the base. Therefore, the USAF has modified the CSE Phase I process by deferring some actions typically performed in a Phase I, to the CSE Phase II, if a Phase II is required. For this Modified CSE Phase I, it was determined that a Conceptual Site Model (CSM) and Munitions Response Site Prioritization Protocol (MRSPP), and Hazard Ranking System scoring elements were not required. The activities performed during the CSE Phase I included identification and review of data repositories located both on and off the installation, interviews with base personnel, and visual surveys.

The location of the 5.40-acre Poorman Range MRA 864 was initially based on the 1951 Runway 8 Taxiway Marking, Project Location Plan; however, review of the 1945 aerial photography revealed several discrepancies between the figure and the site layout. The location of the MRA 864 was ultimately georeferenced from the 1945 aerial photograph.

Due to the inaccurate location provided by the 1951 Project Location Plan, a visual survey of the MRA 864 location was not performed during the Modified CSE Phase I. Based on available information, it was concluded that historical small arms use at the Poorman Range MRA 864 may have resulted in the presence of MD and MC on the ground surface and possibly below the
ground surface. Therefore, the MRA 864 was recommended for further evaluation during the CSE Phase II.

2.1.2.2 Comprehensive Site Evaluation Phase II

A CSE Phase II (HDR, 2013) was conducted to determine whether the Poorman Range (MRA 864) warranted further munitions response action. The field activities performed during this study included detector-aided (i.e., White’s Electromagnetic DFX 300 metal detector) visual surveys and environmental sampling of surface soils to determine if MC (i.e., metals and explosive constituents) have been released into the environment.

A Visual survey was completed at the 5.40-acre Poorman Range MRA 864. Observed firing pads were relatively intact and 25 firing stations were present on the area. Remnants of wooden tow carts were also present on the area. Since small arms debris and MD were observed across the entire MRA, the visual surveys were extended to the east and west of the MRA boundary.

The following items were observed during the visual survey:

- **MEC** – two intact M18 smoke grenades, two intact M116A1 hand grenade simulaters, and one intact M115A2 ground burst simulator;
- **MD** - expended M18 smoke grenades, hand grenade simulators, and artillery simulators;
- Clay target debris;
- Small arms debris - .50 caliber casings and links near the firing stations, 5.56-millimeter (mm) and 7.62-mm blanks; and
- M16 magazine clip full of 5.56-mm blanks.

It was concluded that MEC and MD items as well as 5.56-mm and 7.62-mm blanks originate from Prime Base Engineer Emergency Force (BEEF) training activities associated with the active Jeep Target Area (**Figure 2-2**).

Eighteen surface soil samples were collected and analyzed for lead using X-Ray Fluorescence (XRF). Lead analysis results for surface soil ranged from below Level of Detection (LOD) (12 milligram [mg]/kilogram [kg]) to 25 mg/kg. Of the 18 surface soil samples collected, 15 were below LOD (12 mg/kg). No samples exceeded the Residential Human Health Screening Level (HHSL) of 400 mg/kg. Maximum and mean lead concentrations exceeded the Ecological Screening Level (ESL) for only the most sensitive ecological receptor category. The maximum and mean lead concentrations at MRA 864 were within the typical New Mexico lead background range. Therefore, it was concluded that lead does not pose human health and ecological risk at the MRA 864.

Eight surface and two subsurface samples were collected and analyzed for Polynuclear Aromatic Hydrocarbons (PAH) analysis. No results exceeded the HHSL. Concentrations of High Molecular Weight PAHs and Low Molecular Wight PAHs were less than their respective ecological screening benchmarks. Therefore, it was concluded that PAHs do not pose human health and ecological risk at the MRA 864.

Based on the surface MD present outside the original MRA boundary, the overall acreage of the Poorman Range MRA 864 increased from 5.40 acres to 22.80 acres at the conclusion of the CSE Phase II (**Figure 2-2**).
The site was also prioritized for further munitions response actions, based on relative risk, using the MRSPP scoring system. The MRS Priority is determined by selecting the highest rating from the Explosives Hazard Evaluation (EHE), Chemical Hazard Evaluation (CHE), and Human Health Hazard Evaluation (HHE) modules and ranges from 1 to 8. Priority 1 and 8 indicate the highest and the lowest potential hazards, respectively. Only a site with a chemical warfare hazard can receive an MRS Priority of 1.

The identified 22.80-acre SR864 MRS obtained an MRSPP score of 6 and was recommended for further munitions response action. The relatively low potential hazard priority score of 6 was based on the historical operation of the site (i.e., small arms range) that does not include the use of munitions with high explosives, as well as on types of MEC identified during the CSE Phase II that are not classified as munitions with high explosives.

Table 2-1  Summary of MEC and MD items Discovered during CSE Phase II and RI at SR864 MRS

<table>
<thead>
<tr>
<th>Site</th>
<th>Acreage</th>
<th>MEC</th>
<th>MD</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR864 MRS based on CSE Phase II</td>
<td>22.80</td>
<td>Two intact M18 smoke grenades, two intact M116A1 hand grenade simulators, and one intact M115A2 ground burst simulator</td>
<td>Expended M18 smoke grenades, hand grenade simulators, and artillery simulators</td>
</tr>
<tr>
<td>SR864 MRS based on RI</td>
<td>22.80</td>
<td>Two M18 smoke grenades</td>
<td>M18 smoke grenade pieces, grenade spoons, and one trip flare bracket</td>
</tr>
</tbody>
</table>

2.1.2.3 Remedial Investigation

An RI (FPM, 2016) was conducted at the 22.80-acre SR864 MRS to characterize the nature and extent of hazards associated with MEC and MC contamination. The RI was completed by performing detector-aided surface clearance and a DGM survey of the entire MRS footprint. DGM surveys create images of underground objects and can be used to determine which objects are likely to be munitions items. This was followed by intrusive investigation of all DGM anomalies, and MC sampling.

Two MEC items (two M18 smoke grenades) were found and destroyed and 77 pounds (lbs) of MD (smoke grenade pieces) and small arms debris were removed from the MRS during the 100 percent coverage surface clearance. Surface MEC locations and surface MD distribution are shown in Figure 2-3.

The 100 percent coverage DGM survey identified 994 discrete subsurface anomalies above the site-specific threshold (7 millivolts) and 11 high anomaly density areas within the MRS (Figure 2-4).

All subsurface anomalies were intrusively investigated, meaning they were excavated. No MEC was found and a total of 2.5 lbs of MD was recovered during intrusive activities (Figure 2-5). Identified MD included M18 smoke grenade pieces, two grenade spoons, and one trip flare bracket.
bracket. Small arm debris found (23.5 lbs) consisted of 5.56 and 7.62mm, .50, .45, and .30 caliber bullet casings and blanks. In addition, 3,275 lbs of cultural (e.g., construction) debris was removed from the MRS during the subsurface clearance.

Three soil samples were collected during the RI, two samples at the confirmed MEC find locations and one sample at the location where the two MEC items were destroyed by detonation. The analytical results were compared against the USEPA residential Regional Screening Levels, the New Mexico Environment Department Residential Soil Screening Levels and the Los Alamos National Laboratory ecological benchmarks.

Explosive constituents were not detected in any of the soil samples. Metals were detected at concentrations below their respective Basewide background concentrations, and well below their respective HHSLS and ESLs. Based on MC sampling results, it was concluded that there are no human health and ecological risks related to MC, and that further human health and ecological risk evaluation of MC in soil at the SR864 MRS was not necessary.

Based on the RI results, the 22.80-acre SR864 MRS obtained an MRSPP score of 8 and was recommended for NFA for both MEC and MC.

### 2.2 Community Participation

NCP Section 300.430(f)(3) establishes a number of public participation activities that the lead agency must conduct following preparation of the Proposed Plan (PP) and review by the support agency. Components of these items and documentation of how each component was satisfied for the SR864 MRS are described in Tables 2-2 and 2-3 below.

**Table 2-2 Public Notification of Document Availability**

<table>
<thead>
<tr>
<th>Requirement:</th>
<th>Satisfied by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notice of availability of the PP must be made in a general circulation major local newspaper.</td>
<td>Notice of availability was published in the Alamogordo Daily News newspaper which is circulated in the Alamogordo area.</td>
</tr>
<tr>
<td>Notice of availability must include a brief abstract of the PP which describes the alternatives evaluated and identifies the preferred alternative (NCP Section 300.430(f)(3)(i)(A)).</td>
<td>Notice of availability provided in Appendix A to this ROD included all of these components with the exception of the date and location of a public meeting.</td>
</tr>
<tr>
<td>Notice of availability should consist of the following information: • Site name and location • Date and location of public meeting • Identification of lead and support agencies • Alternatives evaluated in the detailed analysis • Identification of preferred alternative • Request for public comments • Public participation opportunities including: o Location of information repositories and Administrative Record file o Methods by which the public may submit written and oral comments, including a contact person</td>
<td>The PP stated that based on the level of interest, the USAF may hold a public meeting. The PP further identifies how the public meeting will be announced and, if scheduled, the location of the public meeting. Since a public meeting was not requested, one was not held.</td>
</tr>
</tbody>
</table>
Table 2-3  Public Comment Period Requirements

<table>
<thead>
<tr>
<th>Requirement:</th>
<th>Satisfied by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead agency should make document available to public for review on same date as newspaper notification.</td>
<td>Document was made available to the public on May 31, 2017. The notification of availability was made on May 31, 2017.</td>
</tr>
<tr>
<td>Lead agency must ensure that all information that forms the basis for selecting the response action is included as part of the Administrative Record file and made available to the public during the public comment period.</td>
<td>Holloman AFB maintains the Administrative Record file for SR864. All data collected and all CERCLA primary documents produced for SR864 are maintained as part of this file which is available to the public electronically at the following web address: <a href="http://afcec.publicadmin-record.us.af.mil/Search.aspx">http://afcec.publicadmin-record.us.af.mil/Search.aspx</a>.</td>
</tr>
<tr>
<td>CERCLA Section 117(a)(2) requires the lead agency to provide the public with a reasonable opportunity to submit written and oral comments on the PP. NCP Section 300.430(f)(3)(i) requires the lead agency to allow the public a minimum of 30 calendar days to comment on the PP and other supporting information located in the Administrative Record and information repository.</td>
<td>The USAF provided a public comment period for the PP from May 31, 2017 to June 29, 2017.</td>
</tr>
<tr>
<td>The lead agency must extend the public comment period by at least 30 calendar days upon timely request.</td>
<td>The USAF received no requests to extend the public comment period.</td>
</tr>
<tr>
<td>The lead agency must provide the opportunity for a public meeting to be held at or near the site during the public comment period. A transcript of this meeting must be made available to the public and be maintained in the Administrative Record and information repository for the site (pursuant to NCP Section 300.430(f)(3)(i)(E)).</td>
<td>A public meeting was not requested during the public comment period.</td>
</tr>
</tbody>
</table>

No comments were received during the public comment period. Holloman AFB maintains an existing base-wide community relations plan. All documents related to SR864 are part of the Administrative Record for Holloman AFB and are maintained in the information repository.

2.3  Site Characteristics

2.3.1  Climate

Holloman AFB is located in a semi-arid region within the northern portion of the Chihuahuan Desert. Its climate resembles other semi-arid regions with warm to hot summer days, cool nights, and mild winters. Monthly mean high temperatures range from 55 degrees Fahrenheit
(°F) in January to 93.6°F in August. Monthly mean low temperatures range from 29°F in January to 66°F in July. Evapotranspiration is usually high due to dry air, large daily solar radiation totals, seasonally high winds, and warm temperatures. Seasonal fluctuation in precipitation rates is a result of prevailing wind directions, which can bring in frontal storms from the north or the Pacific or Caribbean cyclonic systems. Holloman AFB averages 13.20 inches of annual rainfall. Nearly half of this amount falls within the months of July through September, known as the summer monsoons. Monsoon thunderstorms are generally short in duration and high in intensity. Occurrences are highly variable from year to year and one or two short-term events may contain a large percentage of the net annual precipitation.

2.3.2 Topography

Holloman AFB lies within the Tularosa basin of south-central New Mexico. This area is part of the Mexican Highland section of the Basin and Range physiographic province and is characterized by fault block mountains interspersed with low desert plains and basins. The Base lies on relatively flat alluvial plains below the Sacramento Mountains. These plains are bordered to the west by the White Sands dune field. Elevations range from 4,000 to 4,250 feet (ft) above mean sea level (HDR, 2013).

The SR864 MRS exhibits relatively flat topography.

2.3.3 Soils

The soils on Holloman AFB are basin fill deposits formed primarily from alluvial and eolian processes. All soils have a high gypsum and salt content, primarily due to the eastern migration of gypsum sands from WSMR and White Sands National Monument. Alluvial floodplains on the eastern and southern portions of the base are basin fill deposits from the western slope of the Sacramento Mountains. Subsoils, or undersoils, are formed from sediments of Lake Otero, a Pleistocene lake formed during a climatic cycle of increased moisture. During periods of low precipitation, this large lake, reaching a depth of several hundred feet, would contract and leave salt and gypsum evaporates. Holloman AFB has three primary soil types: several associations and complexes of Holloman, Gypsum Land, and Yesum soils, located in the flats; Dune Land, found in the White Sands dunes; and Mead silty clay loam soil, found in the alluvial floodplains (including most jurisdictional wetlands). None of the soil types are very productive, due to high gypsum and salt content, and all are highly subject to both wind and water erosion when the vegetation is sparse or the soil is exposed.

Soils at SR864 MRS consist of Yesum Sandy Loam.

2.3.4 Geology

Holloman AFB is located in the Tularosa Basin, a downfaulted, closed, intermountain basin located in the southern portion of the Rio Grande Rift. The Tularosa Basin is a bolson, which is a basin with no surface drainage outlet, in which sediments are carried by surface water into the closed basin and deposited (Bhate, 2007). The Tularosa Basin is thought to have formed approximately 35 million years ago as a result of faulting, with the most recent formational activity having occurred as recently as 10,000 years ago. Basin fill of the Tularosa Basin is derived from the erosion of the uplifted material and fluvial deposits from the Rio Grande River. The Basin fill consists of unconsolidated coarse- to fine-grained alluvial fan deposits along the rims of the basin that are gradational toward the basin into finer-grained alluvial, fluvial, and lacustrine deposits. Evaporite materials, such as selenite, are present. Prominent local
physiographic features include the Sacramento Mountains to the east, San Andres Mountains and White Sands National Monument to the west. The Tularosa Basin was formed as a structural trough during the Middle to Late Cenozoic era. Alluvial fill deposition includes sand, gravel, and clay in alluvial fans along the basin margins and extensive lake, alluvial, and evaporate deposits within the interior basin.

2.3.5 **Hydrogeology**

Streams sustained by groundwater discharge within the basin include Salt Creek and Malpais Spring. It is estimated that the groundwater resources of the Tularosa Basin contain over 100 million-acre feet of brackish groundwater. A wide range of water chemistries including sodium chloride, carbonate, and sulfate-based brine waters exist in the basin and water with salinity from 1,000 parts per million (ppm) Total Dissolved Solids (TDS), approximate to fresh water, to over 20,000 ppm TDS, approximate to sea water, can be found within the basin. The predominance of groundwater occurs as an unconfined aquifer in the unconsolidated deposits of the central basin. The primary source of groundwater recharge is percolation of rainwater and a minor contribution from stream run-off along the western edge of the Sacramento Mountains. Beneath Holloman AFB, groundwater ranges from 5 to 50 ft below ground surface (bgs). Groundwater flow is generally toward the southwest with localized influences from the variations in Base topography with shallower groundwater found on the southern end of the Base (HDR, 2013).

2.3.6 **Hydrology**

The only permanent water in the Tularosa Basin is found in small streams between Alamogordo and Three Rivers, New Mexico. There are no perennial streams within Holloman AFB or in the nearby surrounding landscape; however, a set of perennial pools exist within the Base. They are the final one-third of the Lost River, a set of pools near the confluence of Ritas and Malone Draws, and the Salt Lakes just south of the Lost River and Camera Pad Road Pond. The Rio Grande, located west of the San Andres Mountains, and the Pecos River, east of the Sacramento Mountains, are the closest perennial rivers in the region. There are at least nine prominent east-west drainages that receive intermittent flows during seasonal thunderstorms. The largest of these drainages is the Lost River drainage system, including alone Draw, Carter Draw, and Ritas Draw. Prior to extensive management of the surface topography and construction of U. S. Highway 70/82, Dillard Draw emptied into the Main Base, creating a network of flats and playas including what are now Lake Holloman, Stinky Playa, and Pond G. Construction activities have disrupted the natural flow of this wetland ecosystem (HDR, 2013).

There are no wetlands or surface water associated with the SR864 MRS.

2.3.7 **Vegetation**

The vegetation of Holloman AFB is consistent with that of the Tularosa Basin and includes mesquite, creosote bush, and grasses. Succulents such as cactus, agave, and yucca also occur. Sensitive species that currently receive no federal protection include lichen (A. clauzadeana), proposed for rare and endangered listing and the grama grass cactus, included due to its former candidate status (HDR, 2013).

Vegetation within the SR864 MRS is consistent with desert scrubland.
2.3.8 Ecological Profile

No federally listed species covered under the Endangered Species Act currently reside at Holloman AFB. Several federally listed species, however, have been observed at the base in the past. Mountain plover (proposed federally threatened) nested at Lake Holloman during the 1980s. Brown pelicans (recently delisted) are occasionally observed at Lake Holloman and the constructed wetlands. Peregrine falcons (recently delisted) regularly forage at Lake Holloman. Five other sensitive species currently receive no federal protection: a lichen (A. clauzadeana), proposed for rare and endangered listing; the grama grass cactus, included due to its former candidate status; the White Sands pupfish, a state-endangered species; the western burrowing owl, a species of concern; and the western snowy plover, also a species of concern.

According to the Integrated Natural Resource Management Plan (Holloman AFB, 2015), no rare, threatened or endangered species are expected to inhabit the SR864 MRS.

2.3.9 Cultural and Archaeological Resources

According to Integrated Cultural Resources Management Plan (Holloman AFB, 2010), the SR864 MRS does not contain archaeological or cultural resources.

2.3.10 Buildings, Structures, and Utilities Near/Within the MRS

No buildings are located at the SR864 MRS. There are 101 buildings within a two-mile radius of the site. Operational mission support, recreational, and flight line support buildings are located to the southeast of the SR864 within a four-mile radius.

2.3.11 Conceptual Site Model

Since 100% surface clearance and subsurface removal of all anomalies above the site-specific threshold was completed during the RI at SR864, all MEC exposure pathways are incomplete for this site for all human receptors: authorized Base personnel and contractors, Base residents, visitors, recreational users and trespassers.

No explosive compounds were detected in soil samples collected during the RI at SR864. Detected concentration of 7 metals in soils were below their respective HHSLs and ESLs. As a result, there are no complete exposure pathways for MC at the SR864 MRS.

2.4 Current and Potential Future Land Uses

The SR864 Poorman Range MRS area is currently unused and according to Installation Development and Design (Holloman AFB, 2011), the long term planned use of this site is open space. Access to Holloman AFB requires admittance through the security gate and there is a fence around the Base. The site is located north of gates IP-7 and IP-8, which are secured with combination locks. This is the most direct method of access; however, the barrier is incomplete as the site may be accessed using a rutted dirt road to the north. Therefore, access to the SR864 MRS is restricted for the general public, but is open to Base personnel, contractors, Base residents, recreational users, visitor, and trespassers.

2.5 Summary of Site Risks

A baseline risk assessment which describes the nature and extent of the risks posed to human health and the environment by the contamination of the site was not performed as part of the RI. Since surface and subsurface clearance was performed across the entire MRS, and since all MEC items discovered during the RI were destroyed, there is no explosive hazard at the MRS.
associated with MEC. In addition, based on RI MC soil sampling results, there are no human health and ecological risks associated with MC (metals and explosive constituents) at the SR864 MRS, as levels of MCs detected were lower than the residential screening level and were present at levels well within Basewide background concentrations.

2.6 Principal Threat Wastes

The NCP expects that treatment that reduces the toxicity, mobility, or volume of the principal threat wastes will be used to the extent practicable. The principal threat concept refers to the source materials at a CERCLA site considered to be highly toxic or highly mobile that generally cannot be reliably controlled in place or present a significant risk to human health or the environment should exposure occur. A source material is material that contains hazardous substances, pollutants or contaminants that act as a reservoir for migration of contamination to groundwater, surface water, or air, or that acts as a source for direct exposure. At the conclusion of the RI, it was determined based on the sampling results and the exhaustive intrusive investigation at the SR864 MRS, there are no principle threat wastes remaining at the site.

2.7 Selected Remedy

The USAF has selected NFA for both MEC and MC at the SR864 MRS since the site does not pose a risk to human health and the environment. This NFA designation requires no land-use controls or restrictions, no capital, operational, or maintenance costs, and no annual and five-year reviews. An NFA recommendation for the SR864 MRS is supported by the following facts:

- All MEC was removed from the MRS during the 100% surface and subsurface clearance of the site during the RI.
- Based on MC (metals and explosive constituents) sampling results, there are no unacceptable risks to human health and the environment posed by the very low levels of contamination at SR864.

2.8 Documentation of Significant Changes

As described in Section 2.2, the PP for the SR864 MRS was released for a 30-day public comment period beginning on May 31, 2017. This PP identified an NFA recommendation for the MRS. No comments were received over the public comment period between May 31 and June 29, 2017, therefore, no changes to the conclusions or procedures outlined in the RI report (FPM, 2016) and PP (FPM, 2017) for this site were required, and no public meeting was held.
3.0 RESPONSIVENESS SUMMARY

This section provides a summary of the public comments regarding the PP for NFA at the SR864 Poorman Range MRS and Holloman AFB and AF response to comments.

A public meeting was solicited if warranted, however no written comments were received during the public comment period. A copy of the public notification is provided in Appendix A.

3.1 Stakeholder Comments and Lead Agency Responses

The USEPA concurred with the conclusions and recommendations in the PP. No comments on the PP were received.

3.2 Technical and Legal Issues

No technical or legal issues were identified during the public review period of the PP.
4.0 REFERENCES


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FIGURES
NOTES:
Coordinate System: NAD 1983 UTM Zone 13N
Projection: Transverse Mercator
False Easting: 500,000.0000
Central Meridian: -105.0000
Scale Factor: 0.9996
False Northing: 0.0000
Latitude of Origin: 0.0000
Units: Meter
Base Map Date: (c) 2010 Microsoft Corporation and its data suppliers
Base Map Source: ESRI Online Bing Data Source

1 inch = 12,000 feet
0 1,500 3,000
0 6,000 12,000

Performance Based Remediation
New Mexico-Arizona
Holloman Air Force Base
Alamogordo, NM
AFCEC

FIGURE 2-1
Holloman Air Force Base Location
2017
NOTES:
Revision Date: 8/6/2017
Coordinate System: NAD 1983 UTM Zone 13N
Projection: Transverse Mercator
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -105.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter
Base Map Date: (c) 2010 Microsoft Corporation and its data suppliers
Base Map Source: ESRI Online Bing Data Source
1 inch = 250 feet

Legend
MRA 864
Poorman Range
Original Boundary
(5.4 acres)
SR864 MRS
Poorman Range Revised
Boundary Based on
CSE Phase II (22.8 acres)
Jeep Target Area
Installation Boundary

Performance Based Remediation
New Mexico-Arizona
Holloman Air Force Base
Alamogordo, NM
AFCEC

FIGURE 2-2
SR864 Poorman Range
MRS Location

2017
NOTES:
Coordinate System: NAD 1983 UTM Zone 13N
Projection: Transverse Mercator
Horizontal Datum: North American 1983
Central Meridian: -105.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter
Base Map Date: © 2010 Microsoft Corporation and its data suppliers
Base Map Source: ESRI Online Bing Data Source
Revision Date: 8/6/2017

1 inch = 250 feet

Legend
- MEC, M118 Smoke Grenade
- Approximate MD Weight (lbs)
- Removed from One Grid
- SR864 MRS
- Poorman Range (22.8 acres)
- Jeep Target Area
- Grid for Surface Clearance
- Installation Boundary

FIGURE 2-3
Surface MEC Locations and Surface MD Distribution
SR864 MRS
Performance Based Remediation
New Mexico-Arizona
Holloman Air Force Base
Alamogordo, NM
AFCEC

2017
NOTES:

Revision Date: 8/6/2017

Coordinate System: NAD 1983 UTM Zone 13N
Projection: Transverse Mercator
False Easting: 500,000.0000 False Northing: 0.0000
Central Meridian: -105.0000 Scale Factor: 0.9996
Latitude Of Origin: 0.0000 Units: Meter
Base Map Date: (c) 2010 Microsoft Corporation and its data suppliers
Base Map Source: ESRI Online Bing Data Source

1 inch = 160 feet

Performance Based Remediation
New Mexico-Arizona
Holloman Air Force Base
Alamogordo, NM
AFCEC

FIGURE 2-5

Locations of Subsurface MD and SD SR864 MRS
APPENDIX A

Public Notice
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AFFIDAVIT OF PUBLICATION

ALAMOGORDO,
STATE OF NEW MEXICO
COUNTY OF OTERO. ss.

I, KIM HERRERA, being duly sworn, on my oath say that I am the Legal Coordinator of the Alamogordo Daily News, a newspaper of daily circulation, published and printed in the English language at the City of Alamogordo, Otero County, and State of New Mexico. That the Alamogordo Daily News has been regularly published and issued for more than nine months prior to the date of the first publication hereinafter mentioned.

That the attached notice was published for FPM Remediations, Inc., 1 time in 1 issue of said newspaper, and not in any supplement thereof, the publication being May 31, 2017, with the laws of the State of New Mexico.

[Signature]
Legal Coordinator

Subscribed in my presence and sworn before me this the 31st day of May, 2017.

[Signature]
Notary Public

My commission expires 12.15.20

[Seal]
EDITH J. SELEME
NOTARY PUBLIC-State of New Mexico
My Commission Expires 12.15.20
PUBLIC NOTICE
PROPOSED PLANS
FOR XU853 – MISSILE TEST STAND AREA MUNITIONS RESPONSE SITE
and
SR864 – POORMAN RANGE MUNITIONS RESPONSE SITE
at HOLLOMAN AIR FORCE BASE, NEW MEXICO

The U.S. Air Force announces the availability for public comments regarding two Proposed Plans for the XU853 Missile Test Stand Area and SR864 Poorman Range Munitions Response Sites at Holloman Air Force Base, New Mexico. Both sites are being addressed under the United States Air Force Military Munitions Response Program in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986. The Military Munitions Response Program was established to address non-operational defense sites located on current and former military installations.

The two Proposed Plans recommend No Further Action for both Munitions and Explosives of Concern (MEC) and Munitions Constituents (MC) following completion of Remedial Investigation and provide reasons for this preference. Based on Remedial Investigation results, there is no explosive hazard associated with MEC and there are no human health and ecological risks associated with MC at either of the two MRSs. The No Further Action designation recommended for both sites requires no land-use controls or restrictions and no capital, operational, or maintenance costs.

The Proposed Plans are available for public review during the 30-day public comment period from May 31st, 2017 to June 29th, 2017 at the following location:

Alamogordo Public Library
920 Oregon Ave.,
Alamogordo, N.M. 88310
(575) 439-4140

If you would like to provide any written comments or questions to these Proposed Plans, they can be submitted by mail to:

49th Wing Public Affairs
490 First Street, Building 29, Suite 1500
Holloman AFB, N.M. 88330

Comments can also be submitted via email to 49wg.paooffice@us.af.mil

For additional questions, comments or concerns please call (575) 572-7381.