

ATTACHMENT E

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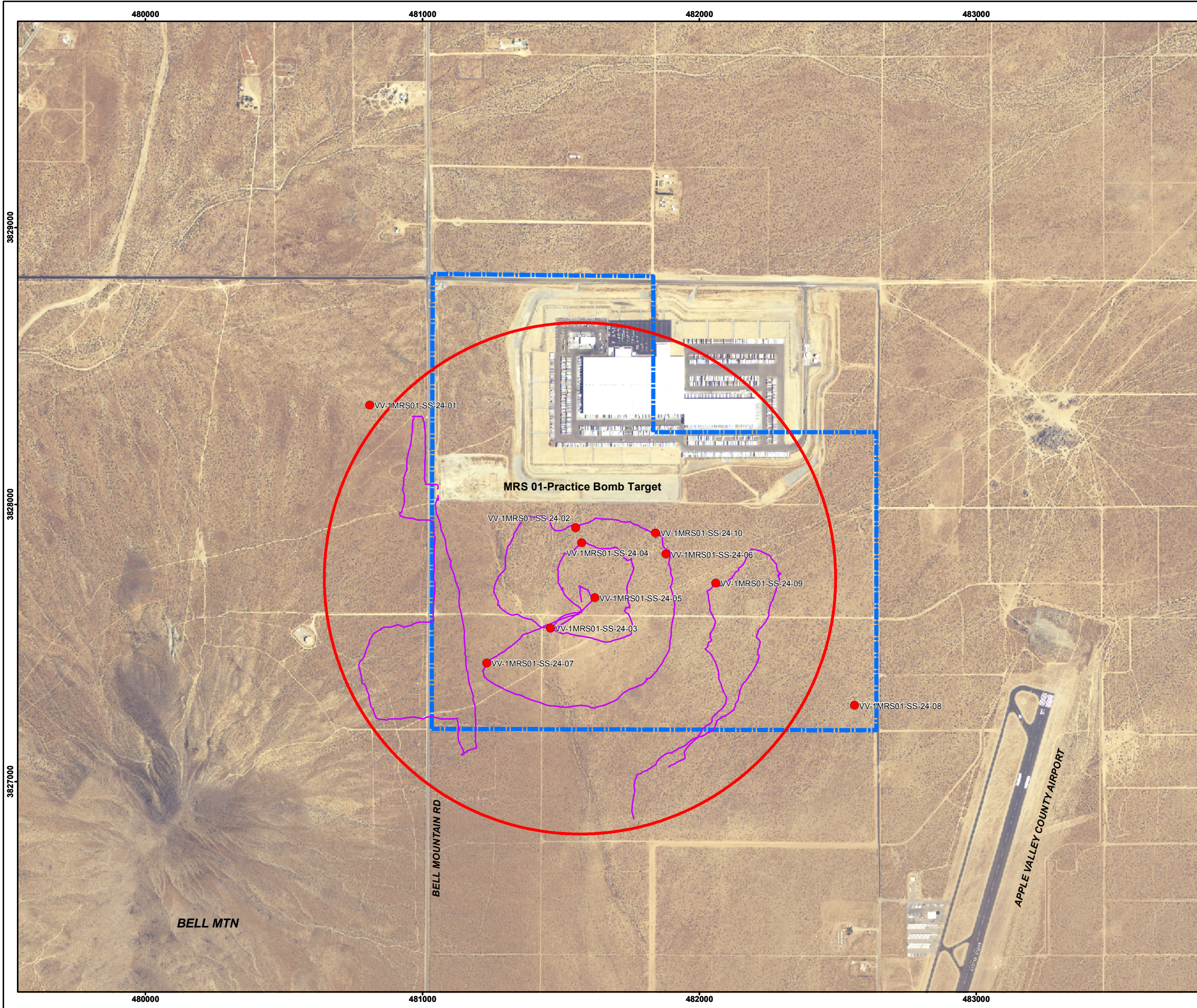


Figure 5.4
Qualitative Reconnaissance and Sample Locations
Victorville PBR No.1
 FUDS Project No. J09CA067501
 San Bernardino County, California

Legend

- Soil Sample Location
- Range Boundary
- - - Project Boundary
- Qualitative Reconnaissance Track

Site Location in California

Image: Orthophoto, 2005
 Projection: UTM Zone 11 NAD83, Map Units in Meters

1,000 500 0 1,000 Feet

PARSONS

U.S. ARMY SOUTH PACIFIC DIVISION
 RANGE SUPPORT CENTER

DESIGNED BY: BT	Qualitative Reconnaissance and Sample Locations		PROJECT NUMBER: 744653.74000
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CHAPTER 6

SCREENING-LEVEL RISK ASSESSMENT

6.1 MUNITIONS AND EXPLOSIVES OF CONCERN SCREENING-LEVEL RISK ASSESSMENT

6.1.1 Conceptual Site Model

The CSM for Victorville PBR No. 1, included in Appendix J, summarizes conditions at the site that could result in human exposure to MEC. It describes the types of MEC potentially present in the MRS, past MEC and MD findings, and current and projected future land use and receptors.

6.1.2 Introduction

6.1.2.1 A qualitative risk evaluation was conducted to assess the potential explosive safety risk to the public at the Victorville PBR No. 1 site. The purpose of this risk evaluation is to qualitatively communicate whether a potential risk is present at the site and the primary causes of that potential risk. The risk evaluation presented here is based on historical information presented in prior studies (e.g., INPR, ASR, and ASR Supplement) and observations made during the SI QR.

6.1.2.2 An explosive safety risk exists if a person can come near or into contact with a MEC item and interact with it in a manner that results in a detonation. The potential for an explosive safety risk depends upon the presence of three critical elements:

- a source (*i.e.*, presence of MEC), AND
- a human receptor (*i.e.*, a person), AND
- the potential for interaction between the source and receptor (*i.e.*, the possibility that the item might be picked up or disturbed by the receptor).

6.1.2.3 All three of these elements must be present for there to be an explosive safety risk. There is no risk if any one element is missing. Each of these three elements provides a basis for implementing effective risk-management response actions.

6.1.3 Qualitative Risk Evaluation

6.1.3.1 The potential risk posed by MEC was characterized qualitatively by evaluating three primary risk factors for each MRS at a site. These factors are related to the three critical elements listed above and are:

- 1) MEC Presence: whether there is the potential for MEC to be present at the MRS;
- 2) MEC Type: the type(s) of MEC that might be present at the MRS and the related potential explosive hazards; and
- 3) Site Accessibility: the potential receptors at the MRS and how they might interact with the MEC.

6.1.3.2 The known or suspected presence of an explosive hazard and any potential human receptors at an MRS will typically be considered sufficient justification for RI/FS. The following paragraphs describe each of the primary risk factors.

6.1.3.3 **MEC Presence:** this factor describes whether MEC either has been confirmed or is suspected to be present at the MRS, either at the surface or in the subsurface, and is based on historical information presented in prior studies (e.g., INPR, ASR, and ASR Supplement) and observations made during the SI QR. Note that if there is historical evidence of potential MEC presence at a site, lack of confirmation of MEC presence during the SI QR will not be considered as evidence of MEC absence for this qualitative risk evaluation. Table 6.1 lists the three possible categories used to describe MEC Presence for this evaluation.

**Table 6.1
Categories of MEC Presence**

MEC Presence	Description
Confirmed or suspected	There is physical or confirmed historical evidence of MEC presence at the MRS, or there is physical or historical evidence indicating that MEC may be present at the MRS.
Small arms only ⁽¹⁾	The presence of small arms ammunition is confirmed or suspected, and there is evidence that no other types of munitions were used or are present at the MRS.
Evidence of no munitions	Following investigation of the MRS, there is physical or historical evidence that there are no UXO or DMM present.

(1) Small arms ammunition is defined as “ammunition, without projectiles that contain explosives (other than tracers), that is .50 caliber or smaller or for shotguns” (Department of the Army, 2005).

6.1.3.4 **MEC Type:** this factor describes whether the MEC potentially present at the MRS might be detonated, resulting in injury to one or more human receptors. If multiple MEC items are potentially present at an MRS, the item which poses the greatest risk to public health is selected for purposes of this qualitative risk evaluation. This determination is based on historical information presented in prior studies (e.g., INPR,

ASR, and ASR Supplement) and observations made during the SI QR. Table 6.2 lists the three possible categories used to describe MEC Presence for this evaluation.

**Table 6.2
Categories of MEC Type**

MEC Type	Description
Potentially Hazardous	Fuzed or unfuzed MEC that may result in physical injury to an individual if detonated by an individual’s activities.
Small arms only ⁽¹⁾	Small arms ammunition is confirmed or suspected, and there is evidence that no other types of munitions were used or are present at the MRS.
Inert	Munitions debris or other items that will cause no injury (e.g., training ordnance containing no explosives, fuzes, spotting charges, etc.).

(1) Small arms ammunition is defined as “ammunition, without projectiles that contain explosives (other than tracers), that is .50 caliber or smaller or for shotguns” (Department of the Army, 2005).

6.1.3.5 **Site Accessibility:** this factor describes whether human receptors have any access to the MRS and, therefore, may interact with any MEC that is present at the surface or in the subsurface. For purposes of this qualitative risk evaluation, if MEC is confirmed or suspected to be present at the MRS, it is assumed that human receptors might come into contact with that MEC unless there is “Complete Restriction to Access.” A description of the potential receptors will also be given with this assessment. Table 6.3 lists the two possible categories used to describe Site Accessibility for this evaluation.

**Table 6.3
Categories of Site Accessibility**

Site Accessibility	Description
Accessible	Access control is not complete: residents, site workers, visitors, or trespassers can gain access to all or part of the MRS.
Complete restriction to access	Human receptors are completely prevented from gaining access to the MRS.

6.1.3.6 With regard to this qualitative risk evaluation, further evaluation (i.e., RI/FS) for the MRS will typically be justified if the following conditions are true:

- MEC is confirmed or suspected to be present, AND
- The MEC confirmed or suspected to be present is potentially hazardous, AND
- The MRS is accessible.

6.1.3.7 The primary risk factors identified above were evaluated for the MRS at Victorville PBR No. 1 using the data collected during the SI field investigation and the historical data available from other studies. The following sections discuss the

qualitative risk evaluation by each primary risk factor to determine whether or not further evaluation is justified at the MRS.

6.1.4 Munitions and Explosives of Concern Risk Assessment – MRS 01

6.1.4.1 No MEC was observed at MRS 01-Practice Bomb Target during the SI field activities in October 2007. However, sixteen observations of MD were noted. These MD observations were in the form of 100-lb practice bomb debris and spotting charge debris. During the 1988 site visit in support of the INPR fragments from exploded ordnance were observed scattered throughout the site. The 1996 site visit in support of the ASR also found two remnants of M38A2 practice bombs. There have been no reports of MEC. Based on this information, the presence of MEC at the MRS is assessed to be “Confirmed or suspected.”

6.1.4.2 Based on the ASR and ASR Supplement, the munitions known or suspected to have been used at the MRS are M38A2 practice bombs. These munitions all contain spotting chargers that might present a residual hazard if they remain intact at the site. Based on this information, the MEC Type at the MRS is assessed to “Potentially Hazardous.”

6.1.4.3 Victorville PBR No. 1 is situated in a somewhat remote location and the land has been divided into plots (currently 51), ranging from 160 acres and over 40 privately owned parcels ranging in size from 2 to 20 acres. The site primarily remains undeveloped and is used for recreation (off-road vehicles). The SVT observed one occupied dwelling on the site; the Wal-Mart Distribution Center. The projected land use is expected to remain unchanged. Based on the land use and the lack of access restrictions, it is possible that industrial workers and site visitors or recreational users will access the site. Based on this information, the Site Accessibility at the MRS is considered to be “Accessible.”

6.1.5 Risk Summary

6.1.5.1 The qualitative MEC risk evaluation for the Victorville PBR No. 1 is summarized in Table 6.4.

**Table 6.4
MEC Risk Evaluation
Victorville PBR No. 1**

MRS	MEC Presence	MEC Type		Site Accessibility	Further Evaluation?
MRS 01	Confirmed or suspected	Bomb, 100-lb, Practice, M38A2; Signal, Spotting Charge, M1A1, M3, and M5	Potentially Hazardous	Accessible	YES

6.1.5.2 Based on this qualitative MEC risk evaluation, there is the possibility that human receptors might come into contact with explosively hazardous MEC at MRS 01, and, therefore, there is the potential for an explosive safety risk at this MRS.

6.2 MUNITIONS CONSTITUENT HUMAN HEALTH SCREENING LEVEL RISK ASSESSMENT

6.2.1 Conceptual Site Model

Based on the current and future land use, potential human receptors for the Victorville PBR No. 1 include commercial or industrial workers (e.g. Wal-Mart employees) and site visitors or recreational users. This is primarily undeveloped land; however, Wal-Mart has recently constructed a warehouse distribution center on the northern end of the site with remaining portions of the land used recreationally (off-road vehicles). The future use of the site is expected to remain the same. The MC CSEM identifies affected media, transport mechanism, exposure routes, and potential receptors.

6.2.2 Affected Media

Direct release of MC from munitions activities at the site would have been to surface soil. Migration of MC from surface soil to surface water and sediment is unlikely given that no surface water is present on or near the site. It is also unlikely that MC from surface soil would leach to the groundwater estimated at 150 feet bgs at the site. Therefore, based on decisions made at the TPP meeting, eight biased surface soil samples, one duplicate, and two ambient soil samples were collected during the SI at Victorville PBR No. 1. No other media (groundwater, surface water, sediment, or air) were sampled at the site.

6.2.3 Screening Values

The soil screening values selected by the TPP Team for this SI include the USEPA Region 9 Industrial Soil PRGs supplemented with the Cal-Modified Region 9 Industrial Soil PRGs.

6.2.4 Risk Characterization for Soil

To complete the risk characterization for the Victorville PBR No. 1 site, the maximum detected concentration of each analyte retained for consideration in the SLRA in Chapter 5 was compared to the screening values selected during the TPP process described above. For a chemical to be considered as a possible health concern at the site, it would be necessary for the chemical to be present above the risk-based screening level.

6.2.4.1 MRS 01-Practice Bomb Target

Eight surface soil samples and one duplicate sample were collected from the MRS 01-Practice Bomb Target. As previously discussed in Subchapter 5.3.4.5, lead was the only non-essential nutrient MC metal detected above background concentration in the surface soil samples and was retained for consideration in the SLRA. As shown in Table 6.5, lead did not exceed its human health screening value. As a result, an unacceptable risk to human health is not expected from exposure to surface soil.

Table 6.5
MRS 01 - Practice Bomb Target
Soil Human Health Screening Level Risk Assessment
Victorville PBR No. 1

Analyte	Units	Maximum Detected Site Conc	Industrial Soil Screening Value (Reg 9 PRG)^a	Exceeds Screening Level?
Lead	mg/kg	14	800	No

a - USEPA Region 9 Preliminary Remediation Goal (PRG) for Industrial Soil (December 28, 2004).

6.2.5 Discussion

Based on the information available, unacceptable risks to human receptors resulting from MC are not likely due to exposure to surface soil.

6.3 MC ECOLOGICAL SCREENING LEVEL RISK ASSESSMENT

As discussed in Subchapter 5.2.5, the Victorville PBR No. 1 site is not considered an important ecological place; ecological receptors are not present and the ecological exposure pathways are incomplete. Therefore, a Screening-Level Ecological Risk Assessment (SLERA) was not conducted and no unacceptable risk to ecological receptors is expected.

CHAPTER 7

SUMMARY AND CONCLUSIONS

7.1 SUMMARY

7.1.1 An SI was performed on the Victorville PBR No. 1 site, in San Bernardino County, California, by evaluating site-specific conditions that could impact the potential for completed exposure pathways to human and ecological receptors within the MRS at the site. The ultimate objective of the SI was to determine whether a FUDS project warrants further response action under CERCLA. The project was planned and performed with the goal of satisfying the DQOs set for the project: 1) evaluate potential presence of MEC; 2) evaluate potential presence of MC; 3) collect data needed to complete MRSPP scoring sheets; and 4) collect information for HRS scoring. Successful completion of the DQOs allowed determination of whether this FUDS project warrants further response action under CERCLA.

7.1.2 The SI evaluation included conduct of approximately 7 miles of QR and collection of ten surface soil samples (with an additional field duplicate) at locations established by the TPP Team. Eight of the surface soil samples were collected from areas that represented the highest likelihood for the presence of MEC or MC contamination to the TPP Team (MRS 01) and two were collected from the buffer zone to provide ambient data on metals for qualitative comparison.

7.1.3 TestAmerica in Arvada, Colorado analyzed the surface soil samples for explosives and metals. The analytical results from the surface soil sampling were evaluated against background concentrations (from ambient samples) at the site. ***Lead was the only non-essential nutrient MC metal detected in surface soil samples above background concentrations. No explosives were detected in any of the surface soil samples.***

7.1.4 Munitions reportedly used at Victorville PBR No. 1 in the early 1940s included M38A2 100-lb practice bombs and M1A1, M3, and M5 spotting charges.

7.1.5 ***The QR did identify MD at the site.*** A summary of the findings for the MRS at the Victorville PBR No. 1 site is listed below.

7.1.1 MRS 01 – Practice Bomb Target

No explosives compounds were detected in the surface soil. Lead was the only non-essential nutrient MC metal detected above background concentrations. *No MEC was observed at MRS 01; however, MD was observed during the QR.*

7.2 CONCLUSIONS REGARDING POTENTIAL EXPOSURE PATHWAYS

7.2.1 An exposure pathway is not considered to be completed unless all four of the following elements are present (USEPA, 1989):

- A source and mechanism for chemical release;
- An environmental transport/exposure medium;
- A receptor exposure point; and
- A receptor and a likely route of exposure at the exposure point.

7.2.2 No explosive compounds were detected in surface soil samples collected from worst-case locations (based on the TPP Team consensus), and lead was the only non-essential nutrient MC metal that exceeded background concentrations; however, lead did not exceed the human health screening value. An unacceptable risk to human health is not expected from exposure to surface soil at MRS 01. However, it is possible that MEC remain on MRS 01 and an explosive hazard pathway is potentially present. Ecological receptors are not considered to be a target of migration pathways because Victorville PBR No. 1 is not considered to be an important ecological place and is not managed for ecological purposes. The present and future land use of the MRS is as undeveloped desert, recreational, and industrial/commercial.

CHAPTER 8

RECOMMENDATIONS

8.1 No MEC was observed during the field portion of the SI at MRS 01; however, MD was observed in the form of M38A2 practice bomb debris and associated spotting charges. The site visit associated with the INPR observed MD spaced 15 to 20 feet apart within the target circles and 75 to 100 feet apart in the remainder of the site. The site visit in support of the ASR also reported observing two pieces of MD from M38A2 practice bombs. As a result, RI/FS is recommended at **MRS 01** to further evaluate potential MEC presence (**Table 8.1**).

8.2 With regard to MC, no explosives were detected and lead was the only non-essential nutrient MC metal detected above background metal concentrations. Lead did not exceed its human health screening value. Based on the SI environmental sampling results for MC, additional sampling during the RI/FS is not warranted. However, when the TPP Team convenes for review of the RI/FS Technical Approach (when awarded), they may choose to re-evaluate the MC sampling recommendation in light of the amount of time passed since the SI completion or additional information that may become available.

8.3 As provided in the Executive Summary, Section 5.2.5.2, and Section 6.3 of this SI Report, it has been determined that the Victorville PBR No. 1 site is not an important ecological place; no T&E species are present and the site is not managed for ecological purposes. Further, it is acknowledged that in the event that additional sampling is conducted under the RI/FS phase, the DTSC has recommended that the ecological screening approach under the next phase (RI/FS) meets all the CDF&G ecological screening approach recommendations, including “terrestrial wildlife site-specific receptors” screening. This recommendation will be taken into consideration when the TPP Team convenes for review of the RI/FS Technical Approach, as appropriate.

Table 8.1
Recommendations
Victorville PBR No. 1, San Bernardino County, California

MRS	Recommendation
01 –Practice Bomb Target	RI/FS, no further MC sampling. <i>Immediate removal action is not warranted at this time.</i>

CHAPTER 9

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