APPENDIX E: MUNITIONS AND EXPLOSIVES OF CONCERN HAZARD ASSESSMENT
MILITARY MUNITIONS RESPONSE PROGRAM
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

FORMER CAMP MAXEY
Paris, Texas

MEC HA Summary Information

Comments

Site ID: Eastern Range Area A
Date: 4/7/2014

Please identify the single specific area to be assessed in this hazard assessment. From this point forward, all references to "site" or "MRS" refer to the specific area that you have defined.

A. Enter a unique identifier for the site:

Eastern Range Area A

Provide a list of information sources used for this hazard assessment. As you are completing the worksheets, use the "Select Ref(s)" buttons at the ends of each subsection to select the applicable information sources from the list below.

Ref. No.	Title (include version, publication date)
1	Final RI/FS Report (April 2014)
2	Non-Time Critical Removal Action Report (2010)
3	Report (2007)
4	Investigation, and Removal Report (2002)
5	Removal Action Site Specific Final Report (2001)
6	Engineering Evaluation/Cost Analysis Report (2000)
7	Explosives Sampling Report (1998)
8	Report (1997)
9	Archive Search Report (1994)
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B. Briefly describe the site:

1. Area (include units): 1124 acres
2. Past munitions-related use:

Target Area

3. Current land-use activities (list all that occur):

Pat Mayse State Park

4. Are changes to the future land-use planned? No
5. What is the basis for the site boundaries?

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6. How certain are the site boundaries?

Boundaries are speculative based on historical information.

Reference(s) for Part B:

Final RI/FS Report (April 2014)

[redacted]

C. Historical Clearances

1. Have there been any historical clearances at the site? Yes, subsurface clearance
2. If a clearance occurred:
   a. What year was the clearance performed? 1997 and 2010

   b. Provide a description of the clearance activity (e.g., extent, depth, amount of munitions-related items removed, types and sizes of removed items, and whether metal detectors were used):

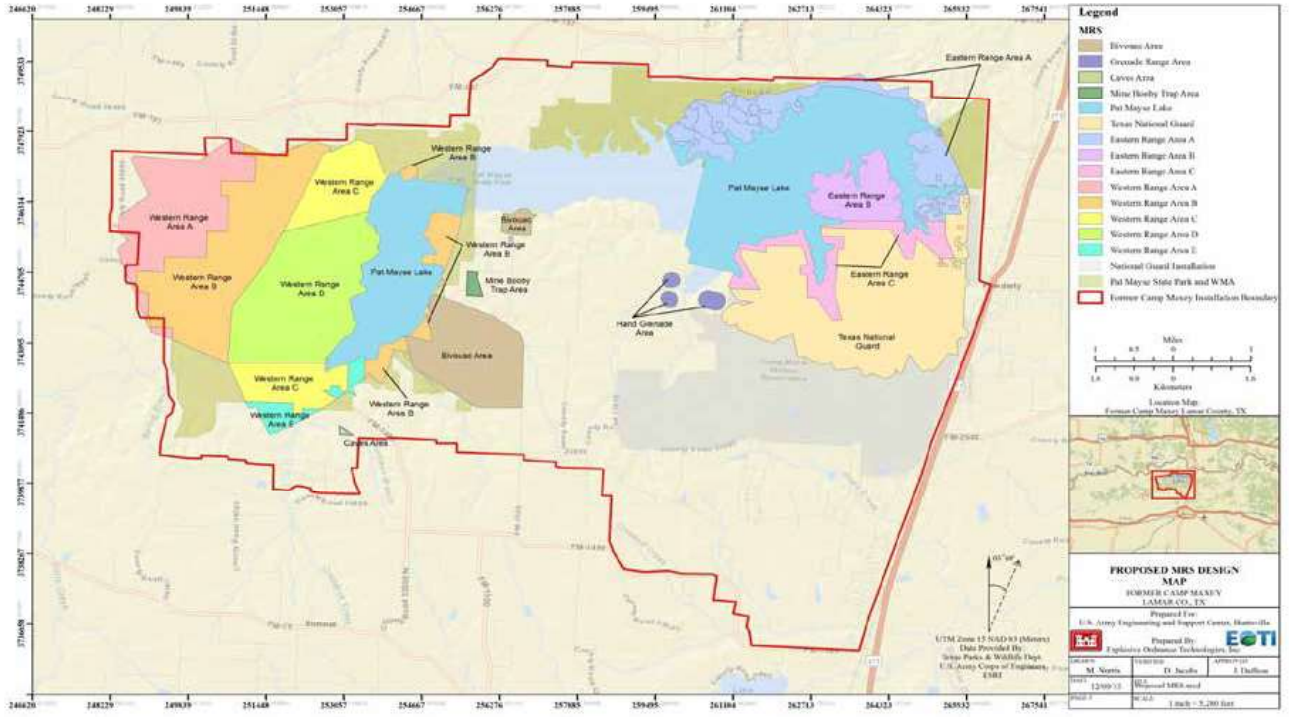
1997: From January 27th through April 10th, 1997, Human Factors Applications, Inc. (HFA) conducted a Time-Critical-Removal-Action (TCRA) on 381 acres in the rocket and grenade impact area (East Impact Area C and Bivouac Area A) on the north shore of Pat Mayse Lakes (Contract No. DACA87-95-D-0027, Task Order 0007). During this effort 2,170 2.36in rockets and 10 M-9 rifle grenades were recovered from the East Range Area.
2010: USAE completed surface clearance of 13 ranges consisting of 1,485 grids/341.5 acres. A total of 170 MEC items, including 2.36-inch rockets, M9 rifle grenades, and MK II hand grenades, were located and disposed of through explosive disposal operations.

Reference(s) for Part C:

Final RI/FS Report (April 2014)

[redacted]

D. Attach maps of the site below (select 'Insert/Picture' on the [redacted]



Site ID: **Eastern Range Area A**
Date: **4/7/2014**

Cased Munitions Information

Item No.	Munition Type (e.g., mortar, projectile, etc.)	Munition Size	Munition Size Units	Mark/ Model	Energetic Material Type	Is Munition Fuzed?	Fuzing Type	Fuze Condition	Minimum Depth for Munition (ft)	Location of Munitions	Comments (include rationale for munitions that are "subsurface only")
1	Rockets	2.36	inches	2.36-inch Rockets	High Explosive	UNK	UNK	UNK	0	Surface and Subsurface	Depth of munitions not specified in 2010 report. UXO assumed to have been found on ground surface to remain conservative.
2	Grenades			M9 Rifle Grenades	High Explosive	UNK	UNK	UNK	0	Surface and Subsurface	Depth of munitions not specified in 2010 report. UXO assumed to have been found on ground surface to remain conservative.
3	Grenades			MKII Hand Grenades	High Explosive	UNK	UNK	UNK	0	Surface and Subsurface	Depth of munitions not specified in 2010 report. UXO assumed to have been found on ground surface to remain conservative.
4	Artillery	37	mm	37mm APHE	High Explosive	UNK	UNK	UNK	0.1	Surface and Subsurface	
11											
12											
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15											
16											
17											
18											
19											
20											

Reference(s) for table above:

Final RI/FS Report (April 2014)

Site ID: **Eastern Range Area A**
Date: **4/7/2014**

Activities Currently Occurring at the Site

Activity No.	Activity	Number of people per year who participate in the activity	Number of hours per year a single person spends on the activity	Potential Contact Time (receptor hours/year)	Maximum intrusive depth (ft)	Comments
1	Recreational (i.e., camping, hunting, hiking, lake access)	10,000	16	**160,000**	1	Receptor activity level is speculative but thought to be conservative.
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
			Total Potential Contact Time (receptor hrs/yr):	**160,000**		
			Maximum intrusive depth at site (ft):		**1**	

Reference(s) for table above:

Final RI/FS Report (April 2014)

Site ID: **Eastern Range Area A**
Date: **4/7/2014**

Planned Remedial or Removal Actions

Response Action No.	Response Action Description	Expected Resulting Minimum MEC Depth (ft)	Expected Resulting Site Accessibility	Will land use activities change if this response action is implemented?	What is the expected scope of cleanup?	Comments
1	No DoD Action Indicated	0	Full Accessibility	No	No MEC cleanup	
2	LUCs; 100 Percent Surface Clearance	0.1	Full Accessibility	No	cleanup of MECs located on the surface only	
3	LUCS; Focused Surface and Subsurface Clearance	0.5	Full Accessibility	No	cleanup of MECs located both on the surface and subsurface	
4	Unlimited Use/Access	3	Full Accessibility	No	cleanup of MECs located both on the surface and subsurface	
5						
6						

According to the 'Summary Info' worksheet, no future land uses are planned. For those alternatives where you answered 'No' in Column E, the land use activities will be assessed against current land uses.

Reference(s) for table above:

Final RI/FS Report (April 2014)

Site ID: **Eastern Range Area A**
Date: **4/7/2014**

Energetic Material Type Input Factor Categories

The following table is used to determine scores associated with the energetic materials. Materials are listed in order from most hazardous to least hazardous.

	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
High Explosive and Low Explosive Filler in Fragmenting Rounds	100	100	100
White Phosphorus	70	70	70
Pyrotechnic	60	60	60
Propellant	50	50	50
Spotting Charge	40	40	40
Incendiary	30	30	30

The most hazardous type of energetic material listed in the 'Munitions, Bulk Explosive Info' Worksheet falls under the category 'High Explosive and Low Explosive Filler in Fragmenting Rounds'.

	Score
Baseline Conditions:	**100**
Surface Cleanup:	**100**
Subsurface Cleanup:	**100**

Location of Additional Human Receptors Input Factor Categories

1. What is the Explosive Safety Quantity Distance (ESQD) from the Explosive Siting Plan or the Explosive Safety Submission for the MRS? 337 feet
2. Are there currently any features or facilities where people may congregate within the MRS, or within the ESQD arc? Yes
3. Please describe the facility or feature.

WMA buildings

MEC Item(s) used to calculate the ESQD for current use activities

[redacted]

Item #3. Artillery (155mm, High Explosive)

The following table is used to determine scores associated with the location of additional human receptors (current use activities):

	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Inside the MRS or inside the ESQD arc	30	30	30
Outside of the ESQD arc	0	0	0

4. Current use activities are 'Inside the MRS or inside the ESQD arc', based on Question 2.'

	Score
Baseline Conditions:	**30**
Surface Cleanup:	**30**
Subsurface Cleanup:	**30**

Site Accessibility Input Factor Categories

The following table is used to determine scores associated with site accessibility:

	Description	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Full Accessibility	No barriers to entry, including signage but no fencing	80	80	80
Moderate Accessibility	Some barriers to entry, such as barbed wire fencing or rough terrain	55	55	55
Limited Accessibility	Significant barriers to entry, such as unguarded chain link fence or requirements for special transportation to reach the site	15	15	15
Very Limited Accessibility	A site with guarded chain link fence or terrain that requires special equipment and skills (e.g., rock climbing) to access	5	5	5

Current Use Activities

Score

Select the category that best describes the site accessibility under the current use scenario:

Full Accessibility

Baseline Conditions: **80**
Surface Cleanup: **80**
Subsurface Cleanup: **80**

Response Alternative No. 1: No DoD Action Indicated

Based on the 'Planned Remedial or Removal Actions' Worksheet, this alternative will lead to 'Full Accessibility'.

Baseline Conditions: **80**
Surface Cleanup: **80**
Subsurface Cleanup: **80**

Response Alternative No. 2: LUCs; 100 Percent Surface Clearance

Based on the 'Planned Remedial or Removal Actions' Worksheet, this alternative will lead to 'Full Accessibility'.

Baseline Conditions: **80**
Surface Cleanup: **80**
Subsurface Cleanup: **80**

Response Alternative No. 3: LUCS; Focused Surface and Subsurface Clearance

Based on the 'Planned Remedial or Removal Actions' Worksheet, this alternative will lead to 'Full Accessibility'.

Baseline Conditions: **80**
Surface Cleanup: **80**
Subsurface Cleanup: **80**

Response Alternative No. 4: Unlimited Use/Access

Based on the 'Planned Remedial or Removal Actions' Worksheet, this alternative will lead to 'Full Accessibility'.

Baseline Conditions: **80**
Surface Cleanup: **80**
Subsurface Cleanup: **80**

Potential Contact Hours Input Factor Categories

The following table is used to determine scores associated with the total potential contact time:

	Description	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Many Hours	≥1,000,000 receptor-hrs/yr	120	90	30
Some Hours	100,000 to 999,999 receptor hrs/yr	70	50	20
Few Hours	10,000 to 99,999 receptor-hrs/yr	40	20	10
Very Few Hours	<10,000 receptor-hrs/yr	15	10	5

Current Use Activities:

Input factors are only determined for baseline conditions for current use activities. Based on the 'Current and Future Activities' Worksheet, the Total Potential Contact Time is: **160,000** receptor hrs/yr

Based on the table above, this corresponds to a input factor score for baseline conditions of: **70** Score

Response Alternative No. 1: No DoD Action Indicated

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Total Potential Contact Time, based on the contact time listed for current use activities (see 'Current and Future Activities' Worksheet) **160,000**

Based on the table above, this corresponds to input factor scores of: ***Score***

Baseline Conditions: **70**

Surface Cleanup: **50**

Subsurface Cleanup: **20**

Response Alternative No. 2: LUCs; 100 Percent Surface Clearance

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Total Potential Contact Time, based on the contact time listed for current use activities (see 'Current and Future Activities' Worksheet) **160,000**

Based on the table above, this corresponds to input factor scores of: ***Score***

Baseline Conditions: **70**

Surface Cleanup: **50**

Subsurface Cleanup: **20**

Response Alternative No. 3: LUCS; Focused Surface and Subsurface

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Total Potential Contact Time, based on the contact time listed for current use activities (see 'Current and Future Activities' Worksheet) **160,000**

Based on the table above, this corresponds to input factor scores of: ***Score***

Baseline Conditions: **70**

Surface Cleanup: **50**

Subsurface Cleanup: **20**

Response Alternative No. 4: Unlimited Use/Access

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Total Potential Contact Time, based on the contact time listed for current use activities (see 'Current and Future Activities' Worksheet) **160,000**

Based on the table above, this corresponds to input factor scores of: ***Score***

Baseline Conditions: **70**

Surface Cleanup: **50**

Subsurface Cleanup: **20**

Amount of MEC Input Factor Categories

The following table is used to determine scores associated with the Amount of MEC:

	Description	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Target Area	Areas at which munitions fire was directed	180	120	30
OB/OD Area	Sites where munitions were disposed of by open burn or open detonation methods. This category refers to the core activity area of an OB/OD area. See the "Safety Buffer Areas" category for safety fans and kick-outs.	180	110	30
Function Test Range	Areas where the serviceability of stored munitions or weapons systems are tested. Testing may include components, partial functioning or complete functioning of stockpile or developmental items.	165	90	25
Burial Pit	The location of a burial of large quantities of MEC items.	140	140	10
Maneuver Areas	Areas used for conducting military exercises in a simulated conflict area or war zone	115	15	5
Firing Points	The location from which a projectile, grenade, ground signal, rocket, guided missile, or other device is to be ignited, propelled, or released.	75	10	5
Safety Buffer Areas	Areas outside of target areas, test ranges, or OB/OD areas that were designed to act as a safety zone to contain munitions that do not hit targets or to contain kick-outs from OB/OD areas.	30	10	5
Storage	Any facility used for the storage of military munitions, such as earth-covered magazines, above-ground magazines, and open-air storage areas.	25	10	5
Explosive-Related Industrial Facility	Former munitions manufacturing or demilitarization sites and TNT production plants	20	10	5

Select the category that best describes the ***most hazardous*** amount of MEC: ***Score***

`Target Area`

Baseline Conditions: **180**
Surface Cleanup: **120**
Subsurface Cleanup: **30**

Minimum MEC Depth Relative to the Maximum Intrusive Depth Input Factor Categories

Current Use Activities

The shallowest minimum MEC depth, based on the 'Cased Munitions Information' Worksheet: **0** ft
The deepest intrusive depth: **1** ft

The table below is used to determine scores associated with the minimum MEC depth relative to the maximum intrusive depth:

	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.	240	150	95
Baseline Condition: MEC located surface and subsurface, After Cleanup: Intrusive depth does not overlap with subsurface MEC.	240	50	25
Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth overlaps with minimum MEC depth.	150	N/A	95
Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth does not overlap with minimum MEC depth.	50	N/A	25

Because the shallowest minimum MEC depth is less than or equal to the deepest intrusive depth, the intrusive depth will overlap after cleanup. MECs are located at both the surface and subsurface, based on the 'Munitions, Bulk Explosive Info' Worksheet. Therefore, the category for this input factor is 'Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.' For 'Current Use Activities', only Baseline Conditions are considered.

240 ***Score***

Future Use Activities

Deepest intrusive depth: ft

Not enough information has been entered to determine the input factor category. ***Score***

Response Alternative No. 1: No DoD Action Indicated

Expected minimum MEC depth (from the 'Planned Remedial or Removal Actions' Worksheet): **0** ft

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Maximum Intrusive Depth, based on the maximum intrusive depth listed for current use activities (see 'Current and Future Activities' Worksheet) **1** ft

Because the shallowest minimum MEC depth is less than or equal to the deepest intrusive depth, the intrusive depth overlaps. MECs are located at both the surface and subsurface, based on the 'Munitions, Bulk Explosive Info' Worksheet. Therefore, the category for this input factor is 'Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.'

Score

Baseline Conditions: **240**

Surface Cleanup:

Subsurface Cleanup:

Response Alternative No. 2: LUCs; 100 Percent Surface Clearance

Expected minimum MEC depth (from the 'Planned Remedial or Removal Actions' Worksheet): **0.1** ft

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Maximum Intrusive Depth, based on the maximum intrusive depth listed for current use activities (see 'Current and Future Activities' Worksheet) **1** ft

Because the shallowest minimum MEC depth is less than or equal to the deepest intrusive depth, the intrusive depth overlaps. MECs are located at both the surface and subsurface, based on the 'Munitions, Bulk Explosive Info' Worksheet. Therefore, the category for this input factor is 'Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.'

Score

Baseline Conditions:

Surface Cleanup: **150**

Subsurface Cleanup:

Response Alternative No. 3: LUCS; Focused Surface and Subsurface Clearance

Expected minimum MEC depth (from the 'Planned Remedial or Removal Actions' Worksheet): **0.5** ft

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Maximum Intrusive Depth, based on the maximum intrusive depth listed for current use activities (see 'Current and Future Activities' Worksheet) **1** ft

Because the shallowest minimum MEC depth is less than or equal to the deepest intrusive depth, the intrusive depth overlaps. MECs are located at both the surface and subsurface, based on the 'Munitions, Bulk Explosive Info' Worksheet. Therefore, the category for this input factor is 'Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.'

Score

Baseline Conditions:

Surface Cleanup:

Subsurface Cleanup: **95**

Response Alternative No. 4: Unlimited Use/Access

Expected minimum MEC depth (from the 'Planned Remedial or Removal Actions' Worksheet): **3** ft

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Maximum Intrusive Depth, based on the maximum intrusive depth listed for current use activities (see 'Current and Future Activities' Worksheet) **1** ft

Because the shallowest minimum MEC depth is greater than the deepest intrusive depth, the intrusive depth does not overlap. MECs are located at both the surface and subsurface, based on the 'Munitions, Bulk Explosive Info' Worksheet. Therefore, the category for this input factor is 'Baseline Condition: MEC located surface and subsurface, After Cleanup: Intrusive depth does not overlap with subsurface MEC.'

Score

Baseline Conditions:

Surface Cleanup:

Subsurface Cleanup: **25**

Migration Potential Input Factor Categories

Is there any physical or historical evidence that indicates it is possible for natural physical forces in the area (e.g., frost heave, erosion) to expose subsurface MEC items, or move surface or subsurface MEC items? Yes

If "yes", describe the nature of natural forces. Indicate key areas of potential migration (e.g., overland water flow) on a map as appropriate (attach a map to the bottom of this sheet, or as a separate worksheet).

Erosion

The following table is used to determine scores associated with the migration potential:

	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Possible	30	30	10
Unlikely	10	10	10

Based on the question above, migration potential is 'Possible.'

	Score
Baseline Conditions:	**30**
Surface Cleanup:	**30**
Subsurface Cleanup:	**10**

Reference(s) for above information:

Final RI/FS Report (April 2014)

[redacted]

MEC Classification Input Factor Categories

Cased munitions information has been inputed into the 'Munitions, Bulk Explosive Info' Worksheet; therefore, bulk explosives do not comprise all MECs for this MRS.

The 'Amount of MEC' category is 'Target Area'. It cannot be automatically assumed that the MEC items from this category are DMM. Therefore, the conservative assumption is that the MEC items in this MRS are UXO.

Has a technical assessment shown that MEC in the OB/OD Area is DMM?

Are any of the munitions listed in the 'Munitions, Bulk Explosive Info' Worksheet: Yes

- Submunitions
- Rifle-propelled 40mm projectiles (often called 40mm grenades)
- Munitions with white phosphorus filler
- High explosive anti-tank (HEAT) rounds
- Hand grenades
- Fuzes
- Mortars

The following table is used to determine scores associated with MEC classification categories:

UXO Special Case	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
UXO Special Case	180	180	180
UXO	110	110	110
Fuzed DMM Special Case	105	105	105
Fuzed DMM	55	55	55
Unfuzed DMM	45	45	45
Bulk Explosives	45	45	45

Based on your answers above, the MEC classification is 'UXO Special Case'.

	Score
Baseline Conditions:	**180**
Surface Cleanup:	**180**
Subsurface Cleanup:	**180**

MEC Size Input Factor Categories

The following table is used to determine scores associated with MEC Size:

	Description	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Small	Any munitions (from the 'Munitions, Bulk Explosive Info' Worksheet) weigh less than 90 lbs; small enough for a receptor to be able to move and initiate a detonation	40	40	40
Large	All munitions weigh more than 90 lbs; too large to move without equipment	0	0	0

Based on the definitions above and the types of munitions at the site (see 'Munitions, Bulk Explosive Info' Worksheet), the MEC Size Input Factor is: Small

Score

Baseline Conditions:	**40**
Surface Cleanup:	**40**
Subsurface Cleanup:	**40**

Scoring Summary

Site ID:	Eastern Range Area A	a. Scoring Summary for Current Use Activities	
Date:	4/7/2014	Response Action Cleanup:	No Response Action
Input Factor		**Input Factor Category**	**Score**
I. Energetic Material Type		High Explosive and Low Explosive Filler in Fragmenting Rounds	100
II. Location of Additional Human Receptors		Inside the MRS or inside the ESQD arc	30
III. Site Accessibility		Full Accessibility	80
IV. Potential Contact Hours		100,000 to 999,999 receptor hrs/yr	70
V. Amount of MEC		Target Area	180
VI. Minimum MEC Depth Relative to Maximum Intrusive Depth		Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.	240
VII. Migration Potential		Possible	30
VIII. MEC Classification		UXO Special Case	180
IX. MEC Size		Small	40
		Total Score	**950**
		Hazard Level Category	**1**

Site ID:	Eastern Range Area A	c. Scoring Summary for Response Alternative 1: No DoD Action Indicated	
Date:	4/7/2014	Response Action Cleanup:	No MEC cleanup
Input Factor		**Input Factor Category**	**Score**
I. Energetic Material Type		High Explosive and Low Explosive Filler in Fragmenting Rounds	100
II. Location of Additional Human Receptors		Inside the MRS or inside the ESQD arc	30
III. Site Accessibility		Full Accessibility	80
IV. Potential Contact Hours		100,000 to 999,999 receptor hrs/yr	70
V. Amount of MEC		Target Area	180
VI. Minimum MEC Depth Relative to Maximum Intrusive Depth		Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.	240
VII. Migration Potential		Possible	30
VIII. MEC Classification		UXO Special Case	180
IX. MEC Size		Small	40
		Total Score	**950**
		Hazard Level Category	**1**

Site ID:	Eastern Range Area A	d. Scoring Summary for Response Alternative 2: LUCs; 100 Percent Surface Clearance	
Date:	4/7/2014	Response Action Cleanup:	cleanup of MECs located on the surface only
Input Factor		**Input Factor Category**	**Score**
I. Energetic Material Type		High Explosive and Low Explosive Filler in Fragmenting Rounds	100
II. Location of Additional Human Receptors		Inside the MRS or inside the ESQD arc	30
III. Site Accessibility		Full Accessibility	80
IV. Potential Contact Hours		100,000 to 999,999 receptor hrs/yr	50
V. Amount of MEC		Target Area	120
VI. Minimum MEC Depth Relative to Maximum Intrusive Depth		Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.	150
VII. Migration Potential		Possible	30
VIII. MEC Classification		UXO Special Case	180
IX. MEC Size		Small	40
		Total Score	**780**
		Hazard Level Category	**2**

Site ID:	Eastern Range Area A	e. Scoring Summary for Response Alternative 3: LUCS; Focused Surface and Subsurface Clearance	
Date:	4/7/2014	Response Action Cleanup:	cleanup of MECs located both on the surface and subsurface
Input Factor		**Input Factor Category**	**Score**
I. Energetic Material Type		High Explosive and Low Explosive Filler in Fragmenting Rounds	100
II. Location of Additional Human Receptors		Inside the MRS or inside the ESQD arc	30
III. Site Accessibility		Full Accessibility	80
IV. Potential Contact Hours		100,000 to 999,999 receptor hrs/yr	20
V. Amount of MEC		Target Area	30
VI. Minimum MEC Depth Relative to Maximum Intrusive Depth		Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.	95
VII. Migration Potential		Possible	10
VIII. MEC Classification		UXO Special Case	180
IX. MEC Size		Small	40
		Total Score	**585**
		Hazard Level Category	**3**

Site ID:	Eastern Range Area A	f. Scoring Summary for Response Alternative 4: Unlimited Use/Access	
Date:	4/7/2014	Response Action Cleanup:	cleanup of MECs located both on the surface and subsurface
Input Factor		**Input Factor Category**	**Score**
I. Energetic Material Type		High Explosive and Low Explosive Filler in Fragmenting Rounds	100
II. Location of Additional Human Receptors		Inside the MRS or inside the ESQD arc	30
III. Site Accessibility		Full Accessibility	80
IV. Potential Contact Hours		100,000 to 999,999 receptor hrs/yr	20
V. Amount of MEC		Target Area	30
VI. Minimum MEC Depth Relative to Maximum Intrusive Depth		Baseline Condition: MEC located surface and subsurface, After Cleanup: Intrusive depth does not overlap with subsurface MEC.	25
VII. Migration Potential		Possible	10
VIII. MEC Classification		UXO Special Case	180
IX. MEC Size		Small	40
		Total Score	**515**
		Hazard Level Category	**4**

MEC HA Hazard Level Determination		
Site ID: Eastern Range Area A		
Date: 4/7/2014		
	Hazard Level Category	**Score**
a. Current Use Activities	1	950
b. Response Alternative 1: No DoD Action Indicated	1	950
c. Response Alternative 2: LUCs; 100 Percent Surface Clearance	2	780
d. Response Alternative 3: LUCS; Focused Surface and Subsurface Clearance	3	585
e. Response Alternative 4: Unlimited Use/Access	4	515
Characteristics of the MRS		
Is critical infrastructure located within the MRS or within the ESQD arc?	Yes	
Are cultural resources located within the MRS or within the ESQD arc?	Yes	
Are significant ecological resources located within the MRS or within the ESQD arc?	Yes	

MEC HA Summary Information

Site ID: Eastern Range Area B
Date: 4/7/2014

Please identify the single specific area to be assessed in this hazard assessment. From this point forward, all references to "site" or "MRS" refer to the specific area that you have defined.

A. Enter a unique identifier for the site:

Eastern Range Area B

Provide a list of information sources used for this hazard assessment. As you are completing the worksheets, use the "Select Ref(s)" buttons at the ends of each subsection to select the applicable information sources from the list below.

Ref. No.	Title (include version, publication date)
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6	Engineering Evaluation/Cost Analysis Report (2000)
7	Explosives Sampling Report (1998)
8	Report (1997)
9	Archive Search Report (1994)
10	
11	
12	

B. Briefly describe the site:

1. Area (include units): 540 acres
2. Past munitions-related use:

Target Area

3. Current land-use activities (list all that occur):

Public property used for hunting and private campgrounds.

4. Are changes to the future land-use planned? No
5. What is the basis for the site boundaries?

FUDSMIS

6. How certain are the site boundaries?

Boundaries are speculative based on historical information.

Reference(s) for Part B:

Final RI/FS Report (April 2014) [redacted]

C. Historical Clearances

1. Have there been any historical clearances at the site? Yes, subsurface clearance
2. If a clearance occurred:
   a. What year was the clearance performed? 2001
   b. Provide a description of the clearance activity (e.g., extent, depth, amount of munitions-related items removed, types and sizes of removed items, and whether metal detectors were used):

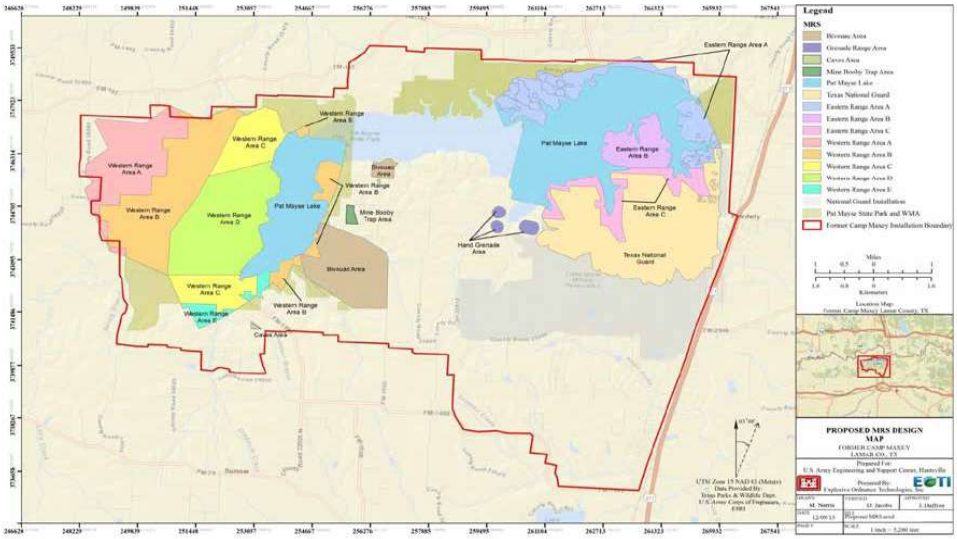
41 parcels totaling 243.3 acres were surveyed, geomapped, and cleared; 50 parcels totaling 82.3 acres were surveyed and geo-mapped; and 13 parcels totaling 21.9 acres were surveyed (Contract No. DACA87-97-D-0006, Delivery Order 17). MEC items recovered include: 19 37mm projectiles and 2 75mm.

Reference(s) for Part C:

Final RI/FS Report (April 2014) [redacted]

Comments

D. Attach maps of the site below (select 'Insert/Picture' on the menu bar.)



Site ID: **Eastern Range Area B**
Date: **4/7/2014**

Cased Munitions Information

Item No.	Munition Type (e.g., mortar, projectile, etc.)	Munition Size	Munition Size Units	Mark/ Model	Energetic Material Type	Is Munition Fuzed?	Fuzing Type	Fuze Condition	Minimum Depth for Munition (ft)	Location of Munitions	Comments (include rationale for munitions that are "subsurface only")
1	Artillery	37	mm	37mm APHE	High Explosive	UNK	UNK	UNK	0.1	Surface and Subsurface	
2	Artillery	37	mm	37mm HE	High Explosive	UNK	UNK	UNK	0.25	Surface and Subsurface	
3											
4											
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20											

Reference(s) for table above:

Final RI/FS Report (April 2014)

Site ID: **Eastern Range Area B**
Date: **4/7/2014**

Activities Currently Occurring at the Site

Activity No.	Activity	Number of people per year who participate in the activity	Number of hours per year a single person spends on the activity	Potential Contact Time (receptor hours/year)	Maximum intrusive depth (ft)	Comments
1	Recreational (i.e., camping, hunting, hiking, lake access)	5,000	16	**80,000**	1	Receptor activity level is speculative but thought to be conservative.
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
			Total Potential Contact Time (receptor hrs/yr):	**80,000**		
			Maximum intrusive depth at site (ft):		**1**	

Reference(s) for table above:

Final RI/FS Report (April 2014)

Site ID: **Eastern Range Area B**
Date: **4/7/2014**

Planned Remedial or Removal Actions

Response Action No.	Response Action Description	Expected Resulting Minimum MEC Depth (ft)	Expected Resulting Site Accessibility	Will land use activities change if this response action is implemented?	What is the expected scope of cleanup?	Comments
1	No DoD Action Indicated	0.1	Moderate Accessibility	No	No MEC cleanup	
2	LUCs, Focused Surface Clearance	0.1	Moderate Accessibility	No	cleanup of MECs located on the surface only	
3	LUCs; 100 Percent Surface and Subsurface Clearance	1	Moderate Accessibility	No	cleanup of MECs located both on the surface and subsurface	
4	Unlimited Use/Access	3	Moderate Accessibility	No	cleanup of MECs located both on the surface and subsurface	
5						
6						

According to the 'Summary Info' worksheet, no future land uses are planned. For those alternatives where you answered 'No' in Column E, the land use activities will be assessed against current land uses.

Reference(s) for table above:

Final RI/FS Report (April 2014)

Site ID: **Eastern Range Area B**
Date: **4/7/2014**

Energetic Material Type Input Factor Categories

The following table is used to determine scores associated with the energetic materials. Materials are listed in order from most hazardous to least hazardous.

	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
High Explosive and Low Explosive Filler in Fragmenting Rounds	100	100	100
White Phosphorus	70	70	70
Pyrotechnic	60	60	60
Propellant	50	50	50
Spotting Charge	40	40	40
Incendiary	30	30	30

The most hazardous type of energetic material listed in the 'Munitions, Bulk Explosive Info' Worksheet falls under the category 'High Explosive and Low Explosive Filler in Fragmenting Rounds'.

	Score
Baseline Conditions:	**100**
Surface Cleanup:	**100**
Subsurface Cleanup:	**100**

Location of Additional Human Receptors Input Factor Categories

1. What is the Explosive Safety Quantity Distance (ESQD) from the Explosive Siting Plan or the Explosive Safety Submission for the MRS? 337 feet
2. Are there currently any features or facilities where people may congregate within the MRS, or within the ESQD arc? Yes
3. Please describe the facility or feature.

Building associated with private campgrounds.

MEC Item(s) used to calculate the ESQD for current use activities

[redacted]

Item #3. Artillery (155mm, High Explosive)

The following table is used to determine scores associated with the location of additional human receptors (current use activities):

	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Inside the MRS or inside the ESQD arc	30	30	30
Outside of the ESQD arc	0	0	0

4. Current use activities are 'Inside the MRS or inside the ESQD arc', based on Question 2.'

	Score
Baseline Conditions:	**30**
Surface Cleanup:	**30**
Subsurface Cleanup:	**30**

Comments

Site Accessibility Input Factor Categories

The following table is used to determine scores associated with site accessibility:

	Description	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Full Accessibility	No barriers to entry, including signage but no fencing	80	80	80
Moderate Accessibility	Some barriers to entry, such as barbed wire fencing or rough terrain	55	55	55
Limited Accessibility	Significant barriers to entry, such as unguarded chain link fence or requirements for special transportation to reach the site	15	15	15
Very Limited Accessibility	A site with guarded chain link fence or terrain that requires special equipment and skills (e.g., rock climbing) to access	5	5	5

Current Use Activities

Score

Select the category that best describes the site accessibility under the current use scenario:

Moderate Accessibility

Baseline Conditions: **55**
Surface Cleanup: **55**
Subsurface Cleanup: **55**

Response Alternative No. 1: No DoD Action Indicated

Based on the 'Planned Remedial or Removal Actions' Worksheet, this alternative will lead to 'Moderate Accessibility'.

Baseline Conditions: **55**
Surface Cleanup: **55**
Subsurface Cleanup: **55**

Response Alternative No. 2: LUCs, Focused Surface Clearance

Based on the 'Planned Remedial or Removal Actions' Worksheet, this alternative will lead to 'Moderate Accessibility'.

Baseline Conditions: **55**
Surface Cleanup: **55**
Subsurface Cleanup: **55**

Response Alternative No. 3: LUCs; 100 Percent Surface and Subsurface Clearance

Based on the 'Planned Remedial or Removal Actions' Worksheet, this alternative will lead to 'Moderate Accessibility'.

Baseline Conditions: **55**
Surface Cleanup: **55**
Subsurface Cleanup: **55**

Response Alternative No. 4: Unlimited Use/Access

Based on the 'Planned Remedial or Removal Actions' Worksheet, this alternative will lead to 'Moderate Accessibility'.

Baseline Conditions: **55**
Surface Cleanup: **55**
Subsurface Cleanup: **55**

Potential Contact Hours Input Factor Categories

The following table is used to determine scores associated with the total potential contact time:

	Description	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Many Hours	≥1,000,000 receptor-hrs/yr	120	90	30
Some Hours	100,000 to 999,999 receptor hrs/yr	70	50	20
Few Hours	10,000 to 99,999 receptor-hrs/yr	40	20	10
Very Few Hours	<10,000 receptor-hrs/yr	15	10	5

Current Use Activities:

Input factors are only determined for baseline conditions for current use activities. Based on the 'Current and Future Activities' Worksheet, the Total Potential Contact Time is: **80,000** receptor hrs/yr

Based on the table above, this corresponds to a input factor score for baseline conditions of: **40** Score

Response Alternative No. 1: No DoD Action Indicated

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Total Potential Contact Time, based on the contact time listed for current use activities (see 'Current and Future Activities' Worksheet) **80,000**

Based on the table above, this corresponds to input factor scores of: ***Score***

Baseline Conditions: **40**
Surface Cleanup: **20**
Subsurface Cleanup: **10**

Response Alternative No. 2: LUCs, Focused Surface Clearance

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Total Potential Contact Time, based on the contact time listed for current use activities (see 'Current and Future Activities' Worksheet) **80,000**

Based on the table above, this corresponds to input factor scores of: ***Score***

Baseline Conditions: **40**
Surface Cleanup: **20**
Subsurface Cleanup: **10**

Response Alternative No. 3: LUCs; 100 Percent Surface and Subsurface

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Total Potential Contact Time, based on the contact time listed for current use activities (see 'Current and Future Activities' Worksheet) **80,000**

Based on the table above, this corresponds to input factor scores of: ***Score***

Baseline Conditions: **40**
Surface Cleanup: **20**
Subsurface Cleanup: **10**

Response Alternative No. 4: Unlimited Use/Access

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Total Potential Contact Time, based on the contact time listed for current use activities (see 'Current and Future Activities' Worksheet) **80,000**

Based on the table above, this corresponds to input factor scores of: ***Score***

Baseline Conditions: **40**
Surface Cleanup: **20**
Subsurface Cleanup: **10**

Amount of MEC Input Factor Categories

The following table is used to determine scores associated with the Amount of MEC:

	Description	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Target Area	Areas at which munitions fire was directed	180	120	30
OB/OD Area	Sites where munitions were disposed of by open burn or open detonation methods. This category refers to the core activity area of an OB/OD area. See the "Safety Buffer Areas" category for safety fans and kick-outs.	180	110	30
Function Test Range	Areas where the serviceability of stored munitions or weapons systems are tested. Testing may include components, partial functioning or complete functioning of stockpile or developmental items.	165	90	25
Burial Pit	The location of a burial of large quantities of MEC items.	140	140	10
Maneuver Areas	Areas used for conducting military exercises in a simulated conflict area or war zone	115	15	5
Firing Points	The location from which a projectile, grenade, ground signal, rocket, guided missile, or other device is to be ignited, propelled, or released.	75	10	5
Safety Buffer Areas	Areas outside of target areas, test ranges, or OB/OD areas that were designed to act as a safety zone to contain munitions that do not hit targets or to contain kick-outs from OB/OD areas.	30	10	5
Storage	Any facility used for the storage of military munitions, such as earth-covered magazines, above-ground magazines, and open-air storage areas.	25	10	5
Explosive-Related Industrial Facility	Former munitions manufacturing or demilitarization sites and TNT production plants	20	10	5

Select the category that best describes the ***most hazardous*** amount of MEC: ***Score***

`Target Area`

Baseline Conditions: **180**
Surface Cleanup: **120**
Subsurface Cleanup: **30**

Minimum MEC Depth Relative to the Maximum Intrusive Depth Input Factor Categories

Current Use Activities

The shallowest minimum MEC depth, based on the 'Cased Munitions Information' Worksheet: **0.1** ft
The deepest intrusive depth: **1** ft
The table below is used to determine scores associated with the minimum MEC depth relative to the maximum intrusive depth:

	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.	240	150	95
Baseline Condition: MEC located surface and subsurface, After Cleanup: Intrusive depth does not overlap with subsurface MEC.	240	50	25
Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth overlaps with minimum MEC depth.	150	N/A	95
Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth does not overlap with minimum MEC depth.	50	N/A	25

Because the shallowest minimum MEC depth is less than or equal to the deepest intrusive depth, the intrusive depth will overlap after cleanup. MECs are located only subsurface, based on the 'Munitions, Bulk Explosive Info' Worksheet. Therefore, the category for this input factor is 'Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth overlaps with minimum MEC depth.' For 'Current Use Activities', only Baseline Conditions are considered. **150** *Score*

Future Use Activities

Deepest intrusive depth: ft

Not enough information has been entered to determine the input factor category. *Score*

Response Alternative No. 1: No DoD Action Indicated

Expected minimum MEC depth (from the 'Planned Remedial or Removal Actions' Worksheet): **0.1** ft
Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.
Maximum Intrusive Depth, based on the maximum intrusive depth listed for current use activities (see 'Current and Future Activities' Worksheet) **1** ft
Because the shallowest minimum MEC depth is less than or equal to the deepest intrusive depth, the intrusive depth overlaps. MECs are located only subsurface, based on the 'Munitions, Bulk Explosive Info' Worksheet. Therefore, the category for this input factor is 'Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth overlaps with minimum MEC depth.'

Score

Baseline Conditions: **150**
Surface Cleanup:
Subsurface Cleanup:

Response Alternative No. 2: LUCs, Focused Surface Clearance

Expected minimum MEC depth (from the 'Planned Remedial or Removal Actions' Worksheet): **0.1** ft

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Maximum Intrusive Depth, based on the maximum intrusive depth listed for current use activities (see 'Current and Future Activities' Worksheet) **1** ft

Because the shallowest minimum MEC depth is less than or equal to the deepest intrusive depth, the intrusive depth overlaps. MECs are located only subsurface, based on the 'Munitions, Bulk Explosive Info' Worksheet. Therefore, the category for this input factor is 'Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth overlaps with minimum MEC depth.'

Score

Baseline Conditions:
Surface Cleanup: **N/A**
Subsurface Cleanup:

Response Alternative No. 3: LUCs; 100 Percent Surface and Subsurface Clearance

Expected minimum MEC depth (from the 'Planned Remedial or Removal Actions' Worksheet): **1** ft

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Maximum Intrusive Depth, based on the maximum intrusive depth listed for current use activities (see 'Current and Future Activities' Worksheet) **1** ft

Because the shallowest minimum MEC depth is less than or equal to the deepest intrusive depth, the intrusive depth overlaps. MECs are located only subsurface, based on the 'Munitions, Bulk Explosive Info' Worksheet. Therefore, the category for this input factor is 'Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth overlaps with minimum MEC depth.'

Score

Baseline Conditions:
Surface Cleanup:
Subsurface Cleanup: **95**

Response Alternative No. 4: Unlimited Use/Access

Expected minimum MEC depth (from the 'Planned Remedial or Removal Actions' Worksheet): **3** ft

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Maximum Intrusive Depth, based on the maximum intrusive depth listed for current use activities (see 'Current and Future Activities' Worksheet) **1** ft

Because the shallowest minimum MEC depth is greater than the deepest intrusive depth, the intrusive depth does not overlap. MECs are located only subsurface, based on the 'Munitions, Bulk Explosive Info' Worksheet. Therefore, the category for this input factor is 'Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth does not overlap with minimum MEC depth.'

Score

Baseline Conditions:
Surface Cleanup:
Subsurface Cleanup: **25**

Migration Potential Input Factor Categories

Is there any physical or historical evidence that indicates it is possible for natural physical forces in the area (e.g., frost heave, erosion) to expose subsurface MEC items, or move surface or subsurface MEC items?

Yes

If "yes", describe the nature of natural forces. Indicate key areas of potential migration (e.g., overland water flow) on a map as appropriate (attach a map to the bottom of this sheet, or as a separate worksheet).

Erosion

The following table is used to determine scores associated with the migration potential:

	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Possible	30	30	10
Unlikely	10	10	10

Based on the question above, migration potential is 'Possible.'

Score

Baseline Conditions: **30**
Surface Cleanup: **30**
Subsurface Cleanup: **10**

Reference(s) for above information:

[redacted]

MEC Classification Input Factor Categories

Cased munitions information has been inputed into the 'Munitions, Bulk Explosive Info' Worksheet; therefore, bulk explosives do not comprise all MECs for this MRS.

The 'Amount of MEC' category is 'Target Area'. It cannot be automatically assumed that the MEC items from this category are DMM. Therefore, the conservative assumption is that the MEC items in this MRS are UXO.

Has a technical assessment shown that MEC in the OB/OD Area is DMM?

Are any of the munitions listed in the 'Munitions, Bulk Explosive Info' Worksheet:

No

- Submunitions
- Rifle-propelled 40mm projectiles (often called 40mm grenades)
- Munitions with white phosphorus filler
- High explosive anti-tank (HEAT) rounds
- Hand grenades
- Fuzes
- Mortars

None of the items listed in the 'Munitions, Bulk Explosive Info' Worksheet were identified as 'fuzed'.

The following table is used to determine scores associated with MEC classification categories:

UXO	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
UXO Special Case	180	180	180
UXO	110	110	110
Fuzed DMM Special Case	105	105	105
Fuzed DMM	55	55	55
Unfuzed DMM	45	45	45
Bulk Explosives	45	45	45

Based on your answers above, the MEC classification is 'UXO'.

Score

Baseline Conditions: **110**
Surface Cleanup: **110**
Subsurface Cleanup: **110**

MEC Size Input Factor Categories

The following table is used to determine scores associated with MEC Size:

	Description	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Small	Any munitions (from the 'Munitions, Bulk Explosive Info' Worksheet) weigh less than 90 lbs; small enough for a receptor to be able to move and initiate a detonation	40	40	40
Large	All munitions weigh more than 90 lbs; too large to move without equipment	0	0	0

Based on the definitions above and the types of munitions at the site (see 'Munitions, Bulk Explosive Info' Worksheet), the MEC Size Input Factor is:

Small

Score

Baseline Conditions: **40**
Surface Cleanup: **40**
Subsurface Cleanup: **40**

Scoring Summary

Site ID:	Eastern Range Area B	a. Scoring Summary for Current Use Activities	
Date:	4/7/2014	Response Action Cleanup:	No Response Action
Input Factor		Input Factor Category	Score
I. Energetic Material Type		High Explosive and Low Explosive Filler in Fragmenting Rounds	100
II. Location of Additional Human Receptors		Inside the MRS or inside the ESQD arc	30
III. Site Accessibility		Moderate Accessibility	55
IV. Potential Contact Hours		10,000 to 99,999 receptor-hrs/yr	40
V. Amount of MEC		Target Area	180
VI. Minimum MEC Depth Relative to Maximum Intrusive Depth		Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth overlaps with minimum MEC depth.	150
VII. Migration Potential		Possible	30
VIII. MEC Classification		UXO	110
IX. MEC Size		Small	40
		Total Score	735
		Hazard Level Category	2

Site ID:	Eastern Range Area B	c. Scoring Summary for Response Alternative 1: No DoD Action Indicated	
Date:	4/7/2014	Response Action Cleanup:	No MEC cleanup
Input Factor		Input Factor Category	Score
I. Energetic Material Type		High Explosive and Low Explosive Filler in Fragmenting Rounds	100
II. Location of Additional Human Receptors		Inside the MRS or inside the ESQD arc	30
III. Site Accessibility		Moderate Accessibility	55
IV. Potential Contact Hours		10,000 to 99,999 receptor-hrs/yr	40
V. Amount of MEC		Target Area	180
VI. Minimum MEC Depth Relative to Maximum Intrusive Depth		Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth overlaps with minimum MEC depth.	150
VII. Migration Potential		Possible	30
VIII. MEC Classification		UXO	110
IX. MEC Size		Small	40
		Total Score	735
		Hazard Level Category	2

Site ID:	Eastern Range Area B	d. Scoring Summary for Response Alternative 2: LUCs, Focused Surface Clearance	
Date:	4/7/2014	Response Action Cleanup:	cleanup of MECs located on the surface only
Input Factor		Input Factor Category	Score
I. Energetic Material Type		High Explosive and Low Explosive Filler in Fragmenting Rounds	100
II. Location of Additional Human Receptors		Inside the MRS or inside the ESQD arc	30
III. Site Accessibility		Moderate Accessibility	55
IV. Potential Contact Hours		10,000 to 99,999 receptor-hrs/yr	20
V. Amount of MEC		Target Area	120
VI. Minimum MEC Depth Relative to Maximum Intrusive Depth		Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth overlaps with minimum MEC depth.	N/A
VII. Migration Potential		Possible	30
VIII. MEC Classification		UXO	110
IX. MEC Size		Small	40
		Total Score	505
		Hazard Level Category	4

Site ID:	Eastern Range Area B	e. Scoring Summary for Response Alternative 3: LUCs; 100 Percent Surface and Subsurface Clearance	
Date:	4/7/2014	Response Action Cleanup:	cleanup of MECs located both on the surface and subsurface
Input Factor		Input Factor Category	Score
I. Energetic Material Type		High Explosive and Low Explosive Filler in Fragmenting Rounds	100
II. Location of Additional Human Receptors		Inside the MRS or inside the ESQD arc	30
III. Site Accessibility		Moderate Accessibility	55
IV. Potential Contact Hours		10,000 to 99,999 receptor-hrs/yr	10
V. Amount of MEC		Target Area	30
VI. Minimum MEC Depth Relative to Maximum Intrusive Depth		Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth overlaps with minimum MEC depth.	95
VII. Migration Potential		Possible	10
VIII. MEC Classification		UXO	110
IX. MEC Size		Small	40
		Total Score	480
		Hazard Level Category	4

Site ID:	Eastern Range Area B	f. Scoring Summary for Response Alternative 4: Unlimited Use/Access	
Date:	4/7/2014	Response Action Cleanup:	cleanup of MECs located both on the surface and subsurface
Input Factor		Input Factor Category	Score
I. Energetic Material Type		High Explosive and Low Explosive Filler in Fragmenting Rounds	100
II. Location of Additional Human Receptors		Inside the MRS or inside the ESQD arc	30
III. Site Accessibility		Moderate Accessibility	55
IV. Potential Contact Hours		10,000 to 99,999 receptor-hrs/yr	10
V. Amount of MEC		Target Area	30
VI. Minimum MEC Depth Relative to Maximum Intrusive Depth		Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth does not overlap with minimum MEC depth.	25
VII. Migration Potential		Possible	10
VIII. MEC Classification		UXO	110
IX. MEC Size		Small	40
		Total Score	410
		Hazard Level Category	4

MEC HA Hazard Level Determination		
Site ID: Eastern Range Area B		
Date: 4/7/2014		
	Hazard Level Category	**Score**
a. Current Use Activities	2	735
b. Response Alternative 1: No DoD Action Indicated	2	735
c. Response Alternative 2: LUCs, Focused Surface Clearance	4	505
d. Response Alternative 3: LUCs; 100 Percent Surface and Subsurface Clearance	4	480
e. Response Alternative 4: Unlimited Use/Access	4	410
Characteristics of the MRS		
Is critical infrastructure located within the MRS or within the ESQD arc?	Yes	
Are cultural resources located within the MRS or within the ESQD arc?	Yes	
Are significant ecological resources located within the MRS or within the ESQD arc?	Yes	

MEC HA Summary Information

Site ID: Eastern Range Area C
Date: 4/7/2014

Please identify the single specific area to be assessed in this hazard assessment. From this point forward, all references to "site" or "MRS" refer to the specific area that you have defined.

A. Enter a unique identifier for the site:

Eastern Range Area B

Provide a list of information sources used for this hazard assessment. As you are completing the worksheets, use the "Select Ref(s)" buttons at the ends of each subsection to select the applicable information sources from the list below.

Ref. No.	Title (include version, publication date)
1	Final RI/FS Report (April 2014)
2	Non-Time Critical Removal Action Report (2010)
3	Report (2007)
4	Investigation, and Removal Report (2002)
5	Removal Action Site Specific Final Report (2001)
6	Engineering Evaluation/Cost Analysis Report (2000)
7	Explosives Sampling Report (1998)
8	Report (1997)
9	Archive Search Report (1994)
10	
11	
12	

B. Briefly describe the site:

1. Area (include units): 563 acres
2. Past munitions-related use:

Target Area

3. Current land-use activities (list all that occur):

Public property used for hunting.

4. Are changes to the future land-use planned? No
5. What is the basis for the site boundaries?

FUDSMIS

6. How certain are the site boundaries?

Boundaries are speculative based on historical information.

Reference(s) for Part B:

Final RI/FS Report (April 2014)

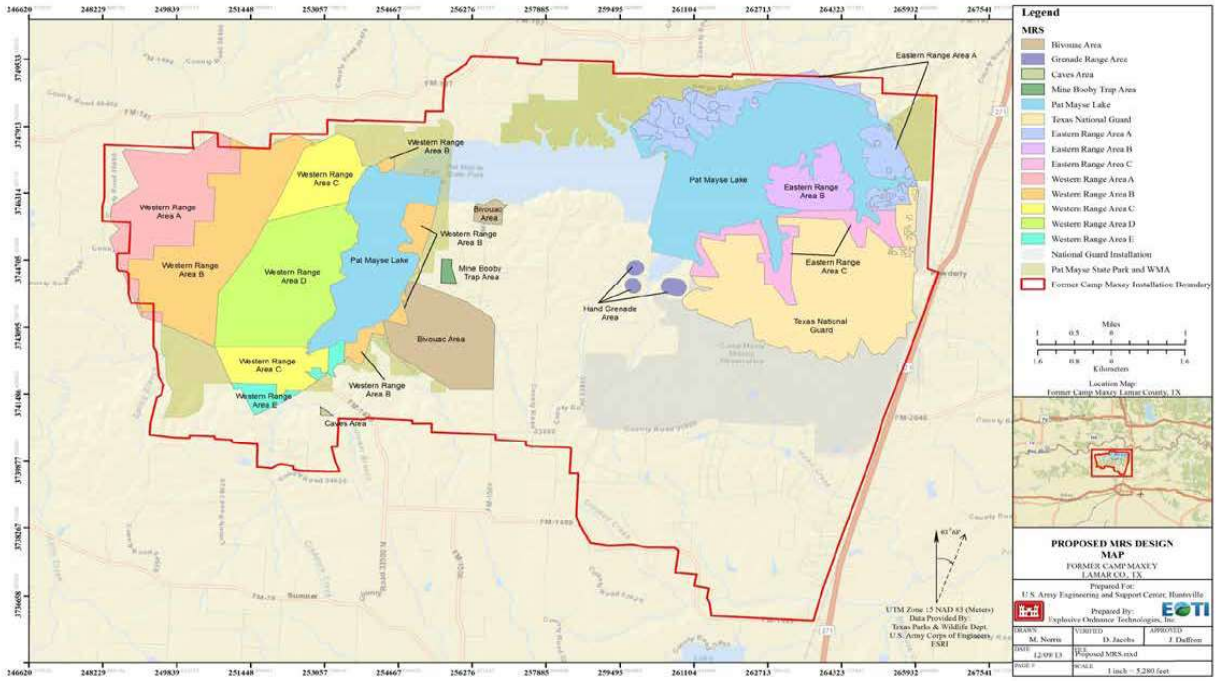
C. Historical Clearances

1. Have there been any historical clearances at the site? No, none
2. If a clearance occurred:
   a. What year was the clearance performed?
   b. Provide a description of the clearance activity (e.g., extent, depth, amount of munitions-related items removed, types and sizes of removed items, and whether metal detectors were used):

Reference(s) for Part C:

Final RI/FS Report (April 2014)

D. Attach maps of the site below (select 'Insert/Picture' on the menu bar.)



Site ID: **Eastern Range Area C**
Date: **4/7/2014**

Cased Munitions Information

Item No.	Munition Type (e.g., mortar, projectile, etc.)	Munition Size	Munition Size Units	Mark/ Model	Energetic Material Type	Is Munition Fuzed?	Fuzing Type	Fuze Condition	Minimum Depth for Munition (ft)	Location of Munitions	Comments (include rationale for munitions that are "subsurface only")
1	Artillery	37	mm	37mm APHE	High Explosive	UNK	UNK	UNK	0.33	Surface and Subsurface	
2	Artillery	37	mm	37mm HE	High Explosive	UNK	UNK	UNK	0.1	Surface and Subsurface	
3											
4											
5											
6											
7											
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15											
16											
17											
18											
19											
20											

Reference(s) for table above:

Final RI/FS Report (April 2014)

Site ID: **Eastern Range Area C**
Date: **4/7/2014**

Activities Currently Occurring at the Site

Activity No.	Activity	Number of people per year who participate in the activity	Number of hours per year a single person spends on the activity	Potential Contact Time (receptor hours/year)	Maximum intrusive depth (ft)	Comments
1	Recreational (i.e., hunting, hiking, lake access)	1,000	16	**16,000**	1	Receptor activity level is speculative but thought to be conservative.
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
			Total Potential Contact Time (receptor hrs/yr):	**16,000**		
				Maximum intrusive depth at site (ft):	**1**	

Reference(s) for table above:

Final RI/FS Report (April 2014)

Site ID: **Eastern Range Area C**
Date: **4/7/2014**

Planned Remedial or Removal Actions

Response Action No.	Response Action Description	Expected Resulting Minimum MEC Depth (ft)	Expected Resulting Site Accessibility	Will land use activities change if this response action is implemented?	What is the expected scope of cleanup?	Comments
1	No DoD Action Indicated	0.1	Full Accessibility	No	No MEC cleanup	
2	LUCs	0.1	Full Accessibility	No	No MEC cleanup	
3	LUCs; Focused Surface Removal	0.1	Full Accessibility	No	cleanup of MECs located on the surface only	
4	LUCs; 100 Percent Surface Removal	0.5	Full Accessibility	No	cleanup of MECs located on the surface only	
5	Unlimited Use/Access	3	Full Accessibility	No	cleanup of MECs located both on the surface and subsurface	
6						

According to the 'Summary Info' worksheet, no future land uses are planned. For those alternatives where you answered 'No' in Column E, the land use activities will be assessed against current land uses.

Reference(s) for table above:

Final RI/FS Report (April 2014)

Site ID: **Eastern Range Area C**
Date: **4/7/2014**

Energetic Material Type Input Factor Categories

The following table is used to determine scores associated with the energetic materials. Materials are listed in order from most hazardous to least hazardous.

	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
High Explosive and Low Explosive Filler in Fragmenting Rounds	100	100	100
White Phosphorus	70	70	70
Pyrotechnic	60	60	60
Propellant	50	50	50
Spotting Charge	40	40	40
Incendiary	30	30	30

The most hazardous type of energetic material listed in the 'Munitions, Bulk Explosive Info' Worksheet falls under the category 'High Explosive and Low Explosive Filler in Fragmenting Rounds'.

	Score
Baseline Conditions:	**100**
Surface Cleanup:	**100**
Subsurface Cleanup:	**100**

Location of Additional Human Receptors Input Factor Categories

1. What is the Explosive Safety Quantity Distance (ESQD) from the Explosive Siting Plan or the Explosive Safety Submission for the MRS? 337 feet
2. Are there currently any features or facilities where people may congregate within the MRS, or within the ESQD arc? Yes
3. Please describe the facility or feature.

Building associated with private campgrounds.

MEC Item(s) used to calculate the ESQD for current use activities

[redacted]

Item #3. Artillery (155mm, High Explosive)

The following table is used to determine scores associated with the location of additional human receptors (current use activities):

	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Inside the MRS or inside the ESQD arc	30	30	30
Outside of the ESQD arc	0	0	0

4. Current use activities are 'Inside the MRS or inside the ESQD arc', based on Question 2.'

	Score
Baseline Conditions:	**30**
Surface Cleanup:	**30**
Subsurface Cleanup:	**30**

Comments

Site Accessibility Input Factor Categories

The following table is used to determine scores associated with site accessibility:

	Description	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Full Accessibility	No barriers to entry, including signage but no fencing	80	80	80
Moderate Accessibility	Some barriers to entry, such as barbed wire fencing or rough terrain	55	55	55
Limited Accessibility	Significant barriers to entry, such as unguarded chain link fence or requirements for special transportation to reach the site	15	15	15
Very Limited Accessibility	A site with guarded chain link fence or terrain that requires special equipment and skills (e.g., rock climbing) to access	5	5	5

Current Use Activities

Score

Select the category that best describes the site accessibility under the current use scenario:

Full Accessibility

Baseline Conditions: **80**
Surface Cleanup: **80**
Subsurface Cleanup: **80**

Response Alternative No. 1: No DoD Action Indicated

Based on the 'Planned Remedial or Removal Actions' Worksheet, this alternative will lead to 'Full Accessibility'.

Baseline Conditions: **80**
Surface Cleanup: **80**
Subsurface Cleanup: **80**

Response Alternative No. 2: LUCs

Based on the 'Planned Remedial or Removal Actions' Worksheet, this alternative will lead to 'Full Accessibility'.

Baseline Conditions: **80**
Surface Cleanup: **80**
Subsurface Cleanup: **80**

Response Alternative No. 3: LUCs; Focused Surface Removal

Based on the 'Planned Remedial or Removal Actions' Worksheet, this alternative will lead to 'Full Accessibility'.

Baseline Conditions: **80**
Surface Cleanup: **80**
Subsurface Cleanup: **80**

Response Alternative No. 4: LUCs; 100 Percent Surface Removal

Based on the 'Planned Remedial or Removal Actions' Worksheet, this alternative will lead to 'Full Accessibility'.

Baseline Conditions: **80**
Surface Cleanup: **80**
Subsurface Cleanup: **80**

Potential Contact Hours Input Factor Categories

The following table is used to determine scores associated with the total potential contact time:

	Description	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Many Hours	≥1,000,000 receptor-hrs/yr	120	90	30
Some Hours	100,000 to 999,999 receptor hrs/yr	70	50	20
Few Hours	10,000 to 99,999 receptor-hrs/yr	40	20	10
Very Few Hours	<10,000 receptor-hrs/yr	15	10	5

Current Use Activities:

Input factors are only determined for baseline conditions for current use activities. Based on the 'Current and Future Activities' Worksheet, the Total Potential Contact Time is: **16,000** receptor hrs/yr

Based on the table above, this corresponds to a input factor score for baseline conditions of: **40** Score

Response Alternative No. 1: No DoD Action Indicated

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Total Potential Contact Time, based on the contact time listed for current use activities (see 'Current and Future Activities' Worksheet) **16,000**

Based on the table above, this corresponds to input factor scores of: ***Score***

Baseline Conditions: **40**
Surface Cleanup: **20**
Subsurface Cleanup: **10**

Response Alternative No. 2: LUCs

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Total Potential Contact Time, based on the contact time listed for current use activities (see 'Current and Future Activities' Worksheet) **16,000**

Based on the table above, this corresponds to input factor scores of: ***Score***

Baseline Conditions: **40**
Surface Cleanup: **20**
Subsurface Cleanup: **10**

Response Alternative No. 3: LUCs; Focused Surface Removal

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Total Potential Contact Time, based on the contact time listed for current use activities (see 'Current and Future Activities' Worksheet) **16,000**

Based on the table above, this corresponds to input factor scores of: ***Score***

Baseline Conditions: **40**
Surface Cleanup: **20**
Subsurface Cleanup: **10**

Response Alternative No. 4: LUCs; 100 Percent Surface Removal

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Total Potential Contact Time, based on the contact time listed for current use activities (see 'Current and Future Activities' Worksheet) **16,000**

Based on the table above, this corresponds to input factor scores of: ***Score***

Baseline Conditions: **40**
Surface Cleanup: **20**
Subsurface Cleanup: **10**

Amount of MEC Input Factor Categories

The following table is used to determine scores associated with the Amount of MEC:

	Description	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Target Area	Areas at which munitions fire was directed	180	120	30
OB/OD Area	Sites where munitions were disposed of by open burn or open detonation methods. This category refers to the core activity area of an OB/OD area. See the "Safety Buffer Areas" category for safety fans and kick-outs.	180	110	30
Function Test Range	Areas where the serviceability of stored munitions or weapons systems are tested. Testing may include components, partial functioning or complete functioning of stockpile or developmental items.	165	90	25
Burial Pit	The location of a burial of large quantities of MEC items.	140	140	10
Maneuver Areas	Areas used for conducting military exercises in a simulated conflict area or war zone	115	15	5
Firing Points	The location from which a projectile, grenade, ground signal, rocket, guided missile, or other device is to be ignited, propelled, or released.	75	10	5
Safety Buffer Areas	Areas outside of target areas, test ranges, or OB/OD areas that were designed to act as a safety zone to contain munitions that do not hit targets or to contain kick-outs from OB/OD areas.	30	10	5
Storage	Any facility used for the storage of military munitions, such as earth-covered magazines, above-ground magazines, and open-air storage areas.	25	10	5
Explosive-Related Industrial Facility	Former munitions manufacturing or demilitarization sites and TNT production plants	20	10	5

Select the category that best describes the ***most hazardous*** amount of MEC: ***Score***

`Target Area`

Baseline Conditions: **180**
Surface Cleanup: **120**
Subsurface Cleanup: **30**

Minimum MEC Depth Relative to the Maximum Intrusive Depth Input Factor Categories

Current Use Activities

The shallowest minimum MEC depth, based on the 'Cased Munitions Information' Worksheet: **0.1** ft
The deepest intrusive depth: **1** ft
The table below is used to determine scores associated with the minimum MEC depth relative to the maximum intrusive depth:

	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.	240	150	95
Baseline Condition: MEC located surface and subsurface, After Cleanup: Intrusive depth does not overlap with subsurface MEC.	240	50	25
Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth overlaps with minimum MEC depth.	150	N/A	95
Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth does not overlap with minimum MEC depth.	50	N/A	25

Because the shallowest minimum MEC depth is less than or equal to the deepest intrusive depth, the intrusive depth will overlap after cleanup. MECs are located only subsurface, based on the 'Munitions, Bulk Explosive Info' Worksheet. Therefore, the category for this input factor is 'Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth overlaps with minimum MEC depth.' For 'Current Use Activities', only Baseline Conditions are considered. **150** *Score*

Future Use Activities

Deepest intrusive depth: ft

Not enough information has been entered to determine the input factor category. *Score*

Response Alternative No. 1: No DoD Action Indicated

Expected minimum MEC depth (from the 'Planned Remedial or Removal Actions' Worksheet): **0.1** ft
Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.
Maximum Intrusive Depth, based on the maximum intrusive depth listed for current use activities (see 'Current and Future Activities' Worksheet) **1** ft
Because the shallowest minimum MEC depth is less than or equal to the deepest intrusive depth, the intrusive depth overlaps. MECs are located only subsurface, based on the 'Munitions, Bulk Explosive Info' Worksheet. Therefore, the category for this input factor is 'Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth overlaps with minimum MEC depth.'

Score

Baseline Conditions: **150**
Surface Cleanup:
Subsurface Cleanup:

Response Alternative No. 2: LUCs

Expected minimum MEC depth (from the 'Planned Remedial or Removal Actions' Worksheet): **0.1** ft

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Maximum Intrusive Depth, based on the maximum intrusive depth listed for current use activities (see 'Current and Future Activities' Worksheet) **1** ft

Because the shallowest minimum MEC depth is less than or equal to the deepest intrusive depth, the intrusive depth overlaps. MECs are located only subsurface, based on the 'Munitions, Bulk Explosive Info' Worksheet. Therefore, the category for this input factor is 'Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth overlaps with minimum MEC depth.'

Score

Baseline Conditions: **150**
Surface Cleanup:
Subsurface Cleanup:

Response Alternative No. 3: LUCs; Focused Surface Removal

Expected minimum MEC depth (from the 'Planned Remedial or Removal Actions' Worksheet): **0.1** ft

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Maximum Intrusive Depth, based on the maximum intrusive depth listed for current use activities (see 'Current and Future Activities' Worksheet) **1** ft

Because the shallowest minimum MEC depth is less than or equal to the deepest intrusive depth, the intrusive depth overlaps. MECs are located only subsurface, based on the 'Munitions, Bulk Explosive Info' Worksheet. Therefore, the category for this input factor is 'Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth overlaps with minimum MEC depth.'

Score

Baseline Conditions:
Surface Cleanup: **N/A**
Subsurface Cleanup:

Response Alternative No. 4: LUCs; 100 Percent Surface Removal

Expected minimum MEC depth (from the 'Planned Remedial or Removal Actions' Worksheet): **0.5** ft

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Maximum Intrusive Depth, based on the maximum intrusive depth listed for current use activities (see 'Current and Future Activities' Worksheet) **1** ft

Because the shallowest minimum MEC depth is less than or equal to the deepest intrusive depth, the intrusive depth overlaps. MECs are located only subsurface, based on the 'Munitions, Bulk Explosive Info' Worksheet. Therefore, the category for this input factor is 'Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth overlaps with minimum MEC depth.'

Score

Baseline Conditions:
Surface Cleanup: **N/A**
Subsurface Cleanup:

Migration Potential Input Factor Categories

Is there any physical or historical evidence that indicates it is possible for natural physical forces in the area (e.g., frost heave, erosion) to expose subsurface MEC items, or move surface or subsurface MEC items? Yes

If "yes", describe the nature of natural forces. Indicate key areas of potential migration (e.g., overland water flow) on a map as appropriate (attach a map to the bottom of this sheet, or as a separate worksheet).

Erosion

The following table is used to determine scores associated with the migration potential:

	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Possible	30	30	10
Unlikely	10	10	10

Based on the question above, migration potential is 'Possible.' *Score*

Baseline Conditions: **30**
Surface Cleanup: **30**
Subsurface Cleanup: **10**

Reference(s) for above information:

Draft Final RI/FS Report (February 2014)

MEC Classification Input Factor Categories

Cased munitions information has been inputed into the 'Munitions, Bulk Explosive Info' Worksheet; therefore, bulk explosives do not comprise all MECs for this MRS.

The 'Amount of MEC' category is 'Target Area'. It cannot be automatically assumed that the MEC items from this category are DMM. Therefore, the conservative assumption is that the MEC items in this MRS are UXO.

Has a technical assessment shown that MEC in the OB/OD Area is DMM?

Are any of the munitions listed in the 'Munitions, Bulk Explosive Info' Worksheet: No

- Submunitions
- Rifle-propelled 40mm projectiles (often called 40mm grenades)
- Munitions with white phosphorus filler
- High explosive anti-tank (HEAT) rounds
- Hand grenades
- Fuzes
- Mortars

None of the items listed in the 'Munitions, Bulk Explosive Info' Worksheet were identified as 'fuzed'.

The following table is used to determine scores associated with MEC classification categories:

UXO	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
UXO Special Case	180	180	180
UXO	110	110	110
Fuzed DMM Special Case	105	105	105
Fuzed DMM	55	55	55
Unfuzed DMM	45	45	45
Bulk Explosives	45	45	45

Based on your answers above, the MEC classification is 'UXO'. *Score*

Baseline Conditions: **110**
Surface Cleanup: **110**
Subsurface Cleanup: **110**

MEC Size Input Factor Categories

The following table is used to determine scores associated with MEC Size:

	Description	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Small	Any munitions (from the 'Munitions, Bulk Explosive Info' Worksheet) weigh less than 90 lbs; small enough for a receptor to be able to move and initiate a detonation	40	40	40
Large	All munitions weigh more than 90 lbs; too large to move without equipment	0	0	0

Based on the definitions above and the types of munitions at the site (see 'Munitions, Bulk Explosive Info' Worksheet), the MEC Size Input Factor is: Small

Score

Baseline Conditions: **40**
Surface Cleanup: **40**
Subsurface Cleanup: **40**

Scoring Summary

Site ID:	Eastern Range Area C	a. Scoring Summary for Current Use Activities	
Date:	4/7/2014	Response Action Cleanup:	No Response Action
Input Factor		Input Factor Category	Score
I. Energetic Material Type		High Explosive and Low Explosive Filler in Fragmenting Rounds	100
II. Location of Additional Human Receptors		Inside the MRS or inside the ESQD arc	30
III. Site Accessibility		Full Accessibility	80
IV. Potential Contact Hours		10,000 to 99,999 receptor-hrs/yr	40
V. Amount of MEC		Target Area	180
VI. Minimum MEC Depth Relative to Maximum Intrusive Depth		Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth overlaps with minimum MEC depth.	150
VII. Migration Potential		Possible	30
VIII. MEC Classification		UXO	110
IX. MEC Size		Small	40
		Total Score	**760**
		Hazard Level Category	**2**

Site ID:	Eastern Range Area C	c. Scoring Summary for Response Alternative 1: No DoD Action Indicated	
Date:	4/7/2014	Response Action Cleanup:	No MEC cleanup
Input Factor		Input Factor Category	Score
I. Energetic Material Type		High Explosive and Low Explosive Filler in Fragmenting Rounds	100
II. Location of Additional Human Receptors		Inside the MRS or inside the ESQD arc	30
III. Site Accessibility		Full Accessibility	80
IV. Potential Contact Hours		10,000 to 99,999 receptor-hrs/yr	40
V. Amount of MEC		Target Area	180
VI. Minimum MEC Depth Relative to Maximum Intrusive Depth		Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth overlaps with minimum MEC depth.	150
VII. Migration Potential		Possible	30
VIII. MEC Classification		UXO	110
IX. MEC Size		Small	40
		Total Score	**760**
		Hazard Level Category	**2**

Site ID:	Eastern Range Area C	d. Scoring Summary for Response Alternative 2: LUCs	
Date:	4/7/2014	Response Action Cleanup:	No MEC cleanup
Input Factor		Input Factor Category	Score
I. Energetic Material Type		High Explosive and Low Explosive Filler in Fragmenting Rounds	100
II. Location of Additional Human Receptors		Inside the MRS or inside the ESQD arc	30
III. Site Accessibility		Full Accessibility	80
IV. Potential Contact Hours		10,000 to 99,999 receptor-hrs/yr	40
V. Amount of MEC		Target Area	180
VI. Minimum MEC Depth Relative to Maximum Intrusive Depth		Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth overlaps with minimum MEC depth.	150
VII. Migration Potential		Possible	30
VIII. MEC Classification		UXO	110
IX. MEC Size		Small	40
		Total Score	**760**
		Hazard Level Category	**2**

Site ID:	Eastern Range Area C	e. Scoring Summary for Response Alternative 3: LUCs; Focused Surface Removal	
Date:	4/7/2014	Response Action Cleanup:	cleanup of MECs located on the surface only
Input Factor		Input Factor Category	Score
I. Energetic Material Type		High Explosive and Low Explosive Filler in Fragmenting Rounds	100
II. Location of Additional Human Receptors		Inside the MRS or inside the ESQD arc	30
III. Site Accessibility		Full Accessibility	80
IV. Potential Contact Hours		10,000 to 99,999 receptor-hrs/yr	20
V. Amount of MEC		Target Area	120
VI. Minimum MEC Depth Relative to Maximum Intrusive Depth		Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth overlaps with minimum MEC depth.	N/A
VII. Migration Potential		Possible	30
VIII. MEC Classification		UXO	110
IX. MEC Size		Small	40
		Total Score	**530**
		Hazard Level Category	**3**

Site ID:	Eastern Range Area C	f. Scoring Summary for Response Alternative 4: LUCs; 100 Percent Surface Removal	
Date:	4/7/2014	Response Action Cleanup:	cleanup of MECs located on the surface only
Input Factor		Input Factor Category	Score
I. Energetic Material Type		High Explosive and Low Explosive Filler in Fragmenting Rounds	100
II. Location of Additional Human Receptors		Inside the MRS or inside the ESQD arc	30
III. Site Accessibility		Full Accessibility	80
IV. Potential Contact Hours		10,000 to 99,999 receptor-hrs/yr	20
V. Amount of MEC		Target Area	120
VI. Minimum MEC Depth Relative to Maximum Intrusive Depth		Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth overlaps with minimum MEC depth.	N/A
VII. Migration Potential		Possible	30
VIII. MEC Classification		UXO	110
IX. MEC Size		Small	40
		Total Score	**530**
		Hazard Level Category	**3**

Site ID:	Eastern Range Area C	g. Scoring Summary for Response Alternative 5: Unlimited Use/Access	
Date:	4/7/2014	Response Action Cleanup:	cleanup of MECs located both on the surface and subsurface
Input Factor		Input Factor Category	Score
I. Energetic Material Type		High Explosive and Low Explosive Filler in Fragmenting Rounds	100
II. Location of Additional Human Receptors		Inside the MRS or inside the ESQD arc	30
III. Site Accessibility		Full Accessibility	80
IV. Potential Contact Hours		10,000 to 99,999 receptor-hrs/yr	10
V. Amount of MEC		Target Area	30
VI. Minimum MEC Depth Relative to Maximum Intrusive Depth		Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth does not overlap with minimum MEC depth.	25
VII. Migration Potential		Possible	10
VIII. MEC Classification		UXO	110
IX. MEC Size		Small	40
		Total Score	**435**
		Hazard Level Category	**4**

MEC HA Hazard Level Determination		
Site ID: Eastern Range Area C		
Date: 4/7/2014		
	Hazard Level Category	**Score**
a. Current Use Activities	2	760
c. Response Alternative 1: No DoD Action Indicated	2	760
d. Response Alternative 2: LUCs	2	760
e. Response Alternative 3: LUCs; Focused Surface Removal	3	530
f. Response Alternative 4: LUCs; 100 Percent Surface Removal	3	530
g. Response Alternative 5: Unlimited Use/Access	4	435
Characteristics of the MRS		
Is critical infrastructure located within the MRS or within the ESQD arc?	Yes	
Are cultural resources located within the MRS or within the ESQD arc?	Yes	
Are significant ecological resources located within the MRS or within the ESQD arc?	Yes	

MEC HA Summary Information

Site ID: Western Range Area D
Date: 4/7/2014

Please identify the single specific area to be assessed in this hazard assessment. From this point forward, all references to "site" or "MRS" refer to the specific area that you have defined.

A. Enter a unique identifier for the site:

Western Range Area D

Provide a list of information sources used for this hazard assessment. As you are completing the worksheets, use the "Select Ref(s)" buttons at the ends of each subsection to select the applicable information sources from the list below.

Ref. No.	Title (include version, publication date)
1	Final RI/FS Report (April 2014)
2	Non-Time Critical Removal Action Report (2010)
3	Report (2007)
4	Investigation, and Removal Report (2002)
5	Removal Action Site Specific Final Report (2001)
6	Engineering Evaluation/Cost Analysis Report (2000)
7	Explosives Sampling Report (1998)
8	Report (1997)
9	Archive Search Report (1994)
10	
11	
12	

B. Briefly describe the site:

1. Area (include units): 1870 acres
2. Past munitions-related use:

Target Area

3. Current land-use activities (list all that occur):

Pat Mayse WMA

4. Are changes to the future land-use planned? No
5. What is the basis for the site boundaries?

FUDSMIS

6. How certain are the site boundaries?

Boundaries are speculative based on historical information.

Reference(s) for Part B:

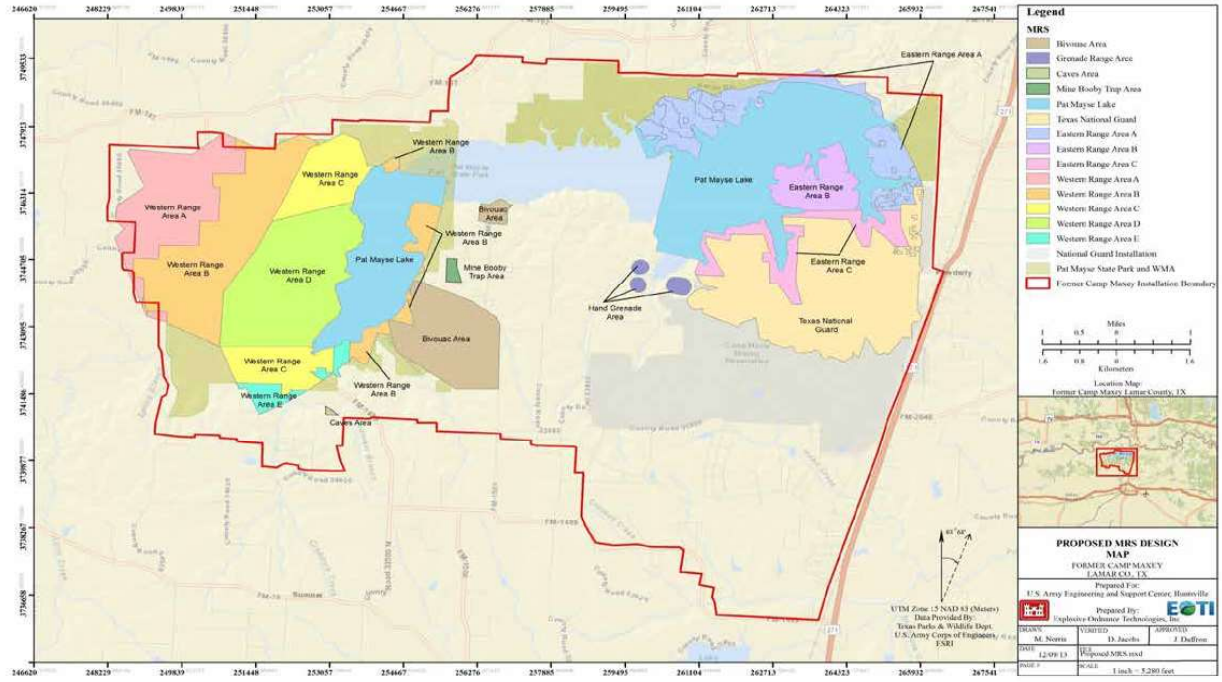
Final RI/FS Report (April 2014)

C. Historical Clearances

1. Have there been any historical clearances at the site? No, none

Final RI/FS Report (April 2014)

D. Attach maps of the site below (select 'Insert/Picture' on the menu bar.)



Site ID: **Western Range Area D**
Date: **4/7/2014**

Cased Munitions Information

Item No.	Munition Type (e.g., mortar, projectile, etc.)	Munition Size	Munition Size Units	Mark/ Model	Energetic Material Type	Is Munition Fuzed?	Fuzing Type	Fuze Condition	Minimum Depth for Munition (ft)	Location of Munitions	Comments (include rationale for munitions that are "subsurface only")
1	Artillery	76	mm	76 mm APHE	High Explosive	UNK	UNK	UNK	0	Surface and Subsurface	Found on transect during geophysical operations and at depths of 8 and 12 inches.
2	Artillery	155	mm	155mm HE	High Explosive	UNK	UNK	UNK	0.33	Surface and Subsurface	
3	Pyrotechnic	105	mm	105mm Smoke Canister	Pyrotechnic	UNK	UNK	UNK	0	Surface and Subsurface	Found on transect during geophysical operations.
4	Rockets	2.36	inches	2.36-inch Rocket Motor with Fuze	High Explosive	Yes	UNK	UNK	0	Surface and Subsurface	Found on transect during geophysical operations.
5											
6											
7											
8											
9											
10											
11											
12											
13											

Reference(s) for table above:

Final RI/FS Report (April 2014) [redacted]

Site ID: **Western Range Area D**
Date: **4/7/2014**

Activities Currently Occurring at the Site

Activity No.	Activity	Number of people per year who participate in the activity	Number of hours per year a single person spends on the activity	Potential Contact Time (receptor hours/year)	Maximum intrusive depth (ft)	Comments
1	Recreational (i.e., hunting, hiking, lake access)	4,000	16	**64,000**	1	Receptor activity level is speculative but thought to be conservative.
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
			Total Potential Contact Time (receptor hrs/yr):	**64,000**		
			Maximum intrusive depth at site (ft):		**1**	

Reference(s) for table above:

Final RI/FS Report (April 2014)

Site ID: **Western Range Area D**
Date: **4/7/2014**

Planned Remedial or Removal Actions

Response Action No.	Response Action Description	Expected Resulting Minimum MEC Depth (ft)	Expected Resulting Site Accessibility	Will land use activities change if this response action is implemented?	What is the expected scope of cleanup?	Comments
1	No DoD Action Indicated	0	Full Accessibility	No	No MEC cleanup	
2	LUCs; 100 Percent Surface Clearance	0.33	Full Accessibility	No	cleanup of MECs located on the surface only	
3	LUCs; Focused Surface and Subsurface Clearance	1	Full Accessibility	No	cleanup of MECs located both on the surface and subsurface	
4	Unlimited Use/Access	3	Full Accessibility	No	cleanup of MECs located both on the surface and subsurface	
5						
6						

According to the 'Summary Info' worksheet, no future land uses are planned. For those alternatives where you answered 'No' in Column E, the land use activities will be assessed against current land uses.

Reference(s) for table above:

Final RI/FS Report (April 2014)

Site ID: **Western Range Area D**
Date: **4/7/2014**

Energetic Material Type Input Factor Categories

The following table is used to determine scores associated with the energetic materials. Materials are listed in order from most hazardous to least hazardous.

	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
High Explosive and Low Explosive Filler in Fragmenting Rounds	100	100	100
White Phosphorus	70	70	70
Pyrotechnic	60	60	60
Propellant	50	50	50
Spotting Charge	40	40	40
Incendiary	30	30	30

The most hazardous type of energetic material listed in the 'Munitions, Bulk Explosive Info' Worksheet falls under the category 'High Explosive and Low Explosive Filler in Fragmenting Rounds'.

Score

Baseline Conditions: **100**
Surface Cleanup: **100**
Subsurface Cleanup: **100**

Location of Additional Human Receptors Input Factor Categories

1. What is the Explosive Safety Quantity Distance (ESQD) from the Explosive Siting Plan or the Explosive Safety Submission for the MRS? 337 feet
2. Are there currently any features or facilities where people may congregate within the MRS, or within the ESQD arc? Yes
3. Please describe the facility or feature.

Residential

MEC Item(s) used to calculate the ESQD for current use activities

Item #3. Artillery (155mm, High Explosive)

The following table is used to determine scores associated with the location of additional human receptors (current use activities):

	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Inside the MRS or inside the ESQD arc	30	30	30
Outside of the ESQD arc	0	0	0

4. Current use activities are 'Inside the MRS or inside the ESQD arc', based on Question 2.'

Score

Baseline Conditions: **30**
Surface Cleanup: **30**
Subsurface Cleanup: **30**

Comments

Site Accessibility Input Factor Categories

The following table is used to determine scores associated with site accessibility:

	Description	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Full Accessibility	No barriers to entry, including signage but no fencing	80	80	80
Moderate Accessibility	Some barriers to entry, such as barbed wire fencing or rough terrain	55	55	55
Limited Accessibility	Significant barriers to entry, such as unguarded chain link fence or requirements for special transportation to reach the site	15	15	15
Very Limited Accessibility	A site with guarded chain link fence or terrain that requires special equipment and skills (e.g., rock climbing) to access	5	5	5

Current Use Activities

Select the category that best describes the site accessibility under the current use scenario:

Full Accessibility

	Score
Baseline Conditions:	**80**
Surface Cleanup:	**80**
Subsurface Cleanup:	**80**

Response Alternative No. 1: No DoD Action Indicated

Based on the 'Planned Remedial or Removal Actions' Worksheet, this alternative will lead to 'Full Accessibility'.

Baseline Conditions:	**80**
Surface Cleanup:	**80**
Subsurface Cleanup:	**80**

Response Alternative No. 2: LUCs; 100 Percent Surface Clearance

Based on the 'Planned Remedial or Removal Actions' Worksheet, this alternative will lead to 'Full Accessibility'.

Baseline Conditions:	**80**
Surface Cleanup:	**80**
Subsurface Cleanup:	**80**

Response Alternative No. 3: LUCs; Focused Surface and Subsurface Clearance

Based on the 'Planned Remedial or Removal Actions' Worksheet, this alternative will lead to 'Full Accessibility'.

Baseline Conditions:	**80**
Surface Cleanup:	**80**
Subsurface Cleanup:	**80**

Response Alternative No. 4: Unlimited Use/Access

Based on the 'Planned Remedial or Removal Actions' Worksheet, this alternative will lead to 'Full Accessibility'.

Baseline Conditions:	**80**
Surface Cleanup:	**80**
Subsurface Cleanup:	**80**

Potential Contact Hours Input Factor Categories

The following table is used to determine scores associated with the total potential contact time:

	Description	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Many Hours	≥1,000,000 receptor-hrs/yr	120	90	30
Some Hours	100,000 to 999,999 receptor hrs/yr	70	50	20
Few Hours	10,000 to 99,999 receptor-hrs/yr	40	20	10
Very Few Hours	<10,000 receptor-hrs/yr	15	10	5

Current Use Activities:

Input factors are only determined for baseline conditions for current use activities. Based on the 'Current and Future Activities' Worksheet, the Total Potential Contact Time is: **64,000** receptor hrs/yr

Based on the table above, this corresponds to a input factor score for baseline conditions of: **40** Score

Response Alternative No. 1: No DoD Action Indicated

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Total Potential Contact Time, based on the contact time listed for current use activities (see 'Current and Future Activities' Worksheet) **64,000**

Based on the table above, this corresponds to input factor scores of: ***Score***

Baseline Conditions: **40**
Surface Cleanup: **20**
Subsurface Cleanup: **10**

Response Alternative No. 2: LUCs; 100 Percent Surface Clearance

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Total Potential Contact Time, based on the contact time listed for current use activities (see 'Current and Future Activities' Worksheet) **64,000**

Based on the table above, this corresponds to input factor scores of: ***Score***

Baseline Conditions: **40**
Surface Cleanup: **20**
Subsurface Cleanup: **10**

Response Alternative No. 3: LUCs; Focused Surface and Subsurface

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Total Potential Contact Time, based on the contact time listed for current use activities (see 'Current and Future Activities' Worksheet) **64,000**

Based on the table above, this corresponds to input factor scores of: ***Score***

Baseline Conditions: **40**
Surface Cleanup: **20**
Subsurface Cleanup: **10**

Response Alternative No. 4: Unlimited Use/Access

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Total Potential Contact Time, based on the contact time listed for current use activities (see 'Current and Future Activities' Worksheet) **64,000**

Based on the table above, this corresponds to input factor scores of: ***Score***

Baseline Conditions: **40**
Surface Cleanup: **20**
Subsurface Cleanup: **10**

Amount of MEC Input Factor Categories

The following table is used to determine scores associated with the Amount of MEC:

	Description	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Target Area	Areas at which munitions fire was directed	180	120	30
OB/OD Area	Sites where munitions were disposed of by open burn or open detonation methods. This category refers to the core activity area of an OB/OD area. See the "Safety Buffer Areas" category for safety fans and kick-outs.	180	110	30
Function Test Range	Areas where the serviceability of stored munitions or weapons systems are tested. Testing may include components, partial functioning or complete functioning of stockpile or developmental items.	165	90	25
Burial Pit	The location of a burial of large quantities of MEC items.	140	140	10
Maneuver Areas	Areas used for conducting military exercises in a simulated conflict area or war zone	115	15	5
Firing Points	The location from which a projectile, grenade, ground signal, rocket, guided missile, or other device is to be ignited, propelled, or released.	75	10	5
Safety Buffer Areas	Areas outside of target areas, test ranges, or OB/OD areas that were designed to act as a safety zone to contain munitions that do not hit targets or to contain kick-outs from OB/OD areas.	30	10	5
Storage	Any facility used for the storage of military munitions, such as earth-covered magazines, above-ground magazines, and open-air storage areas.	25	10	5
Explosive-Related Industrial Facility	Former munitions manufacturing or demilitarization sites and TNT production plants	20	10	5

Select the category that best describes the ***most hazardous*** amount of MEC: ***Score***

Target Area

Baseline Conditions: **180**
Surface Cleanup: **120**
Subsurface Cleanup: **30**

Minimum MEC Depth Relative to the Maximum Intrusive Depth Input Factor Categories

Current Use Activities

The shallowest minimum MEC depth, based on the 'Cased Munitions Information' Worksheet: **0** ft
The deepest intrusive depth: **1** ft
The table below is used to determine scores associated with the minimum MEC depth relative to the maximum intrusive depth:

	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.	240	150	95
Baseline Condition: MEC located surface and subsurface, After Cleanup: Intrusive depth does not overlap with subsurface MEC.	240	50	25
Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth overlaps with minimum MEC depth.	150	N/A	95
Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth does not overlap with minimum MEC depth.	50	N/A	25

Because the shallowest minimum MEC depth is less than or equal to the deepest intrusive depth, the intrusive depth will overlap after cleanup. MECs are located at both the surface and subsurface, based on the 'Munitions, Bulk Explosive Info' Worksheet. Therefore, the category for this input factor is 'Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.' For 'Current Use Activities', only Baseline Conditions are considered. **240** *Score*

Future Use Activities

Deepest intrusive depth: ft

Not enough information has been entered to determine the input factor category. *Score*

Response Alternative No. 1: No DoD Action Indicated

Expected minimum MEC depth (from the 'Planned Remedial or Removal Actions' Worksheet): **0** ft
Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.
Maximum Intrusive Depth, based on the maximum intrusive depth listed for current use activities (see 'Current and Future Activities' Worksheet) **1** ft
Because the shallowest minimum MEC depth is less than or equal to the deepest intrusive depth, the intrusive depth overlaps. MECs are located at both the surface and subsurface, based on the 'Munitions, Bulk Explosive Info' Worksheet. Therefore, the category for this input factor is 'Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.'

Score

Baseline Conditions: **240**
Surface Cleanup:
Subsurface Cleanup:

Response Alternative No. 2: LUCs; 100 Percent Surface Clearance

Expected minimum MEC depth (from the 'Planned Remedial or Removal Actions' Worksheet): **0.33** ft

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Maximum Intrusive Depth, based on the maximum intrusive depth listed for current use activities (see 'Current and Future Activities' Worksheet) **1** ft

Because the shallowest minimum MEC depth is less than or equal to the deepest intrusive depth, the intrusive depth overlaps. MECs are located at both the surface and subsurface, based on the 'Munitions, Bulk Explosive Info' Worksheet. Therefore, the category for this input factor is 'Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.'

Score

Baseline Conditions:
Surface Cleanup: **150**
Subsurface Cleanup:

Response Alternative No. 3: LUCs; Focused Surface and Subsurface Clearance

Expected minimum MEC depth (from the 'Planned Remedial or Removal Actions' Worksheet): **1** ft

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Maximum Intrusive Depth, based on the maximum intrusive depth listed for current use activities (see 'Current and Future Activities' Worksheet) **1** ft

Because the shallowest minimum MEC depth is less than or equal to the deepest intrusive depth, the intrusive depth overlaps. MECs are located at both the surface and subsurface, based on the 'Munitions, Bulk Explosive Info' Worksheet. Therefore, the category for this input factor is 'Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.'

Score

Baseline Conditions:
Surface Cleanup:
Subsurface Cleanup: **95**

Response Alternative No. 4: Unlimited Use/Access

Expected minimum MEC depth (from the 'Planned Remedial or Removal Actions' Worksheet): **3** ft

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Maximum Intrusive Depth, based on the maximum intrusive depth listed for current use activities (see 'Current and Future Activities' Worksheet) **1** ft

Because the shallowest minimum MEC depth is greater than the deepest intrusive depth, the intrusive depth does not overlap. MECs are located at both the surface and subsurface, based on the 'Munitions, Bulk Explosive Info' Worksheet. Therefore, the category for this input factor is 'Baseline Condition: MEC located surface and subsurface, After Cleanup: Intrusive depth does not overlap with subsurface MEC.'

Score

Baseline Conditions:
Surface Cleanup:
Subsurface Cleanup: **25**

Migration Potential Input Factor Categories

Is there any physical or historical evidence that indicates it is possible for natural physical forces in the area (e.g., frost heave, erosion) to expose subsurface MEC items, or move surface or subsurface MEC items? Yes

If "yes", describe the nature of natural forces. Indicate key areas of potential migration (e.g., overland water flow) on a map as appropriate (attach a map to the bottom of this sheet, or as a separate worksheet).

Erosion

The following table is used to determine scores associated with the migration potential:

	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Possible	30	30	10
Unlikely	10	10	10

Based on the question above, migration potential is 'Possible.'

Score

Baseline Conditions: **30**
Surface Cleanup: **30**
Subsurface Cleanup: **10**

Reference(s) for above information:

Final RI/FS Report (April 2014)

MEC Classification Input Factor Categories

Cased munitions information has been inputed into the 'Munitions, Bulk Explosive Info' Worksheet; therefore, bulk explosives do not comprise all MECs for this MRS.

The 'Amount of MEC' category is 'Target Area'. It cannot be automatically assumed that the MEC items from this category are DMM. Therefore, the conservative assumption is that the MEC items in this MRS are UXO.

Has a technical assessment shown that MEC in the OB/OD Area is DMM?

Are any of the munitions listed in the 'Munitions, Bulk Explosive Info' Worksheet: Yes

- Submunitions
- Rifle-propelled 40mm projectiles (often called 40mm grenades)
- Munitions with white phosphorus filler
- High explosive anti-tank (HEAT) rounds
- Hand grenades
- Fuzes
- Mortars

At least one item listed in the 'Munitions, Bulk Explosive Info' Worksheet was identified as 'fuzed'.

The following table is used to determine scores associated with MEC classification categories:

UXO Special Case	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
UXO Special Case	180	180	180
UXO	110	110	110
Fuzed DMM Special Case	105	105	105
Fuzed DMM	55	55	55
Unfuzed DMM	45	45	45
Bulk Explosives	45	45	45

Based on your answers above, the MEC classification is 'UXO Special Case'.

Score

Baseline Conditions: **180**
Surface Cleanup: **180**
Subsurface Cleanup: **180**

MEC Size Input Factor Categories

The following table is used to determine scores associated with MEC Size:

	Description	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Small	Any munitions (from the 'Munitions, Bulk Explosive Info' Worksheet) weigh less than 90 lbs; small enough for a receptor to be able to move and initiate a detonation	40	40	40
Large	All munitions weigh more than 90 lbs; too large to move without equipment	0	0	0

Based on the definitions above and the types of munitions at the site (see 'Munitions, Bulk Explosive Info' Worksheet), the MEC Size Input Factor is: Small

Score

Baseline Conditions: **40**
Surface Cleanup: **40**
Subsurface Cleanup: **40**

Scoring Summary

Site ID:	Western Range Area D	a. Scoring Summary for Current Use Activities	
Date:	4/7/2014	Response Action Cleanup:	No Response Action
Input Factor		Input Factor Category	Score
I. Energetic Material Type		High Explosive and Low Explosive Filler in Fragmenting Rounds	100
II. Location of Additional Human Receptors		Inside the MRS or inside the ESQD arc	30
III. Site Accessibility		Full Accessibility	80
IV. Potential Contact Hours		10,000 to 99,999 receptor-hrs/yr	40
V. Amount of MEC		Target Area	180
VI. Minimum MEC Depth Relative to Maximum Intrusive Depth		Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.	240
VII. Migration Potential		Possible	30
VIII. MEC Classification		UXO Special Case	180
IX. MEC Size		Small	40
		Total Score	920
		Hazard Level Category	1

Site ID:	Western Range Area D	c. Scoring Summary for Response Alternative 1: No DoD Action Indicated	
Date:	4/7/2014	Response Action Cleanup:	No MEC cleanup
Input Factor		Input Factor Category	Score
I. Energetic Material Type		High Explosive and Low Explosive Filler in Fragmenting Rounds	100
II. Location of Additional Human Receptors		Inside the MRS or inside the ESQD arc	30
III. Site Accessibility		Full Accessibility	80
IV. Potential Contact Hours		10,000 to 99,999 receptor-hrs/yr	40
V. Amount of MEC		Target Area	180
VI. Minimum MEC Depth Relative to Maximum Intrusive Depth		Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.	240
VII. Migration Potential		Possible	30
VIII. MEC Classification		UXO Special Case	180
IX. MEC Size		Small	40
		Total Score	920
		Hazard Level Category	1

Site ID:	Western Range Area D	d. Scoring Summary for Response Alternative 2: LUCs; 100 Percent Surface Clearance	
Date:	4/7/2014	Response Action Cleanup:	cleanup of MECs located on the surface only
Input Factor		Input Factor Category	Score
I. Energetic Material Type		High Explosive and Low Explosive Filler in Fragmenting Rounds	100
II. Location of Additional Human Receptors		Inside the MRS or inside the ESQD arc	30
III. Site Accessibility		Full Accessibility	80
IV. Potential Contact Hours		10,000 to 99,999 receptor-hrs/yr	20
V. Amount of MEC		Target Area	120
VI. Minimum MEC Depth Relative to Maximum Intrusive Depth		Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.	150
VII. Migration Potential		Possible	30
VIII. MEC Classification		UXO Special Case	180
IX. MEC Size		Small	40
		Total Score	750
		Hazard Level Category	2

Site ID:	Western Range Area D	e. Scoring Summary for Response Alternative 3: LUCs; Focused Surface and Subsurface Clearance	
Date:	4/7/2014	Response Action Cleanup:	cleanup of MECs located both on the surface and subsurface
Input Factor		Input Factor Category	Score
I. Energetic Material Type		High Explosive and Low Explosive Filler in Fragmenting Rounds	100
II. Location of Additional Human Receptors		Inside the MRS or inside the ESQD arc	30
III. Site Accessibility		Full Accessibility	80
IV. Potential Contact Hours		10,000 to 99,999 receptor-hrs/yr	10
V. Amount of MEC		Target Area	30
VI. Minimum MEC Depth Relative to Maximum Intrusive Depth		Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.	95
VII. Migration Potential		Possible	10
VIII. MEC Classification		UXO Special Case	180
IX. MEC Size		Small	40
		Total Score	575
		Hazard Level Category	3

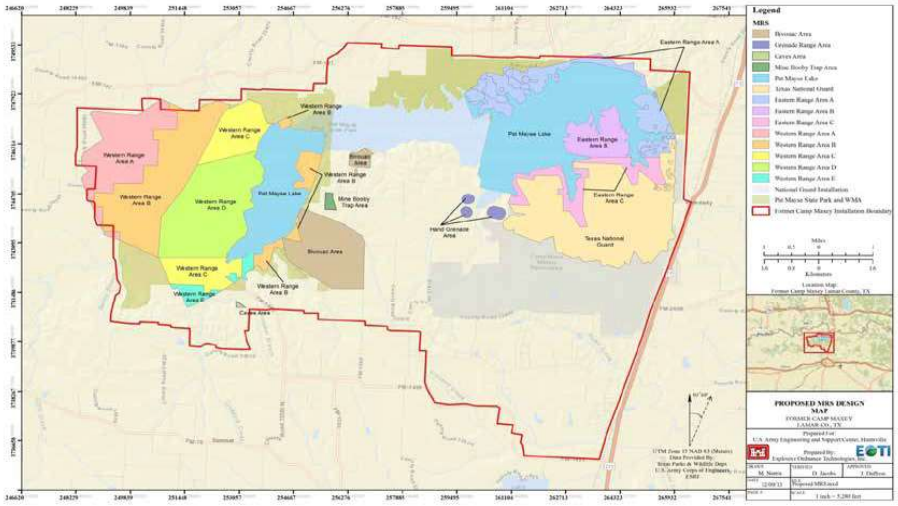
Site ID:	Western Range Area D	f. Scoring Summary for Response Alternative 4: Unlimited Use/Access	
Date:	4/7/2014	Response Action Cleanup:	cleanup of MECs located both on the surface and subsurface
Input Factor		Input Factor Category	Score
I. Energetic Material Type		High Explosive and Low Explosive Filler in Fragmenting Rounds	100
II. Location of Additional Human Receptors		Inside the MRS or inside the ESQD arc	30
III. Site Accessibility		Full Accessibility	80
IV. Potential Contact Hours		10,000 to 99,999 receptor-hrs/yr	10
V. Amount of MEC		Target Area	30
VI. Minimum MEC Depth Relative to Maximum Intrusive Depth		Baseline Condition: MEC located surface and subsurface, After Cleanup: Intrusive depth does not overlap with subsurface MEC.	25
VII. Migration Potential		Possible	10
VIII. MEC Classification		UXO Special Case	180
IX. MEC Size		Small	40
		Total Score	505
		Hazard Level Category	4

MEC HA Hazard Level Determination		
Site ID: Western Range Area D		
Date: 4/7/2014		
	Hazard Level Category	**Score**
a. Current Use Activities	1	920
b. Response Alternative 1: No DoD Action Indicated	1	920
c. Response Alternative 2: LUCs; 100 Percent Surface Clearance	2	750
d. Response Alternative 3: LUCs; Focused Surface and Subsurface Clearance	3	575
e. Response Alternative 4: Unlimited Use/Access	4	505
Characteristics of the MRS		
Is critical infrastructure located within the MRS or within the ESQD arc?	Yes	
Are cultural resources located within the MRS or within the ESQD arc?	Yes	
Are significant ecological resources located within the MRS or within the ESQD arc?	Yes	

MEC HA Summary Information

		Comments
Site ID:	Grenade Range Area	
Date:	4/7/2014	
Please identify the single specific area to be assessed in this hazard assessment. From this point forward, all references to "site" or "MRS" refer to the specific area that you have defined.		
A. Enter a unique identifier for the site:		
Grenade Range Area		
Provide a list of information sources used for this hazard assessment. As you are completing the worksheets, use the "Select Ref(s)" buttons at the ends of each subsection to select the applicable information sources from the list below.		
Ref. No.	Title (include version, publication date)	
1	Final RI/FS Report (April 2014)	
2	Non-Time Critical Removal Action Report (2010)	
3	Report (2007)	
4	Investigation, and Removal Report (2002)	
5	Removal Action Site Specific Final Report (2001)	
6	Engineering Evaluation/Cost Analysis Report (2000)	
7	Explosives Sampling Report (1998)	
8	Report (1997)	
9	Archive Search Report (1994)	
B. Briefly describe the site:		
1. Area (include units):	97 acres	
2. Past munitions-related use:		
Target Area		
3. Current land-use activities (list all that occur):		
Public property available for hunting.		
4. Are changes to the future land-use planned?	No	
5. What is the basis for the site boundaries?		
FUDSMIS		
6. How certain are the site boundaries?		
Boundaries are speculative based on historical information.		
Reference(s) for Part B:		
Final RI/FS Report (April 2014)	[redacted]	
C. Historical Clearances		
1. Have there been any historical clearances at the site?	No, none	
Reference(s) for Part C:		
Final RI/FS Report (April 2014)	[redacted]	

D. Attach maps of the site below (select 'Insert/Picture' on the menu bar.)



Site ID: **Grenade Range Area**
Date: **4/7/2014**

Cased Munitions Information

Item No.	Munition Type (e.g., mortar, projectile, etc.)	Munition Size	Munition Size Units	Mark/ Model	Energetic Material Type	Is Munition Fuzed?	Fuzing Type	Fuze Condition	Minimum Depth for Munition (ft)	Location of Munitions	Comments (include rationale for munitions that are "subsurface only")
1	Grenades			MKII Hand Genade	High Explosive	UNK	UNK	UNK	0.1	Surface and Subsurface	
2	Rockets	2.36	inches	2.36-inch Rocket	High Explosive	UNK	UNK	UNK	0	Surface and Subsurface	Found on ground surface during geophysical operations.
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											

Reference(s) for table above:

Final RI/FS Report (April 2014)

Site ID: **Grenade Range Area**
Date: **4/7/2014**

Activities Currently Occurring at the Site

Activity No.	Activity	Number of people per year who participate in the activity	Number of hours per year a single person spends on the activity	Potential Contact Time (receptor hours/year)	Maximum intrusive depth (ft)	Comments
1	Recreational (i.e., hunting, hiking, lake access)	1,000	16	**16,000**	1	Receptor activity level is speculative but thought to be conservative.
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
			Total Potential Contact Time (receptor hrs/yr):	**16,000**		
			Maximum intrusive depth at site (ft):		**1**	

Reference(s) for table above:

Final RI/FS Report (April 2014)

Site ID: **Grenade Range Area**
Date: **4/7/2014**

Planned Remedial or Removal Actions

Response Action No.	Response Action Description	Expected Resulting Minimum MEC Depth (ft)	Expected Resulting Site Accessibility	Will land use activities change if this response action is implemented?	What is the expected scope of cleanup?	Comments
1	No DoD Action Indicated	0	Full Accessibility	No	No MEC cleanup	
2	LUCs	0	Full Accessibility	No	No MEC cleanup	
3	LUCs; Focused Surface Clearance	0.1	Full Accessibility	No	cleanup of MECs located on the surface only	
4	LUCs; 100 Percent Surface Clearance	0.5	Full Accessibility	No	cleanup of MECs located on the surface only	
5	Unlimited Use/Access	3	Full Accessibility	No	cleanup of MECs located both on the surface and subsurface	
6						

According to the 'Summary Info' worksheet, no future land uses are planned. For those alternatives where you answered 'No' in Column E, the land use activities will be assessed against current land uses.

Reference(s) for table above:

Final RI/FS Report (April 2014)

Site ID: **Grenade Range Area**
Date: **4/7/2014**

Energetic Material Type Input Factor Categories

The following table is used to determine scores associated with the energetic materials. Materials are listed in order from most hazardous to least hazardous.

	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
High Explosive and Low Explosive Filler in Fragmenting Rounds	100	100	100
White Phosphorus	70	70	70
Pyrotechnic	60	60	60
Propellant	50	50	50
Spotting Charge	40	40	40
Incendiary	30	30	30

The most hazardous type of energetic material listed in the 'Munitions, Bulk Explosive Info' Worksheet falls under the category 'High Explosive and Low Explosive Filler in Fragmenting Rounds'.

Score

Baseline Conditions: **100**
Surface Cleanup: **100**
Subsurface Cleanup: **100**

Location of Additional Human Receptors Input Factor Categories

1. What is the Explosive Safety Quantity Distance (ESQD) from the Explosive Siting Plan or the Explosive Safety Submission for the MRS? 337 feet
2. Are there currently any features or facilities where people may congregate within the MRS, or within the ESQD arc? Yes
3. Please describe the facility or feature.

Residential

MEC Item(s) used to calculate the ESQD for current use activities

Item #3. Artillery (155mm, High Explosive)

The following table is used to determine scores associated with the location of additional human receptors (current use activities):

	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Inside the MRS or inside the ESQD arc	30	30	30
Outside of the ESQD arc	0	0	0

4. Current use activities are 'Inside the MRS or inside the ESQD arc', based on Question 2.'

Score

Baseline Conditions: **30**
Surface Cleanup: **30**
Subsurface Cleanup: **30**

Comments

Site Accessibility Input Factor Categories

The following table is used to determine scores associated with site accessibility:

	Description	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Full Accessibility	No barriers to entry, including signage but no fencing	80	80	80
Moderate Accessibility	Some barriers to entry, such as barbed wire fencing or rough terrain	55	55	55
Limited Accessibility	Significant barriers to entry, such as unguarded chain link fence or requirements for special transportation to reach the site	15	15	15
Very Limited Accessibility	A site with guarded chain link fence or terrain that requires special equipment and skills (e.g., rock climbing) to access	5	5	5

Current Use Activities

Select the category that best describes the site accessibility under the current use scenario:

Full Accessibility

Score

Baseline Conditions: **80**
Surface Cleanup: **80**
Subsurface Cleanup: **80**

Response Alternative No. 1: No DoD Action Indicated

Based on the 'Planned Remedial or Removal Actions' Worksheet, this alternative will lead to 'Full Accessibility'.

Baseline Conditions: **80**
Surface Cleanup: **80**
Subsurface Cleanup: **80**

Response Alternative No. 2: LUCs

Based on the 'Planned Remedial or Removal Actions' Worksheet, this alternative will lead to 'Full Accessibility'.

Baseline Conditions: **80**
Surface Cleanup: **80**
Subsurface Cleanup: **80**

Response Alternative No. 3: LUCs; Focused Surface Clearance

Based on the 'Planned Remedial or Removal Actions' Worksheet, this alternative will lead to 'Full Accessibility'.

Baseline Conditions: **80**
Surface Cleanup: **80**
Subsurface Cleanup: **80**

Response Alternative No. 4: LUCs; 100 Percent Surface Clearance

Based on the 'Planned Remedial or Removal Actions' Worksheet, this alternative will lead to 'Full Accessibility'.

Baseline Conditions: **80**
Surface Cleanup: **80**
Subsurface Cleanup: **80**

Potential Contact Hours Input Factor Categories

The following table is used to determine scores associated with the total potential contact time:

	Description	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Many Hours	≥1,000,000 receptor-hrs/yr	120	90	30
Some Hours	100,000 to 999,999 receptor hrs/yr	70	50	20
Few Hours	10,000 to 99,999 receptor-hrs/yr	40	20	10
Very Few Hours	<10,000 receptor-hrs/yr	15	10	5

Current Use Activities:

Input factors are only determined for baseline conditions for current use activities. Based on the 'Current and Future Activities' Worksheet, the Total Potential Contact Time is: **16,000** receptor hrs/yr

Based on the table above, this corresponds to a input factor score for baseline conditions of: **40** Score

Response Alternative No. 1: No DoD Action Indicated

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Total Potential Contact Time, based on the contact time listed for current use activities (see 'Current and Future Activities' Worksheet) **16,000**

Based on the table above, this corresponds to input factor scores of: ***Score***

Baseline Conditions: **40**
Surface Cleanup: **20**
Subsurface Cleanup: **10**

Response Alternative No. 2: LUCs

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Total Potential Contact Time, based on the contact time listed for current use activities (see 'Current and Future Activities' Worksheet) **16,000**

Based on the table above, this corresponds to input factor scores of: ***Score***

Baseline Conditions: **40**
Surface Cleanup: **20**
Subsurface Cleanup: **10**

Response Alternative No. 3: LUCs; Focused Surface Clearance

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Total Potential Contact Time, based on the contact time listed for current use activities (see 'Current and Future Activities' Worksheet) **16,000**

Based on the table above, this corresponds to input factor scores of: ***Score***

Baseline Conditions: **40**
Surface Cleanup: **20**
Subsurface Cleanup: **10**

Response Alternative No. 4: LUCs; 100 Percent Surface Clearance

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Total Potential Contact Time, based on the contact time listed for current use activities (see 'Current and Future Activities' Worksheet) **16,000**

Based on the table above, this corresponds to input factor scores of: ***Score***

Baseline Conditions: **40**
Surface Cleanup: **20**
Subsurface Cleanup: **10**

Amount of MEC Input Factor Categories

The following table is used to determine scores associated with the Amount of MEC:

	Description	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Target Area	Areas at which munitions fire was directed	180	120	30
OB/OD Area	Sites where munitions were disposed of by open burn or open detonation methods. This category refers to the core activity area of an OB/OD area. See the "Safety Buffer Areas" category for safety fans and kick-outs.	180	110	30
Function Test Range	Areas where the serviceability of stored munitions or weapons systems are tested. Testing may include components, partial functioning or complete functioning of stockpile or developmental items.	165	90	25
Burial Pit	The location of a burial of large quantities of MEC items.	140	140	10
Maneuver Areas	Areas used for conducting military exercises in a simulated conflict area or war zone	115	15	5
Firing Points	The location from which a projectile, grenade, ground signal, rocket, guided missile, or other device is to be ignited, propelled, or released.	75	10	5
Safety Buffer Areas	Areas outside of target areas, test ranges, or OB/OD areas that were designed to act as a safety zone to contain munitions that do not hit targets or to contain kick-outs from OB/OD areas.	30	10	5
Storage	Any facility used for the storage of military munitions, such as earth-covered magazines, above-ground magazines, and open-air storage areas.	25	10	5
Explosive-Related Industrial Facility	Former munitions manufacturing or demilitarization sites and TNT production plants	20	10	5

Select the category that best describes the ***most hazardous*** amount of MEC: ***Score***

Target Area

Baseline Conditions: **180**
Surface Cleanup: **120**
Subsurface Cleanup: **30**

Minimum MEC Depth Relative to the Maximum Intrusive Depth Input Factor Categories

Current Use Activities

The shallowest minimum MEC depth, based on the 'Cased Munitions Information' Worksheet: **0** ft
The deepest intrusive depth: **1** ft
The table below is used to determine scores associated with the minimum MEC depth relative to the maximum intrusive depth:

	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.	240	150	95
Baseline Condition: MEC located surface and subsurface, After Cleanup: Intrusive depth does not overlap with subsurface MEC.	240	50	25
Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth overlaps with minimum MEC depth.	150	N/A	95
Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth does not overlap with minimum MEC depth.	50	N/A	25

Because the shallowest minimum MEC depth is less than or equal to the deepest intrusive depth, the intrusive depth will overlap after cleanup. MECs are located at both the surface and subsurface, based on the 'Munitions, Bulk Explosive Info' Worksheet. Therefore, the category for this input factor is 'Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.' For 'Current Use Activities', only Baseline Conditions are considered. **240** *Score*

Future Use Activities

Deepest intrusive depth: ft

Not enough information has been entered to determine the input factor category. *Score*

Response Alternative No. 1: No DoD Action Indicated

Expected minimum MEC depth (from the 'Planned Remedial or Removal Actions' Worksheet): **0** ft
Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.
Maximum Intrusive Depth, based on the maximum intrusive depth listed for current use activities (see 'Current and Future Activities' Worksheet) **1** ft
Because the shallowest minimum MEC depth is less than or equal to the deepest intrusive depth, the intrusive depth overlaps. MECs are located at both the surface and subsurface, based on the 'Munitions, Bulk Explosive Info' Worksheet. Therefore, the category for this input factor is 'Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.'

Score

Baseline Conditions: **240**
Surface Cleanup:
Subsurface Cleanup:

Response Alternative No. 2: LUCs

Expected minimum MEC depth (from the 'Planned Remedial or Removal Actions' Worksheet): **0** ft

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Maximum Intrusive Depth, based on the maximum intrusive depth listed for current use activities (see 'Current and Future Activities' Worksheet) **1** ft

Because the shallowest minimum MEC depth is less than or equal to the deepest intrusive depth, the intrusive depth overlaps. MECs are located at both the surface and subsurface, based on the 'Munitions, Bulk Explosive Info' Worksheet. Therefore, the category for this input factor is 'Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.'

	Score
Baseline Conditions:	**240**
Surface Cleanup:	
Subsurface Cleanup:	

Response Alternative No. 3: LUCs; Focused Surface Clearance

Expected minimum MEC depth (from the 'Planned Remedial or Removal Actions' Worksheet): **0.1** ft

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Maximum Intrusive Depth, based on the maximum intrusive depth listed for current use activities (see 'Current and Future Activities' Worksheet) **1** ft

Because the shallowest minimum MEC depth is less than or equal to the deepest intrusive depth, the intrusive depth overlaps. MECs are located at both the surface and subsurface, based on the 'Munitions, Bulk Explosive Info' Worksheet. Therefore, the category for this input factor is 'Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.'

	Score
Baseline Conditions:	
Surface Cleanup:	**150**
Subsurface Cleanup:	

Response Alternative No. 4: LUCs; 100 Percent Surface Clearance

Expected minimum MEC depth (from the 'Planned Remedial or Removal Actions' Worksheet): **0.5** ft

Based on the 'Planned Remedial or Removal Actions' Worksheet, land use activities will not change if this alternative is implemented.

Maximum Intrusive Depth, based on the maximum intrusive depth listed for current use activities (see 'Current and Future Activities' Worksheet) **1** ft

Because the shallowest minimum MEC depth is less than or equal to the deepest intrusive depth, the intrusive depth overlaps. MECs are located at both the surface and subsurface, based on the 'Munitions, Bulk Explosive Info' Worksheet. Therefore, the category for this input factor is 'Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.'

	Score
Baseline Conditions:	
Surface Cleanup:	**150**
Subsurface Cleanup:	

Migration Potential Input Factor Categories

Is there any physical or historical evidence that indicates it is possible for natural physical forces in the area (e.g., frost heave, erosion) to expose subsurface MEC items, or move surface or subsurface MEC items? Yes

If "yes", describe the nature of natural forces. Indicate key areas of potential migration (e.g., overland water flow) on a map as appropriate (attach a map to the bottom of this sheet, or as a separate worksheet).

Erosion

The following table is used to determine scores associated with the migration potential:

	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Possible	30	30	10
Unlikely	10	10	10

Based on the question above, migration potential is 'Possible.'

	Score
Baseline Conditions:	**30**
Surface Cleanup:	**30**
Subsurface Cleanup:	**10**

Reference(s) for above information:

Final RI/FS Report (April 2014)

MEC Classification Input Factor Categories

Cased munitions information has been inputed into the 'Munitions, Bulk Explosive Info' Worksheet; therefore, bulk explosives do not comprise all MECs for this MRS.

The 'Amount of MEC' category is 'Target Area'. It cannot be automatically assumed that the MEC items from this category are DMM. Therefore, the conservative assumption is that the MEC items in this MRS are UXO.

Has a technical assessment shown that MEC in the OB/OD Area is DMM?

Are any of the munitions listed in the 'Munitions, Bulk Explosive Info' Worksheet: Yes

- Submunitions
- Rifle-propelled 40mm projectiles (often called 40mm grenades)
- Munitions with white phosphorus filler
- High explosive anti-tank (HEAT) rounds
- Hand grenades
- Fuzes
- Mortars

None of the items listed in the 'Munitions, Bulk Explosive Info' Worksheet were identified as 'fuzed'.

The following table is used to determine scores associated with MEC classification categories:

UXO Special Case	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
UXO Special Case	180	180	180
UXO	110	110	110
Fuzed DMM Special Case	105	105	105
Fuzed DMM	55	55	55
Unfuzed DMM	45	45	45
Bulk Explosives	45	45	45

Based on your answers above, the MEC classification is 'UXO Special Case'.

	Score
Baseline Conditions:	**180**
Surface Cleanup:	**180**
Subsurface Cleanup:	**180**

MEC Size Input Factor Categories

The following table is used to determine scores associated with MEC Size:

	Description	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Small	Any munitions (from the 'Munitions, Bulk Explosive Info' Worksheet) weigh less than 90 lbs; small enough for a receptor to be able to move and initiate a detonation	40	40	40
Large	All munitions weigh more than 90 lbs; too large to move without equipment	0	0	0

Based on the definitions above and the types of munitions at the site (see 'Munitions, Bulk Explosive Info' Worksheet), the MEC Size Input Factor is: Small

	Score
Baseline Conditions:	**40**
Surface Cleanup:	**40**
Subsurface Cleanup:	**40**

Scoring Summary

Site ID:	Grenade Range Area	a. Scoring Summary for Current Use Activities	
Date:	4/7/2014	Response Action Cleanup:	No Response Action
Input Factor		Input Factor Category	Score
I. Energetic Material Type		High Explosive and Low Explosive Filler in Fragmenting Rounds	100
II. Location of Additional Human Receptors		Inside the MRS or inside the ESQD arc	30
III. Site Accessibility		Full Accessibility	80
IV. Potential Contact Hours		10,000 to 99,999 receptor-hrs/yr	40
V. Amount of MEC		Target Area	180
VI. Minimum MEC Depth Relative to Maximum Intrusive Depth		Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.	240
VII. Migration Potential		Possible	30
VIII. MEC Classification		UXO Special Case	180
IX. MEC Size		Small	40
		Total Score	**920**
		Hazard Level Category	**1**

Site ID:	Grenade Range Area	c. Scoring Summary for Response Alternative 1: No DoD Action Indicated	
Date:	4/7/2014	Response Action Cleanup:	No MEC cleanup
Input Factor		Input Factor Category	Score
I. Energetic Material Type		High Explosive and Low Explosive Filler in Fragmenting Rounds	100
II. Location of Additional Human Receptors		Inside the MRS or inside the ESQD arc	30
III. Site Accessibility		Full Accessibility	80
IV. Potential Contact Hours		10,000 to 99,999 receptor-hrs/yr	40
V. Amount of MEC		Target Area	180
VI. Minimum MEC Depth Relative to Maximum Intrusive Depth		Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.	240
VII. Migration Potential		Possible	30
VIII. MEC Classification		UXO Special Case	180
IX. MEC Size		Small	40
		Total Score	**920**
		Hazard Level Category	**1**

Site ID:	Grenade Range Area	d. Scoring Summary for Response Alternative 2: LUCs	
Date:	4/7/2014	Response Action Cleanup:	No MEC cleanup
Input Factor		Input Factor Category	Score
I. Energetic Material Type		High Explosive and Low Explosive Filler in Fragmenting Rounds	100
II. Location of Additional Human Receptors		Inside the MRS or inside the ESQD arc	30
III. Site Accessibility		Full Accessibility	80
IV. Potential Contact Hours		10,000 to 99,999 receptor-hrs/yr	40
V. Amount of MEC		Target Area	180
VI. Minimum MEC Depth Relative to Maximum Intrusive Depth		Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.	240
VII. Migration Potential		Possible	30
VIII. MEC Classification		UXO Special Case	180
IX. MEC Size		Small	40
		Total Score	**920**
		Hazard Level Category	**1**

Site ID:	Grenade Range Area	e. Scoring Summary for Response Alternative 3: LUCs; Focused Surface Clearance	
Date:	4/7/2014	Response Action Cleanup:	cleanup of MECs located on the surface only
Input Factor		Input Factor Category	Score
I. Energetic Material Type		High Explosive and Low Explosive Filler in Fragmenting Rounds	100
II. Location of Additional Human Receptors		Inside the MRS or inside the ESQD arc	30
III. Site Accessibility		Full Accessibility	80
IV. Potential Contact Hours		10,000 to 99,999 receptor-hrs/yr	20
V. Amount of MEC		Target Area	120
VI. Minimum MEC Depth Relative to Maximum Intrusive Depth		Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.	150
VII. Migration Potential		Possible	30
VIII. MEC Classification		UXO Special Case	180
IX. MEC Size		Small	40
		Total Score	**750**
		Hazard Level Category	**2**

Site ID:	Grenade Range Area	f. Scoring Summary for Response Alternative 4: LUCs; 100 Percent Surface Clearance	
Date:	4/7/2014	Response Action Cleanup:	cleanup of MECs located on the surface only
Input Factor		Input Factor Category	Score
I. Energetic Material Type		High Explosive and Low Explosive Filler in Fragmenting Rounds	100
II. Location of Additional Human Receptors		Inside the MRS or inside the ESQD arc	30
III. Site Accessibility		Full Accessibility	80
IV. Potential Contact Hours		10,000 to 99,999 receptor-hrs/yr	20
V. Amount of MEC		Target Area	120
VI. Minimum MEC Depth Relative to Maximum Intrusive Depth		Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.	150
VII. Migration Potential		Possible	30
VIII. MEC Classification		UXO Special Case	180
IX. MEC Size		Small	40
		Total Score	**750**
		Hazard Level Category	**2**

Site ID:	Grenade Range Area	g. Scoring Summary for Response Alternative 5: Unlimited Use/Access	
Date:	4/7/2014	Response Action Cleanup:	cleanup of MECs located both on the surface and subsurface
Input Factor		Input Factor Category	Score
I. Energetic Material Type		High Explosive and Low Explosive Filler in Fragmenting Rounds	100
II. Location of Additional Human Receptors		Inside the MRS or inside the ESQD arc	30
III. Site Accessibility		Full Accessibility	80
IV. Potential Contact Hours		10,000 to 99,999 receptor-hrs/yr	10
V. Amount of MEC		Target Area	30
VI. Minimum MEC Depth Relative to Maximum Intrusive Depth		Baseline Condition: MEC located surface and subsurface, After Cleanup: Intrusive depth does not overlap with subsurface MEC.	25
VII. Migration Potential		Possible	10
VIII. MEC Classification		UXO Special Case	180
IX. MEC Size		Small	40
		Total Score	**505**
		Hazard Level Category	**4**

MEC HA Hazard Level Determination		
Site ID: Grenade Range Area		
Date: 4/7/2014		
	Hazard Level Category	**Score**
a. Current Use Activities	1	920
c. Response Alternative 1: No DoD Action Indicated	1	920
d. Response Alternative 2: LUCs	1	920
e. Response Alternative 3: LUCs; Focused Surface Clearance	2	750
f. Response Alternative 4: LUCs; 100 Percent Surface Clearance	2	750
g. Response Alternative 5: Unlimited Use/Access	4	505
Characteristics of the MRS		
Is critical infrastructure located within the MRS or within the ESQD arc?	Yes	
Are cultural resources located within the MRS or within the ESQD arc?	Yes	
Are significant ecological resources located within the MRS or within the ESQD arc?	Yes	

APPENDIX F: MUNITIONS RESPONSE SITE PRIORITIZATION PROTOCOL
MILITARY MUNITIONS RESPONSE PROGRAM
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

FORMER CAMP MAXEY
Paris, Texas

Table A
MRS Background Information

DIRECTIONS: Record the background information below for the MRS to be evaluated. Much of this information is available from Service and DoD databases. If the MRS is located on a FUDS property, the suitable FUDS property information should be substituted. In the **MRS Summary**, briefly describe the UXO, DMM, or MC that are known or suspected to be present, the exposure setting (the MRS's physical environment), any other incidental nonmunitions-related contaminants (e.g., benzene, trichloroethylene) found at the MRS, and any potentially exposed human and ecological receptors. If possible, include a map of the MRS.

Munitions Response Site Name: Western Range Area A
Component: U.S. Army
Installation/Property Name: Camp Maxey FUDS
Location (City, County, State): Paris, Lamar County, TX
Site Name/Project Name (Project No.): Former Camp Maxey (K06TX0305) **PRDF/FRMD**:_____

Date Information Entered/Updated: December 2013
Point of Contact (Name/Phone): Layne Young (410.332.4806)
Project Phase (check only one): RI/FS

❑ PA	❑ SI	✓ RI	✓ FS	❑ RD
❑ RA-C	❑ RIP	❑ RA-O	❑ RC	❑ LTM

Note: This Draft MRSPP was created in coordination with the U.S. Army Corps of Engineers and additional project stakeholders. Prior to being finalized the MRSPP will be included in a public notice and will be available for public review.

Media Evaluated (check all that apply):.

❑ Groundwater	❑ Sediment (human receptor)
❑ Surface soil	❑ Surface Water (ecological receptor)
❑Sediment (ecological receptor)	❑ Surface Water (human receptor)

MRS Summary:

MRS Description: Describe the munitions-related activities that occurred at the installation, the dates of operation, and the UXO, DMM, or MC known or suspected to be present. When possible, identify munitions, CWM, and MC by type:

This MRS includes 1,310 acres located in the northwest portion of Camp Maxey. It is on private property primarily used for agriculture. There was no access granted to this area during the RI. Historical data indicated that it includes firing points and portions of artillery ranges fans for several ranges. Additional data is still needed to characterize the MRS. (RI/FS Report [EOTI, 2014]; Table 4-1)

Description of Pathways for Human and Ecological Receptors:
Potentially complete pathways exist for residents, trespassers, outdoor site workers, and biota for MEC in the surface and subsurface. Incomplete pathways exist for all human and ecological receptors for MC. (RI/FS Report [EOTI, 2014]; Section 5.1.2)

Table 1

EHE Module: Munitions Type Data Element Table

DIRECTIONS: Below are 11 classifications of munitions and their descriptions. Circle the scores that correspond with **all** the munitions types known or suspected to be present at the MRS.

Note: The terms *practice munitions, small arms ammunition, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Sensitive	◆ UXO that are considered most likely to function upon any interaction with exposed persons (e.g., submunitions, 40mm high-explosive [HE] grenades, white phosphorus [WP] munitions, high-explosive antitank [HEAT] munitions, and practice munitions with sensitive fuzes, but excluding all other practice munitions). ◆ Hand grenades containing energetic filler. ◆ Bulk primary explosives, or mixtures of these with environmental media, such that the mixture poses an explosive hazard.	30
High explosive (used or damaged)	◆ UXO containing a high-explosive filler (e.g., RDX, Composition B), that are not considered "sensitive." ◆ DMM containing a high-explosive filler that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	25
Pyrotechnic (used or damaged)	◆ UXO containing a pyrotechnic filler other than white phosphorus (e.g., flares, signals, simulators, smoke grenades). ◆ DMM containing a pyrotechnic filler other than white phosphorus (e.g., flares, signals, simulators, smoke grenades) that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	20
High explosive (unused)	◆ DMM containing a high-explosive filler that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	15
Propellant	◆ UXO containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor). ◆ DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are: ▪ Damaged by burning or detonation ▪ Deteriorated to the point of instability.	15
Bulk secondary high explosives, pyrotechnics, or propellant	◆ DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor). ◆ DMM that are bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture poses an explosive hazard.	10
Pyrotechnic (not used or damaged)	◆ DMM containing a pyrotechnic filler (i.e., red phosphorus), other than white phosphorus filler, that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	10
Practice	◆ UXO that are practice munitions that are not associated with a sensitive fuze. ◆ DMM that are practice munitions that are not associated with a sensitive fuze and that have not: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	5
Riot control	◆ UXO or DMM containing a riot control agent filler (e.g., tear gas).	3
Small arms	◆ Used munitions or DMM that are categorized as small arms ammunition. (Physical evidence or historical evidence that no other types of munitions [e.g., grenades, subcaliber training rockets, demolition charges] were used or are present on the MRS is required for selection of this category.)	2
Evidence of no munitions	◆ Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
MUNITIONS TYPE	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).	0

DIRECTIONS: Document any MRS-specific data used in selecting the ***Munitions Type*** classifications in the space provided.

No munitions or evidence of munitions (MD) has been found in the MRS; however, very limited , if any, investigations have been conducted. (RI/FS Report [EOTI, 2014]; Table 4-1)