					ble A			
	a\ Fl Di er fo m	vailable JDS pro MM, or nvironm und at t ap of th	ne background inform from Service and Do operty information sh MC that are known o ent), any other incide the MRS, and any po he MRS.	nation below D databases ould be subs or suspected ental non-mu tentially expo	for the M s. If the I stituted. to be pre nitions-re osed hur	MRS is located on a F In the <b>MRS Summary</b> esent, the exposure se elated contaminants (en man and ecological rec	Much of this informatio UDS property, the suit , briefly describe the U etting (the MRS's physi e.g., benzene, trichloro ceptors. If possible, inc	able IXO, cal ethylene)
Cor Inst Loc Site		oerty N County ect Nar	lame: ⁄, State): ne (Project No.):	PBA-001-R	F ARSE F ARSE -01	NAL NAL, JEFFERSON CO	#: 05087.1075 DUNTY, ARKANSAS VICINITY (BMV)	
Poi		ct (Na	tered/Updated: me/Phone):  R c only one):	22 APRIL 2 iki Young, (	-	4-2421		
	D PA		SI SI	🗆 RI		□ FS	RD RD	
	🗆 RA-C			🛛 RA-O		X RC		-
Me	dia Evaluated	(check	all that apply):					
	🔰 Groundwa				🛛 Sedi	ment (human recepto	r)	_
	X Surface sc	oil			X Surfa	ace Water (ecological	receptor)	_
	Sediment	(ecolog	ical receptor)		Surfa	ace Water (human rec	ceptor)	
The - Ri - Si - D - Ri The The	egulator Appro te Specific Fina ecision Docume emedial Investi MRS is at Resp regulators hav	val of S al Repor ent (DD igation/ ponse C re concu	urred with the SSFR.	ort (RA-SSFR bber 2021. 4. S), Dated Ma edies have be	k), Dated ay 2014. een comp	April 2024. Deted in accordance w	Site is at RC as of 2 with the DD (SSFR, Pag the eastern PBA prope	e ES-1).
bour inclu and	ndary at the Ar Ided: munitior MC are known	kansas is testir to rem	River. It is comprise ag primarily of thermi ain on the site. CWM	d of approxin te bombs; M 1 and CAIS, r	mately 29 EC/CWM may rema	96 acres. The historic burial activities; OB/C ain on the site (DD, Se	al activities at the MRS DD. Conventional MEC, ection 2.1, Page 2-1).	MD,
	n 1942 through iitions (DD, Sec			tion of this M	IRS was i	used for the burning a	nd disposal of mustard	agent
Envi reac	ronmental inve hing as deep a	estigatio Is 14 fee	ons conducted in the et bgs (RI/FS, Page E	1980s at the S-2).	MRS dis	covered large burial pi	its of MEC and CWM ite	ems,
vario M15	ous bombs, 10! WP Grenade,	5mm m M18 Sn	ortars, 155mm projec	ctilės, 155mn M82 Bomb F	n WP sm Frag, and	oke projectile, M156 r I various bombs, 3.5-iı	cendiaries, fuzes, morta ockets, M20A1 hand gi nch rockets, 20mm pro	enades,
cont	ained chemica	l agent,	ing the corrective me 4.2-inch mortars, 10 and mortars (SSFR, T	0lb bombs, 7	750lb boı	mb, CAIS (some are id	an Tractor Rockets (GT lentified M1 K941), 15-	Rs) that cm
Iten	ns were found i	in the s	urface and subsurface	e and in buri	al pits (S	SFR, Section 1.0, Page	e 1-1).	
						Complete and all rem ncurred with the SSFR	edies have been comp R.	eted in
Sta	keholder Invo	olveme	ent (SHI): TBD					

## Table A CONTINUED

**Description of Pathways for Human and Ecological Receptors:** The MRS has complete MEC exposure pathways, meaning that all components for a complete pathway are present (source, access, activity, and receptors). Sources for exposure are MEC/CWM items in the surface and subsurface (DD, Section 2.5, Page 2-4).

Site contaminants (metals and volatile organic compounds [VOC]) originating from soil or surface water can spread to the food chain, surface water/sediment, groundwater, and surface and subsurface soil. In turn, the receptors (i.e., authorized installation personnel, trespassers, fishermen, and biota) may be exposed to the contamination through ingestion, dermal contact, inhalation, or consumption of affected fish (DD, Section 2.5, Page 2-4 and 2-5).

**Description of Receptors (Human and Ecological):** Receptors include authorized installation personnel, trespassers, fishermen (DD, Section 2.5, Page 2-4).

No threatened or endangered species are currently documented at the MRS (DD, Section 2.7.3, Page 2-13).

# 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 <u>all</u> 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	<ul> <li>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).</li> <li>Hand grenades containing energetic filler.</li> <li>Bulk primary explosives, or mixtures of these with environmental media, such that the mixture poses an explosive hazard.</li> </ul>	30
High explosive (used or damaged)	<ul> <li>UXO containing a high-explosive filler (e.g., RDX, Composition B), that are not considered "sensitive."</li> <li>DMM containing a high-explosive filler that have:         <ul> <li>Been damaged by burning or detonation</li> <li>Deteriorated to the point of instability.</li> </ul> </li> </ul>	25
Pyrotechnic (used or damaged)	<ul> <li>UXO containing a pyrotechnic filler other than white phosphorus (e.g., flares, signals, simulators, smoke grenades).</li> <li>DMM containing a pyrotechnic filler other than white phosphorus (e.g., flares, signals, simulators, smoke grenades) that have:         <ul> <li>Been damaged by burning or detonation</li> <li>Deteriorated to the point of instability.</li> </ul> </li> </ul>	20
High explosive (unused)	<ul> <li>DMM containing a high-explosive filler that:         <ul> <li>Have not been damaged by burning or detonation</li> <li>Are not deteriorated to the point of instability.</li> </ul> </li> </ul>	15
Propellant	<ul> <li>UXO containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor).</li> <li>DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are:         <ul> <li>Damaged by burning or detonation</li> <li>Deteriorated to the point of instability.</li> </ul> </li> </ul>	15
Bulk secondary high explosives, pyrotechnics, or propellant	<ul> <li>DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor).</li> <li>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.</li> </ul>	10
Pyrotechnic (not used or damaged)	<ul> <li>DMM containing a pyrotechnic filler (i.e., red phosphorus), other than white phosphorus filler, that:</li> <li>Have not been damaged by burning or detonation</li> <li>Are not deteriorated to the point of instability.</li> </ul>	10
Practice	<ul> <li>UXO that are practice munitions that are not associated with a sensitive fuze.</li> <li>DMM that are practice munitions that are not associated with a sensitive fuze and that have not:         <ul> <li>Been damaged by burning or detonation</li> <li>Deteriorated to the point of instability.</li> </ul> </li> </ul>	5
Riot control	• UXO or DMM containing a riot control agent filler (e.g., tear gas).	3
Small arms	<ul> <li>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.)</li> </ul>	2
Evidence of no munitions	<ul> <li>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.</li> </ul>	0
MUNITIONS TYPE	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 30).	30

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

MEC items recovered during corrective measures phase include the following: AN-M50 incendiaries, fuzes, mortars, and various bombs, 105mm mortars, 155mm projectiles, 155mm WP smoke projectile, M156 rockets, M20A1 hand grenades, M15 WP Grenade, M18 Smoke Grenade, fuzes, M82 Bomb Frag, and various bombs, 3.5-inch rockets, 20mm projectile, rockets, 4.2-inch mortars (SSFR, Tables 2-1 through 2-10, Pages 102-171).

# Table 2 EHE Module: Source of Hazard Data Element Table

**DIRECTIONS:** Below are 11 classifications describing sources of explosive hazards. Circle the scores that correspond with <u>all</u> the sources of explosive hazards known or suspected to be present at the MRS.

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

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include impact or target areas and associated buffer and safety zones.	10
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former military range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	<ul> <li>The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.</li> </ul>	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	<ul> <li>The MRS is a firing point, where the firing point is delineated as an MRS separate from the rest of a former military range.</li> </ul>	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a military range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms ammunition was used. (There must be evidence that no other types of munitions [e.g., grenades] were used or are present to place an MRS into this category.)	1
Evidence of no munitions	<ul> <li>Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.</li> </ul>	0
SOURCE OF HAZARD	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 10).	8

**DIRECTIONS:** Document any MRS-specific data used in selecting the *Source of Hazard* classifications in the space provided.

The historical activities at the MRS included: munitions testing primarily of thermite bombs; MEC/CWM burial activities; OB/OD. Conventional MEC, MD, and MC are known to remain on the site. CWM and CAIS, may remain on the site (DD, Section 2.1, Page 2-1).

From 1942 through 1948 the southeastern portion of this MRS was used for the burning and disposal of mustard agent munitions (DD, Section 2.2, Page 2-2).

Environmental investigations conducted in the 1980s at the MRS discovered large burial pits of MEC and CWM items, reaching as deep as 14 feet bgs (RI/FS, Page ES-2).

## Table 3 EHE Module: Location of Munitions Data Element Table

**DIRECTIONS:** Below are eight classifications of munitions locations and their descriptions. Circle the scores that correspond with <u>all</u> the locations where munitions are known or suspected to be present at the MRS.

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

Classification	Description	Score
Confirmed surface	<ul> <li>Physical evidence indicates that there are UXO or DMM on the surface of the MRS.</li> <li>Historical evidence (i.e., a confirmed report such as an explosive ordnance disposal [EOD], police, or fire department report that an incident or accident that involved UXO or DMM occurred) indicates there are UXO or DMM on the surface of the MRS.</li> </ul>	25
Confirmed subsurface, active	<ul> <li>Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS, and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM.</li> <li>Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM.</li> </ul>	20
Confirmed subsurface, stable	<ul> <li>Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed.</li> <li>Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed.</li> <li>Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed.</li> </ul>	15
Suspected (physical evidence)	<ul> <li>There is physical evidence (e.g., munitions debris such as fragments, penetrators, projectiles, shell casings, links, fins), other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.</li> </ul>	10
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	<ul> <li>There is physical or historical evidence indicating that UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.</li> </ul>	2
Small arms (regardless of location)	• The presence of small arms ammunition is confirmed or suspected, regardless of other factors such as geological stability. (There must be evidence that no other types of munitions [e.g., grenades] were used or are present at the MRS to place an MRS into this category.)	1
Evidence of no munitions	<ul> <li>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.</li> </ul>	0
LOCATION OF MUNITIONS	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 25).	25

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

Items were found in the surface and subsurface and in burial pits (SSFR, Section 1.0, Page 1-1).

Erosion is a concern at the MRS (RI/FS, Section 2.4.a, Page 2-8) (RI/FS, Section 4.1.6.0.3, Page 4-10) (RI/FS, Section 5.2.2, Page 5-14).

# Table 4 EHE Module: Ease of Access Data Element Table

**DIRECTIONS:** Below are four classifications of barrier types that can surround an MRS and their descriptions. The barrier type is directly related to the ease of public access to the MRS. Circle the score that corresponds with the ease of access to the MRS.

Note: The term *barrier* is defined in Appendix C of the Primer.

		-
Classification	Description	Score
No barrier	<ul> <li>There is no barrier preventing access to any part of the MRS (i.e., all parts of the MRS are accessible).</li> </ul>	10
Barrier to MRS access is incomplete	<ul> <li>There is a barrier preventing access to parts of the MRS, but not the entire MRS.</li> </ul>	8
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
EASE OF ACCESS	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 10).	10
DIRECTIONS: Document any M provided.	RS-specific data used in selecting the <i>Ease of Access</i> classification in the sp	ace
There is no barrier to the MRS	5 (DD, Section 2.6.1, Page 2-8).	

# Table 5 EHE Module: Status of Property Data Element Table

**DIRECTIONS:** Below are three classifications of the status of a property within the Department of Defense (DoD) and their descriptions. Circle the score that corresponds with the status of property at the MRS.

Classification	Description	Score
Non-DoD control	<ul> <li>The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by DoD. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal, or local governments; and land or water bodies managed by other federal agencies.</li> <li>The MRS is at a location that is owned by DoD, but that DoD has leased to another entity and for which DoD does not control access 24 hours per day.</li> </ul>	5
Scheduled for transfer from DoD control	<ul> <li>The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD, and DoD plans to transfer that land or water body to the control of another entity (e.g., a state, tribal, or local government; a private party; another federal agency) within 3 years from the date the Protocol is applied.</li> </ul>	3
DoD control	<ul> <li>The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD. With respect to property that is leased or otherwise possessed, DoD must control access to the MRS 24 hours per day, every day of the calendar year.</li> </ul>	0
STATUS OF PROPERTY	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).	0
DIRECTIONS: Document any M provided.	IRS-specific data used in selecting the <i>Status of Property</i> classification in the	space
The MRS is under DoD Control	(DD, Section 2.1, Page 2-1).	

# Table 6 EHE Module: Population Density Data Element Table

- **DIRECTIONS:** Below are three classifications for population density and their descriptions. Determine the population density per square mile that most closely corresponds with the population of the MRS, including the area within a two-mile radius of the MRS's perimeter. Circle the most appropriate score.
- **Note:** Use the U.S. Census Bureau tract data available to capture the <u>highest</u> population density within a two-mile radius of the perimeter of the MRS.

	Description	Score
> 500 persons per square mile	• There are more than 500 persons per square mile in the U.S. Census Bureau tract in which the MRS is located.	5
100–500 persons per square mile	There are 100 to 500 persons per square mile in the U.S. Census Bureau tract in which the MRS is located.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the U.S. Census Bureau tract in which the MRS is located.	1
POPULATION DENSITY	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).	1
DIRECTIONS: Document any l provided.	MRS-specific data used in selecting the <b>Population Density</b> classification in the	ne space
	miles away from the MBS boundary. The city of Dine Pluff is over 5 miles away	av
The city of White Hall is 2.47 from the MRS boundary. Jef	miles away from the MRS boundary. The city of Pine Bluff is over 5 miles awa ferson County census data is used.	цу
from the MRS boundary. Jef	ferson County census data is used. quare mile in Jefferson County.	чу

## EHE Module: Population Near Hazard Data Element Table

**DIRECTIONS:** Below are six classifications describing the number of inhabited structures near the MRS. The number of inhabited buildings relates to the potential population near the MRS. Determine the number of inhabited structures within two miles of the MRS boundary and circle the score that corresponds with the number of inhabited structures.

Note: The term *inhabited structures* is defined in Appendix C of the Primer.

Classification	Description	Score
26 or more inhabited structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5
16 to 25 inhabited structures	There are 16 to 25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15 inhabited structures	• There are 11 to 15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10 inhabited structures	• There are 6 to 10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5 inhabited structures	There are 1 to 5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0 inhabited structures	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
POPULATION NEAR HAZARD	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).	5

There are more than 26 inhabited structures within two miles of the MRS

boundary. See GoogleEarth: https://earth.google.com/web/@34.34488606,-92.07886107,69.80829639a,5721.67001652d,35y,0h,0t,0r

## Table 8 EHE Module: Types of Activities/Structures Data Element Table

**DIRECTIONS:** Below are five classifications of activities and/or inhabited structures and their descriptions. Review the types of activities that occur and/or structures that are present within two miles of the MRS and circle the scores that correspond with <u>all</u> the activities/structure classifications at the MRS. **Note:** The term *inhabited structure* is defined in Appendix C of the Primer.

Classification Description Score Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with any of the following purposes: residential, educational, child care, critical assets Residential, educational, (e.g., hospitals, fire and rescue, police stations, dams), hotels, 5 commercial, or subsistence commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering. Activities are conducted, or inhabited structures are located up ٠ to two miles from the MRS's boundary or within the MRS's Parks and recreational areas boundary, that are associated with parks, nature preserves, or other recreational uses Activities are conducted, or inhabited structures are located up ٠ to two miles from the MRS's boundary or within the MRS's Agricultural, forestry 3 boundary, that are associated with agriculture or forestry. Activities are conducted, or inhabited structures are located up ٠ to two miles from the MRS's boundary or within the MRS's boundary, that are associated with industrial activities or 2 Industrial or warehousing warehousing. There are no known or recurring activities occurring up to two ٠ No known or recurring activities miles from the MRS's boundary or within the MRS's boundary. 1 TYPES OF **DIRECTIONS:** Record **the single highest score** from above in 5 ACTIVITIES/STRUCTURES the box to the right (maximum score = 5).

**DIRECTIONS:** Document any MRS-specific data used in selecting the *Types of Activities/Structures* classifications in the space provided.

There are a few homes/farms across the river within two miles of the eastern side of the MRS boundary. The Arkansas River is used for recreational activities.

https://earth.google.com/web/@34.34488606,-92.07886107,69.80829639a,5721.67001652d,35y,0h,0t,0r

# Table 9 EHE Module: Ecological and/or Cultural Resources Data Element Table

**DIRECTIONS:** Below are four classifications of ecological and/or cultural resources and their descriptions. Review the types of resources present and circle the score that corresponds with the ecological and/or cultural resources present on the MRS.

Note: The terms ecological resources and cultural resources are defined in Appendix C of the Primer.

Classification	Description	Score
Ecological and cultural resources present	<ul> <li>There are both ecological and cultural resources present on the MRS.</li> </ul>	5
Ecological resources present	<ul> <li>There are ecological resources present on the MRS.</li> </ul>	3
Cultural resources present	There are cultural resources present on the MRS.	3
No ecological or cultural resources present	<ul> <li>There are no ecological resources or cultural resources present on the MRS.</li> </ul>	0
ECOLOGICAL AND/OR CULTURAL RESOURCES	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).	0
	y MRS-specific data used in selecting the <i>Ecological and/or Cultural Resource</i> the space provided.	ces
The sites have no known ar	eas of archaeological or historical importance (DD Report, Section 2.5, Pa	age 2-5).
No threatened or endangere 2-13).	ed species are currently documented at either the MRS (DD, Section 2.7.3	3, Page

# Table 10 Determining the EHE Module Rating

## DIRECTIONS:

- 1. From Tables 1–9, record the data element scores in the **Score** boxes to the right.
- 2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
- Add the three Value boxes and record this number in the EHE Module Total box below.
- 4. Circle the appropriate range for the **EHE Module Total** below.
- 5. Circle the EHE Module Rating that corresponds to the range selected and record this value in the EHE Module Rating box found at the bottom of the table.

#### Note:

An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

g the EHE Module Rating			
	Source	Score	Value
Explosive Hazard Factor Data Ele	ements		
Munitions Type	Table 1	30	38
Source of Hazard	Table 2	8	50
Accessibility Factor Data Elemer	nts		
Location of Munitions	Table 3	25	
Ease of Access	Table 4	10	35
Status of Property	Table 5	0	
Receptor Factor Data Elements	-		
Population Density	Table 6	1	
Population Near Hazard	Table 7	5	11
Types of Activities/Structures	Table 8	5	
Ecological and/or Cultural Resources	Table 9	0	
EHE	HE MODULE TOTAL 8		
EHE Module Total	EHE	Module R	ating
92 to 100	A		
82 to 91		В	
71 to 81		С	
60 to 70		D	
48 to 59		Е	
38 to 47		F	
less than 38		G	
	Evaluation Pending		
Alternative Module Ratings	No I	Longer Req	uired
	No Known or Suspected		
EHE MODULE RATING			
EHE MODULE RATING	EX	NLR	

The MRS is at Response Complete and all remedies have been completed in accordance with the DD (SSFR, Page ES-1). The regulators have concurred with the SSFR.

# Table 11 CHE Module: CWM Configuration Data Element Table

DIRECTIONS: Below are seven classifications of CWM configuration and their descriptions. Circle the scores that correspond with <u>all</u> the CWM configurations known or suspected to be present at the MRS.
 Note: The terms *CWM/UXO*, *CWM/DMM*, *physical evidence*, and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score		
CWM, that are either UXO, or explosively configured damaged DMM	<ul> <li>The CWM known or suspected of being present at the MRS are:</li> <li>CWM that are UXO (i.e., CWM/UXO)</li> <li>Explosively configured CWM that are DMM (i.e., CWM/DMM) that have been damaged.</li> </ul>			
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are undamaged CWM/DMM or CWM not configured as a munition that are commingled with conventional munitions that are UXO.	25		
CWM, explosive configuration that are undamaged DMM	The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20		
CWM/DMM, not explosively configured or CWM, bulk container	<ul> <li>The CWM known or suspected of being present at the MRS are:</li> <li>Nonexplosively configured CWM/DMM either damaged or undamaged</li> <li>Bulk CWM (e.g., ton container).</li> </ul>	15		
CAIS K941 and CAIS K942	The CWM/DMM known or suspected of being present at the MRS are CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M- 2/E11.	12		
CAIS (chemical agent identification sets)	CAIS, other than CAIS K941 and K942, are known or suspected of being present at the MRS.	10		
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0		
CWM CONFIGURATION	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 30).	30		

DIRECTIONS: Document any MRS-specific data used in selecting the CWM Configuration classifications

CWM items recovered during the corrective measures phase include the following: German Tractor Rockets (GTRs) that contained chemical agent, 4.2-inch mortars, 100lb bombs, 750lb bomb, CAIS (some are identified M1 K941), 15-cm rockets, 4.2-inch rockets and mortars (SSFR, Tables 2-1 through 2-10, Pages 102-171).

	Module: Sources of CWM Data Element Table	
the scores that co the MRS.	arces of CWM hazards and their descriptions. Review these classification prrespond with <u>all</u> the sources of CWM hazards known or suspected to b <i>WM/DMM, CAIS/DMM, surface, subsurface, physical evidence,</i> and <i>histo</i> appendix C of the Primer.	e present
Classification	Description	Score
Live-fire involving CWM	<ul> <li>The MRS is a former military range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface.</li> <li>The MRS is a former military range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface commingled with conventional munitions that are UXO.</li> </ul>	10
Damaged CWM/DMM surface or subsurface	<ul> <li>There are damaged CWM/DMM on the surface or in the subsurface at the MRS.</li> </ul>	10
Undamaged CWM/DMM surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
CAIS/DMM surface	There are CAIS/DMM on the surface.	10
Undamaged CWM/DMM, subsurface	<ul> <li>There are undamaged CWM/DMM in the subsurface at the MRS.</li> </ul>	5
CAIS/DMM subsurface	There are CAIS/DMM in the subsurface at the MRS.	5
Former CA or CWM Production Facilities	The MRS is a facility that formerly engaged in production of CA or CWM, and CWM/DMM is suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM	<ul> <li>The MRS is at a facility that formerly was involved in non-live- fire RDT&amp;E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.</li> </ul>	3
Former Training Facility using CWM or CAIS	<ul> <li>The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWM, decontamination training) and CWM/DMM or CAIS/DMM are suspected of being present on the surface or in the subsurface.</li> </ul>	2
Former Storage or Transfer points of CWM	The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	<ul> <li>Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.</li> </ul>	0
SOURCES OF CWM	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 10).	10

MEC/CWM burial activities; OB/OD. CWM and CAIS remain on the site (DD, Section 2.1, Page 2-1).

From 1942 through 1948 the southeastern portion of this MRS was used for the burning and disposal of mustard agent munitions (DD, Section 2.2, Page 2-2).

Environmental investigations conducted in the 1980s at the MRS discovered large burial pits of MEC and CWM items, reaching as deep as 14 feet bgs (RI/FS, Page ES-2).

Items were found in the surface and subsurface and in burial pits (SSFR, Section 1.0, Page 1-1). CWM items removed during the LPA surface removal activities (SSFR, Page ES-6).

# Table 13 CHE Module: Location of CWM Data Element Table

**DIRECTIONS:** Below are seven classifications of CWM locations and their descriptions. Review these locations and circle the scores that correspond with <u>all</u> the locations where CWM are known or suspected of being found at the MRS.

**Note:** The terms *confirmed, surface, subsurface, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Confirmed surface	<ul> <li>Physical evidence indicates that there are CWM on the surface of the MRS.</li> <li>Historical evidence (i.e., a confirmed report such as an explosive ordnance disposal [EOD], police, or fire department report, that an incident or accident that involved CWM, regardless of configuration, occurred) indicates there are CWM on the surface of the MRS.</li> </ul>	25
Confirmed subsurface, active	<ul> <li>Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose CWM.</li> <li>Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose CWM.</li> </ul>	20
Confirmed subsurface, stable	<ul> <li>Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause CWM to be exposed.</li> <li>Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause CWM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause CWM to be exposed.</li> </ul>	15
Suspected (physical evidence)	• There is physical evidence, other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	<ul> <li>There is physical or historical evidence indicating that CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.</li> </ul>	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence that there is no CWM present or there is historical evidence indicating that no CWM are present.	0
LOCATION OF CWM	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 25).	25

**DIRECTIONS:** Document any MRS-specific data used in selecting the *Location of CWM* classifications in the space provided.

Items were found in the surface and subsurface and in burial pits (SSFR, Section 1.0, Page 1-1).

Erosion is a concern at the MRS (RI/FS, Section 2.4.a, Page 2-8) (RI/FS, Section 4.1.6.0.3, Page 4-10) (RI/FS, Section 5.2.2, Page 5-14).

# Table 14 CHE Module: Ease of Access Data Element Table

**DIRECTIONS:** Below are four classifications of barrier types that can surround an MRS and their descriptions. The barrier type is directly related to the ease of public access to the MRS. Circle the score that corresponds with the ease of access to the MRS.

**Note:** The term *barrier* is defined in Appendix C of the Primer.

	-		
Description	Score		
<ul> <li>There is no barrier preventing access to any part of the MRS (i.e., all parts of the MRS are accessible).</li> </ul>			
• There is a barrier preventing access to parts of the MRS, but not the entire MRS.	8		
• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5		
• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.			
<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 10).	10		
<b>DIRECTIONS:</b> Document any MRS-specific data used in selecting the <i>Ease of Access</i> classification in the space provided. There is no barrier to the MRS (DD, Section 2.6.1, Page 2-8).			
	<ul> <li>There is no barrier preventing access to any part of the MRS (i.e., all parts of the MRS are accessible).</li> <li>There is a barrier preventing access to parts of the MRS, but not the entire MRS.</li> <li>There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.</li> <li>There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.</li> <li>DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 10).</li> </ul>		

# Table 15 CHE Module: Status of Property Data Element Table

**DIRECTIONS:** Below are three classifications of the status of a property within the Department of Defense (DoD) and their descriptions. Circle the score that corresponds with the status of property at the MRS.

Classification	Description	Score		
Non-DoD control	<ul> <li>The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by DoD. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal or local governments; and land or water bodies managed by other federal agencies.</li> <li>The MRS is at a location that is owned by DoD, but that DoD has leased to another entity and for which DoD does not control access 24 hours per day.</li> </ul>			
Scheduled for transfer from DoD control	<ul> <li>The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD, and DoD plans to transfer that land or water body to control of another entity (e.g., a state, tribal, or local government; a private party; another federal agency) within 3 years from the date the Protocol is applied.</li> </ul>			
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD. With respect to property that is leased or otherwise possessed, DoD controls access to the MRS 24 hours per day, every day of the calendar year.			
STATUS OF PROPERTY	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).	0		
<b>DIRECTIONS:</b> Document any MRS-specific data used in selecting the <b>Status of Property</b> classification in the space provided.				
The MRS is under DoD Control (DD, Section 2.1, Page 2-1).				

## Table 16 CHE Module: Population Density Data Element Table

**DIRECTIONS:** Below are three classifications for population density and their descriptions. Determine the population density per square mile that most closely corresponds with the population of the MRS, including the area within a two-mile radius of the MRS's perimeter. Circle the most appropriate score.

**Note:** Use the U.S. Census Bureau tract data available to capture the <u>highest</u> population density within a two-mile radius of the perimeter of the MRS.

Classification	Description	Score	
> 500 persons per square mile	• There are more than 500 persons per square mile in the U.S. Census Bureau tract in which the MRS is located.	5	
100–500 persons per square mile	<ul> <li>There are 100 to 500 persons per square mile in the U.S. Census Bureau tract in which the MRS is located.</li> </ul>	3	
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the U.S. Census Bureau tract in which the MRS is located.	1	
POPULATION DENSITY	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).		
DIRECTIONS: Document any MRS-specific data used in selecting the Population Density classification in the space			

The city of White Hall is 2.47 miles away from the MRS boundary. The city of Pine Bluff is over 5 miles away from the MRS boundary. Jefferson County census data is used.

There are 77.1 persons per square mile in Jefferson County.

provided.

https://www.census.gov/quickfacts/fact/table/jeffersoncountyarkansas/PST045223

#### CHE Module: Population Near Hazard Data Element Table

**DIRECTIONS:** Below are six classifications describing the number of inhabited structures near the MRS. The number of inhabited buildings relates to the potential population near the MRS. Determine the number of inhabited structures within two miles of the MRS boundary and circle the score that corresponds with the number of inhabited structures.

Note: The term inhabited structures is defined in Appendix C of the Primer.

Classification	Classification Description	
<ul> <li>There are 26 or more inhabited structures located up from the boundary of the MRS, within the boundary or or both.</li> </ul>		5
16 to 25 inhabited structures	<ul> <li>There are 16 to 25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.</li> </ul>	4
11 to 15 inhabited structures	<ul> <li>There are 11 to 15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.</li> </ul>	3
6 to 10 inhabited structures	• There are 6 to 10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5 inhabited structures	<ul> <li>There are 1 to 5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.</li> </ul>	1
0 inhabited structures	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
POPULATION NEAR HAZARD	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).	5

**DIRECTIONS:** Document any MRS-specific data used in selecting the *Population Near Hazard* classification in the space provided.

There are more than 26 inhabited structures within two miles of the MRS

boundary. See GoogleEarth: https://earth.google.com/web/@34.34488606,-92.07886107,69.80829639a,5721.67001652d,35y,0h,0t,0r

# Table 18 CHE Module: Types of Activities/Structures Data Element Table

**DIRECTIONS:** Below are five classifications of activities and/or inhabited structures and their descriptions. Review the types of activities that occur and/or structures that are present within two miles of the MRS and circle the scores that correspond with <u>all</u> the activities/structures classifications at the MRS. **Note:** The term *inhabited structures* is defined in Appendix C of the Primer.

Classification	Description	Score	
Residential, educational, commercial, or subsistence	<ul> <li>Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.</li> </ul>		
Parks and recreational areas	<ul> <li>Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with parks, nature preserves, or other recreational uses.</li> </ul>	4	
Agricultural, forestry	<ul> <li>Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with agriculture or forestry.</li> </ul>	3	
Industrial or warehousing	<ul> <li>Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with industrial activities or warehousing.</li> </ul>	2	
No known or recurring activities	<ul> <li>There are no known of recurring activities occurring up to two miles from the MRS's boundary or within the MRS's boundary.</li> </ul>	1	
TYPES OF ACTIVITIES/STRUCTURES	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).	5	

**DIRECTIONS:** Document any MRS-specific data used in selecting the *Types of Activities/Structures* classifications in

the space provided.

There are a few homes/farms across the river within two miles of the eastern side of the MRS boundary. The Arkansas River is used for recreational activities.

https://earth.google.com/web/@34.34488606,-92.07886107,69.80829639a,5721.67001652d,35y,0h,0t,0r

## CHE Module: Ecological and/or Cultural Resources Data Element Table

**DIRECTIONS:** Below are four classifications of ecological and/or cultural resources and their descriptions. Review the types of resources present and circle the score that corresponds with the ecological and/or cultural resources present on the MRS.

Note: The terms ecological resources and cultural resources are defined in Appendix C of the Primer.

Classification	Description	Score	
Ecological and cultural resources present	There are both ecological and cultural resources present on the MRS.		
Ecological resources present	There are ecological resources present on the MRS.		
Cultural resources present	There are cultural resources present on the MRS.	3	
No ecological or cultural resources present • There are no ecological resources or cultural resources present on the MRS.		0	
ECOLOGICAL AND/OR CULTURAL RESOURCESDIRECTIONS: Record the single highest score to the right (maximum score = 5).		0	
<b>DIRECTIONS:</b> Document any MRS-specific data used in selecting the <i>Ecological and/or Cultural Resources</i> classification in the space provided.			
The sites have no known areas of archaeological or historical importance (DD Report, Section 2.5, Page 2-5). No threatened or endangered species are currently documented at the MRS (DD, Section 2.7.3, Page 2-13).			

# Table 20 Determining the CHE Module Rating

**DIRECTIONS:** 

**CWM Hazard Factor Data Elements** 

Source

Score

Value

1	From Tobles 11, 10, record the	CWM Configuration	Table 11	30	40	
1.	From Tables 11–19, record the data element scores in the	Sources of CWM	Table 12	10		
	Score boxes to the right.	Accessibility Factor Data Elements				
2.	Add the <b>Score</b> boxes for each	Location of CWM	Table 13	25		
	of the three factors and record this number in the <b>Value</b> boxes	Ease of Access	Table 14	10	35	
	to the right.	Status of Property	Table 15	0		
3.	Add the three <b>Value</b> boxes and record this number in the <b>CHE</b>	Receptor Factor Data Elements				
	Module Total box below.	Population Density	Table 16	1		
4.	Circle the appropriate range for	Population Near Hazard	Table 17	5	11	
	the CHE Module Total below.	Types of Activities/Structures	Table 18	5		
5.	Circle the <b>CHE Module Rating</b> that corresponds to the range	Ecological and/or Cultural Resources	Table 19	0		
	selected and record this value in the <b>CHE Module Rating</b> box	CHE MODULE TOTAL 86			86	
	found at the bottom of the table.	CHE Module Total	CHE N	lodule R	ating	
Note:		92 to 100		А		
	ernative module rating may be ned when a module letter rating is	82 to 91		В		
inapp	ropriate. An alternative module	71 to 81		С		
neede	is used when more information is ed to score one or more data	60 to 70		D		
	ents, contamination at an MRS was ously addressed, or there is no	48 to 59	E			
	n to suspect contamination was present at an MRS.	38 to 47	F			
		less than 38	G			
			Evaluation Pending		ling	
		Alternative Module Ratings	No Longer Required		uired	
				wn or Susp WM Hazard		
		CHE MODULE RATING	NLR			
The N	IRS is at Response Complete and all	remedies have been complete	ed in accord	lance wit	h the	

The MRS is at Response Complete and all remedies have been completed in accordance with the DD (SSFR, Page ES-1). The regulators have concurred with the SSFR.

### HHE Module: Groundwater Data Element Table

#### Contaminant Hazard Factor (CHF)

**DIRECTIONS:** Record the **maximum concentrations** of all contaminants in the MRS's groundwater and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional groundwater contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the groundwater, select the box at the bottom of the table.

Contaminant	Maximum Concentration (μg/L)	Comparison Value (µg/L)	Ratios
Thiodiglycol	9.3 1100		.008
1,4-Dithiane	110 150		.733
1,4-Thioxane	19	2600000	.0000007
Ethane	55	Not in Appendix B-1	N / A
		From Table 27-1 / 2	1846.76014
CHF Scale	CHF Value	Sum The Ratios	1847.5011407
CHF > 100	H (High)	CHF = $\sum_{i=1}^{i}$ [Maximum Concentration of C	ontaminantl
100 > CHF > 2	M (Medium)	CHF =[Comparison Value for Conta	
2 > CHF			
CONTAMINANT HAZARD FACTOR	<b>DIRECTIONS:</b> Record <u>the CHF Value</u> (maximum value = H).	from above in the box to the right	н
DIRECTIONS: Circle th	Migratory Pathw ne value that corresponds most closely to	vay Factor o the groundwater migratory pathway at the	MRS.
Classification	Des	cription	Value
Evident	Analytical data or observable evidence indicates that contamination in the groundwater is present at, moving toward, or has moved to a point of exposure.		Н
Potential	Contamination in groundwater has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.		М
Confined	Information indicates a low potential for contamir a potential point of exposure (possibly due to the controls).	L	
MIGRATORY PATHWAY FACTOR	<b>DIRECTIONS:</b> Record <u>the single highest value</u> from above in the box to the right (maximum value = H).		М
DIRECTIONS: Circle th	<b>Receptor F</b> ace that corresponds most closely to		
Classification	Des	cription	Value
Identified	There is a threatened water supply well downgradient of the source and the groundwater is a current source of drinking water or source of water for other beneficial uses such as irrigation/agriculture (equivalent to Class I or IIA aquifer).		н
Potential	There is no threatened water supply well downgradient of the source and the groundwater is currently or potentially usable for drinking water, irrigation, or agriculture (equivalent to Class I, IIA, or IIB aquifer).		М
Limited	There is no potentially threatened water supply well downgradient of the source and the groundwater is not considered a potential source of drinking water and is of limited beneficial use (equivalent to Class IIIA or IIIB aquifer, or where perched aquifer exists only).		
RECEPTOR FACTOR	<b>DIRECTIONS:</b> Record <u>the single highest value</u> from above in the box to the right (maximum value = H).		
	No Kno	wn or Suspected Groundwater MC Hazard	

Sampling Data can be found in the SSFR, Table 5-3, Pages 174-177.

### HHE Module: Surface Water – Human Endpoint Data Element Table

#### **Contaminant Hazard Factor (CHF)**

**DIRECTIONS:** Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional surface water contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard with human endpoints present in the surface water, select the box at the bottom of the table.

Contaminant	Maximum Concentration (μg/L)	Comparison Value (μg/L)	Ratios		
Copper	.0019	620	.000003		
cis-1,2-Dichloroethene	.52	29	.018		
Tetrachloroethene	.92	35	.026		
CHF Scale	CHF Value	Sum The Ratios	.044003		
CHF > 100 100 > CHF > 2	H (High) M (Medium)	<b>CHF</b> = $\sum_{i=1}^{i}$ [Maximum Concentration of Co	ontaminant]		
2 > CHF	L (Low)	[Comparison Value for Contaminant]			
CONTAMINANT HAZARD FACTOR	<b>DIRECTIONS:</b> Record <u>the CHF Value</u> from above in the box to the right (maximum value = H).		L		
	Migratory Pathway Factor				

**DIRECTIONS:** Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
<b>Evident</b> Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.		н
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	М
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to the presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	<b>DIRECTIONS:</b> Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	М
DIRECTIONS: Circle 1	Receptor Factor the value that corresponds most closely to the surface water receptors at the MRS. Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	Н
Detential	Potential for receptors to have access to surface water to which contamination has moved or can	Ν.4

Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	М
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L
RECEPTOR FACTOR	<b>DIRECTIONS:</b> Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	М
	No Known or Suspected Surface Water (Human Endpoint) MC Hazard	

Sampling Data can be found in the SSFR, Table 5-4, Pages 181 and 182.

Table 23         HHE Module: Sediment – Human Endpoint Data Element Table         Contaminant Hazard Factor (CHF)         DIRECTIONS: Record the maximum concentrations of all contaminants in the MRS's sediment and their compar values (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded Table 27. Calculate and record the ratios for each contaminant by dividing the maximum concentration by the comparison value. Determine the CHF by adding the contaminant ratios together, including any additional sediment contaminants recorded on Table 27. Based on the CHF, the CHF Scale to determine and record the CHF Value. If there is no known or suspected MC haza with human endpoints present in the sediment, select the box at the bottom of the table.							
Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios				
CHF Scale	CHF Value	Sum The Ratios					
CHF > 100	H (High)	- Maximum Concentration of Co	ontaminant]				
100 > CHF > 2	M (Medium)	$CHF = \sum [Maximum Concentration of Co$					
2 > CHF			minanij				
CONTAMINANT HAZARD FACTOR	<b>DIRECTIONS:</b> Record <u>the CHF Value</u> maximum value = H).	from above in the box to the right					
DIRECTIONS: Circle the Classification		r <u>ay Factor</u> o the sediment migratory pathway at the MRS c <b>ription</b>	S. Value				
Evident	Analytical data or observable evidence indicates	that contamination in the sediment is present at,	Н				
Potential		tly beyond the source (i.e., tens of feet), could move ot sufficient to make a determination of Evident or	М				
Confined		ant migration from the source via the sediment to a resence of geological structures or physical controls).	L				
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record <u>the single high</u> right (maximum value =	nest value from above in the box to the					
DIRECTIONS: Circle th	ne value that corresponds most closely to						
Classification	Des	cription	Value				
Identified	Identified receptors have access to sediment to v	which contamination has moved or can move.	Н				
Potential	Potential for receptors to have access to sedimen	nt to which contamination has moved or can move.	М				
Limited	Little or no potential for receptors to have access can move.	to sediment to which contamination has moved or	L				
RECEPTOR FACTOR	DIRECTIONS: Record <u>the single high</u> the right (maximum val	n <u>est value</u> from above in the box to ue = H).					
	No Known or Suspected Sediment (Human Endpoint) MC Hazard						

### HHE Module: Surface Water – Ecological Endpoint Data Element Table

#### **Contaminant Hazard Factor (CHF)**

DIRECTIONS: Record the maximum concentrations of all contaminants in the MRS's surface water and their comparison values (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the ratios for each contaminant by dividing the maximum concentration by the comparison value. Determine the CHF by adding the contaminant ratios together, including any additional surface water contaminants recorded on Table 27. Based on the CHF, use the CHF Scale to determine and record the CHF Value. If there is no known or suspected MC hazard with ecological endpoints present in the surface water, select the box at the bottom of the table.

Contaminant	Maximum Concentration ( $\mu$ g/L)	Comparison Value (μg/L)	Ratios			
Copper	.0019	9	.0002			
cis-1,2-Dichloroethene	.52	Not in Appendix B-2	N / A			
Tetrachloroethene	.92	110	.008			
CHF Scale	CHF Value	Sum the Ratios	.0082			
CHF > 100	H (High)	<b>CHF</b> = $\sum_{i=1}^{i}$ [Maximum Concentration of Co	ontaminantl			
100 > CHF > 2	M (Medium)	CHF =[Comparison Value for Conta	minantl			
2 > CHF			minang			
CONTAMINANT HAZARD FACTOR	<b>DIRECTIONS:</b> Record <u>the CHF Value</u> (maximum value = H).	from above in the box to the right	L			
		o the surface water migratory pathway at the	MRS. Value			
Classification	Description					
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.					
Potential		slightly beyond the source (i.e., tens of feet), could on is not sufficient to make a determination of Evident	М			
Confined	Information indicates a low potential for contamin to a potential point of exposure (possibly due to controls).	nant migration from the source via the surface water the presence of geological structures or physical	L			
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record <u>the single hig</u> right (maximum value =	hest value from above in the box to the = H).	М			
DIRECTIONS: Circle th	Receptor F ne value that corresponds most closely to	<u>actor</u> o the surface water receptors at the MRS.				
Classification		cription	Value			
Identified	Identified receptors have access to surface wate	r to which contamination has moved or can move.	Н			
Potential	Potential for receptors to have access to surface move.	water to which contamination has moved or can	М			
Limited		to surface water to which contamination has moved	L			
RECEPTOR FACTOR	DIRECTIONS: Record <u>the single hig</u> right (maximum value =	h <u>est value</u> from above in the box to the = H).	М			
	No Known or Suspected Surface	ce Water (Ecological Endpoint) MC Hazard				

Sampling Data can be found in the SSFR, Table 5-4, Pages 181 and 182 .

Table 25         HHE Module: Sediment – Ecological Endpoint Data Element Table <u>Contaminant Hazard Factor (CHF)</u> DIRECTIONS: Record the maximum concentrations of all contaminants in the MRS's sediment and their corvalues (from Appendix B of the Primer) in the table below. Additional contaminants can be recordable 27. Calculate and record the ratios for each contaminant by dividing the maximum concentration by the comparison value. Determine the CHF by adding the contaminant ratio together, including any additional sediment contaminants recorded on Table 27. Based on the the CHF Scale to determine and record the CHF Value. If there is no known or suspected MC with ecological endpoints present in the sediment, select the box at the bottom of the table.							
Contaminant	nt Maximum Concentration (mg/kg) Comparison Value (mg/kg)						
CHF Scale	CHF Value	Sum the Ratios					
CHF > 100	H (High)	— Maximum Concentration of Co	ntaminant]				
100 > CHF > 2							
2 > CHF	L (Low)	[Comparison Value for Conta	minantj				
CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record <u>the CHF Valu</u> (maximum value = H).	<u>e</u> from above in the box to the right					
DIRECTIONS: Circle th	<u>Migratory Path</u> he value that corresponds most closely	<b>way Factor</b> to the sediment migratory pathway at the MRS	S.				
Classification	Des	scription	Value				
Evident		s that contamination in the sediment is present at,	Н				
Potential		ntly beyond the source (i.e., tens of feet), could move not sufficient to make a determination of Evident or	М				
Confined		nant migration from the source via the sediment to a presence of geological structures or physical controls).	L				
MIGRATORY PATHWAY FACTOR		hest value from above in the box to the					
DIRECTIONS: Circle the Classification	Receptor I he value that corresponds most closely	to the sediment receptors at the MRS.	Value				
Identified	Identified receptors have access to sediment to	scription which contamination has moved or can move.	H				
		ent to which contamination has moved or can move.					
Potential Limited		s to sediment to which contamination has moved or	M L				
	can move.		L				
RECEPTOR FACTOR	DIRECTIONS: Record <u>the single hig</u> right (maximum value	hest value from above in the box to the = H).					
No Known or Suspected Sediment (Ecological Endpoint) MC Hazard							

Media Not Sampled. In accordance with the DD, Sediment sampling was not conducted during the SSFR for this MRS.

# Table 26 HHE Module: Surface Soil Data Element Table

#### **Contaminant Hazard Factor (CHF)**

**DIRECTIONS:** Record the **maximum concentrations** of all contaminants in the MRS's surface soil and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional surface soil contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the surface soil, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratio		
1,3-Dinitrobenzene	.085	6.1	.014		
PETN	1.1	120	.009		
ARSENIC	180	34	5.29		
BARIUM	1100	15000	.073		
		Total From Table 27-2	3.1496		
CHF Scale	CHF Value	Sum the Ratios	8.5356		
CHF > 100 100 > CHF > 2	H (High) M (Medium)	<b>CHF</b> = $\sum_{i=1}^{i}$ [Maximum Concentration of Co	ontaminant]		
2 > CHF	L (Low)	[Comparison Value for Contaminant]			
CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record <u>the CHF Value</u> (maximum value = H)	Valuefrom above in the box to the rightM= H).			

#### Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface soil is present at, moving toward, or has moved to a point of exposure.	Н
Potential	Contamination in surface soil has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	М
Confined	Information indicates a low potential for contaminant migration from the source via the surface soil to a potential point of exposure (possibly due to the presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	<b>DIRECTIONS:</b> Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	М

#### **Receptor Factor**

DIRECTIONS: Circle the value that corresponds most closely to the surface soil receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface soil to which contamination has moved or can move.	Н
Potential	Potential for receptors to have access to surface soil to which contamination has moved or can move.	М
Limited	Little or no potential for receptors to have access to surface soil to which contamination has moved or can move.	L
RECEPTOR FACTOR	<b>DIRECTIONS:</b> Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	М
	No Known or Suspected Surface Soil MC Hazard	

Soil Sampling Data can be found in the SSFR. SSFR, Table 3-5, Pages 183-202.

## Table 27-1

## HHE Module: Supplemental Contaminant Hazard Factor Table

#### Contaminant Hazard Factor (CHF)

DIRECTIONS: Only use this table if there are more than five contaminants in any given medium present at the MRS. This is a supplemental table designed to hold information about contaminants that do not fit in the previous tables. Indicate the media in which these contaminants are present. Then record all contaminants, their maximum concentrations and their comparison values (from Appendix B of the Primer) in the table below. Calculate and record the ratio for each contaminant by dividing the maximum concentration by the comparison value. Determine the CHF for each medium on the appropriate media-specific tables.

**Note:** Do not add ratios from different media.

Media	Contaminant	Maximum Concentration	Comparison Value	Ratio
GW (T21)	Ethylene	4.7	Not in Appendix B-1	N / A
GW (T21)	Methane	12000	Not in Appendix B-1	N / A
GW (T21)	Arsenic	.05	4.5	.011
GW (T21)	Barium	.96	2900	.0003
GW (T21)	Cadmium	.00021	6.9	.00003
GW (T21)	Chromium	.0063	Not in Appendix B-1	N / A
GW (T21)	Lead	.0031	15	.0002
GW (T21)	Zinc	.092	4700	.00001
GW (T21)	Perchlorate	1.1	11	.100
GW (T21)	1,1-Dichloroethane	.54	240	.002
GW (T21)	1,1-Dichloroethene	.92	130	.007
GW (T21)	1,2-Dichlorobenzene	1.2	280	.004
GW (T21)	1,4-Dichlorobenzene	1.4	42	.033
GW (T21)	Acetone	7.9	12000	.0006
GW (T21)	Benzene	Benzene 55000 30		1833
GW (T21)	Chlorobenzene	56	72	.778
GW (T21)	Chloroform	Chloroform 39 19		2.052
GW (T21)	cis-1,2-Dichloroethene	cis-1,2-Dichloroethene 1.8		.062
GW (T21)	Ethylbenzene	Ethylbenzene 850 130		6.538
GW (T21)	m,p-Xylenes	1.9	Not in Appendix B-1	N / A
GW (T21)	o-Xylene	.94	190	.005
GW (T21)	Tetrachloroethene	53	Not in Appendix B-1	N/A
GW (T21)	Toluene	12	930	.013
GW (T21)	trans-1,2-Dichloroethene	.82	87	.009
GW (T21)	Trichloroethene	2.3	2.6	.885
GW (T21)	Vinyl chloride	3.6	1.5	2.4
GW (T21)	Chloride by EPA300	110	Not in Appendix B-1	N / A
GW (T21)	Sulfate by EPA300	240	Not in Appendix B-1	N / A
GW (T21)	Total organic carbon by SW9060A	15	Not in Appendix B-1	N / A
GW (T21)	Dissolved organic carbon by SW9060A	20	Not in Appendix B-1	N / A
			Total GroundWater This Page	1845.90014

## Table 27-2

## HHE Module: Supplemental Contaminant Hazard Factor Table

#### **Contaminant Hazard Factor (CHF)**

DIRECTIONS: Only use this table if there are more than five contaminants in any given medium present at the MRS. This is a supplemental table designed to hold information about contaminants that do not fit in the previous tables. Indicate the media in which these contaminants are present. Then record all contaminants, their maximum concentrations and their comparison values (from Appendix B of the Primer) in the table below. Calculate and record the ratio for each contaminant by dividing the maximum concentration by the comparison value. Determine the CHF for each medium on the appropriate media-specific tables.

**Note:** Do not add ratios from different media.

Media	Contaminant	Maximum Concentration	n Comparison Value	Ratio
GW (T21)	Diethanolamine (DEA)	26	31	.839
GW (T21)	Triethanolamine (TEA)	35	Not in Appendix B-1	N / A
GW (T21)	Manganese	6.6	320	.021
		1	otal GroundWater This Page	.860
Soil (T26)	CADMIUM	4.3	70	.061
Soil (T26)	CHROMIUM	47	1600	.029
Soil (T26)	LEAD	1100	400	2.75
Soil (T26)	MERCURY	.074	23	.003
Soil (T26)	SELENIUM	5.1	390	.013
Soil (T26)	SILVER	4.35	390	.011
Soil (T26)	Diethanolamine (DEA)	.17	120	.001
Soil (T26)	2,6-Dinitrotoluene	.0235	18	.001
Soil (T26)	2,4,6-Trinitrotoluene	8.7	36	.242
Soil (T26)	3-Nitrotoluene	.0452	6.1	.007
Soil (T26)	2-Amino-4,6-Dinitrotoluene	.4	150	.003
Soil (T26)	4-Amino-2,6-Dinitrotoluene	.097	150	.0006
Soil (T26)	3,5-Dinitroaniline	.025	Not in Appendix B-1	N / A
Soil (T26)	Tetryl	6.8	240	.028
		Tot	tal Soil From This Page	3.1496

# Table 28 Determining the HHE Module Rating

## **DIRECTIONS:**

- 1. Record the letter values (H, M, L) for the **Contaminant Hazard**, **Migration Pathway**, and **Receptor Factors** for the media (from Tables 21–26) in the corresponding boxes below.
- 2. Record the media's three-letter combinations in the **Three-Letter Combination** boxes below (three-letter combinations are arranged from Hs to Ms to Ls).
- 3. Using the **HHE Ratings** provided below, determine each media's rating (A–G) and record the letter in the corresponding **Media Rating** box below.

Media (Source)	Contaminant Hazard Factor Value	Migratory Pathway Factor Value	Receptor Factor Value	Three-Letter Combination (Hs-Ms-Ls)	Media Rating (A-G)
Groundwater (Table 21)	н	М	М	НММ	С
Surface Water/Human Endpoint (Table 22)	L	М	М	MML	E
Sediment/Human Endpoint (Table 23)					
Surface Water/Ecological Endpoint (Table 24)	L	М	М	MML	E
Sediment/Ecological Endpoint (Table 25)					
Surface Soil (Table 26)	М	М	М	MMM	D

## DIRECTIONS (cont.):

4. Select the single highest Media Rating (A is highest; G is lowest) and enter the letter in the **HHE Module Rating** box.

### Note:

An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more media, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

HHE Ratings (for refere	nce only)	
Combination	Rating	
ННН	A	
HHM	В	
HHL		
НММ	C	
HML		
МММ	D	
HLL	_	
MML	E	
MLL	F	
LLL	G	
	Evaluation Pending	
Alternative Module Ratings	No Longer Required	
	No Known or Suspected MC Hazard	

HHE MODULE RATING

NLR

The MRS is at Response Complete and all remedies have been completed in accordance with the DD (SSFR, Page ES-1). The regulators have concurred with the SSFR.

## Table 29 MRS Priority

- **DIRECTIONS:** In the chart below, circle the letter **rating** for each module recorded in Table 10 (EHE), Table 20 (CHE), and Table 28 (HHE). Circle the corresponding numerical **priority** for each module. If information to determine the module rating is not available, choose the appropriate alternative module rating. The MRS Priority is the single highest priority; record this relative priority in the **MRS Priority or Alternative MRS Rating** at the bottom of the table.
- **Note:** An MRS assigned Priority 1 has the highest relative priority; an MRS assigned Priority 8 has the lowest relative priority. Only an MRS with CWM known or suspected to be present can be assigned Priority 1; an MRS that has CWM known or suspected to be present cannot be assigned Priority 8.

EHE Rating	Priority	CHE Rating	Priority	HHE Rating	Priority	
		А	1			
A	2	В	2	A	2	
В	3	С	3	В	3	
С	4	D	4	С	4	
D	5	E	5	D	5	
E	6	F	6	E	6	
F	7	G	7	F	7	
G	8			G	8	
Evaluation	Pending	Evaluation Pending		Evaluation Pending		
No Longer	No Longer Required		No Longer Required		er Required	
No Known or Sus Haz		No Known or Suspected CWM Hazard		No Known or Suspected MC Hazard		
MRS PRIORITY or ALTERNATIVE MRS RATING				Ν	LR	

					ble A			
DIR	<b>DIRECTIONS:</b> 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 <b>MRS Summary</b> , 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 non-munitions-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.							
Con Inst Loc	Munitions Response Site Name:       PBA-002-R-01       WEBCASS #: 05087.1076         Component:       Active         Installation/Property Name:       PINE BLUFF ARSENAL         Location (City, County, State):       PINE BLUFF ARSENAL, JEFFERSON COUNTY, ARKANSAS         Site Name/Project Name (Project No.):       PBA-002-R-01       YELLOW LAKE BORROW AREA (YLBA)							A)
Poi	nt of Cont	act (Na	tered/Updated: me/Phone):  R < only one):	26 APRIL 2 iki Young, (	-	4-2421		
	D PA		□ SI	🗆 RI		G FS	RD	
	□ RA-C			🛛 RA-O		X RC	LTM	
Mec	lia Evaluat∉	ed (check	all that apply):					1
	Ground	water			🛛 Sedi	ment (human receptor	)	
	Surface	soil			X Surfa	ace Water (ecological r	eceptor)	_
	Sedimer	nt (ecolog	ical receptor)		X Surfa	ace Water (human rece	eptor)	
The 1 - Re - Sit - De	egulator App te Specific Fi ecision Docu	pporting o proval of S inal Repor iment (DD	documents are used a Site Specific Final Report (SSFR), Dated Octo ), Dated October 201 FeasibilityStudy (RI/F	ort (RA-SSFR ber 2021. 14.	R), Dated	April 2024.	Site is at RC as of 20	)240415
The The	MRS is at Re regulators h	esponse C lave concl	Complete and all reme urred with the SSFR.	dies have be	en comp	leted in accordance wi	ith the DD (SSFR, Page	e ES-1).
The historical activities at the MRS are suspected to be associated with proof testing of 4.2-inch chemical and HE mortars, and impact ranges have been identified. The MRS is an undeveloped forested area with restricted access to off- installation personnel, located in the eastern central portion of PBA near the eastern property boundary at the Arkansas River. It is comprised of approximately 943 acres, of which approximately 745 acres is land and 198 acres is within Yellow Lake and the YLBA Drainage Feature. In addition, GTRs, which historically have a CA fill, have been discovered. There is no information that would indicate that munitions were buried at the YLBA as a means of disposal. It is highly probable that MEC, CWM, MD, and CACM remain on the site. Potential CWM includes mustard, mustard/PD, and DA/PD (SSFR, Section 1.0, Page 1-1).								
	4.2-inch mo (DD, Section			l fill were rec	overed a	cross the site, at depth	ns ranging from 15 to 4	40 inches
At the MRS, MD was present only in the subsurface (1,187 pounds). The majority of identifiable MD consisted of frag from 4.2-inch HE mortars and half shells from 4.2-inch chemical mortars. (DD, Section 2.5, Pages 2-6 & 2-7).								
at th risks to pr	e current sta and hazard rovide consti	atus. LUC s from bo ruction su	Cs are already in-place th MEC/CWM and MC	e, which wou Cat this MRS	uld be for would be	malized and expanded e managed through LU	MRS. This MRS would , as necessary. Remai Cs, including a review land and groundwater	ining process
			be performed because ion 2.12.2, Page 2-34		and COC	s, including benzene a	nd ABP in groundwate	r, will
						Complete and all reme ncurred with the SSFR.	edies have been comple	eted in
Stal	ceholder Ir	volveme	ent (SHI): TBD					

## Table A CONTINUED

**Description of Pathways for Human and Ecological Receptors:** The MRS has a complete pathway for exposure to subsurface MEC/CWM, and a potentially complete pathway for surface MEC/CWM. The pathway to surface MEC/CWM is potentially complete opposed to complete because the RI did not observe MEC/CWM items on the surface, even though surface items are possible based on the site history. The MRS (water) has a potentially complete pathway; it is considered potentially complete because the presence of MEC/CWM items underwater and in the sediments is possible, but was not confirmed (DD, Section 2.5, Page 2-4).

The soil exposure pathway for human receptors is considered to be potentially complete for both surface and soils. Surface soil exposure is possible for all three exposure routes (ingestion, dermal contact, & inhalation). Passive and intrusive activities by human activities would be possible release mechanisms. The surface water pathway for humans is considered to be potentially complete. Exposure routes include dermal contact and ingestion. The upper aquifer (Jackson/Quaternary) is not currently used for consumption; therefore, there is no potential for direct groundwater exposure (DD, Section 2.7.2, Page 2-11).

**Description of Receptors (Human and Ecological):** Receptors include hunters, fishermen, pavilion area visitors, trespassers, groundskeeper, outdoor worker, construction worker, and rifle range personnel (DD, Section 2.7.1, Page 2-9 and 2-10).

No threatened or endangered species are currently documented at the MRS (DD, Section 2.7.3, Page 2-13).

# 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 <u>all</u> 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	<ul> <li>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).</li> <li>Hand grenades containing energetic filler.</li> <li>Bulk primary explosives, or mixtures of these with environmental media, such that the mixture poses an explosive hazard.</li> </ul>	30
High explosive (used or damaged)	<ul> <li>UXO containing a high-explosive filler (e.g., RDX, Composition B), that are not considered "sensitive."</li> <li>DMM containing a high-explosive filler that have:         <ul> <li>Been damaged by burning or detonation</li> <li>Deteriorated to the point of instability.</li> </ul> </li> </ul>	25
Pyrotechnic (used or damaged)	<ul> <li>UXO containing a pyrotechnic filler other than white phosphorus (e.g., flares, signals, simulators, smoke grenades).</li> <li>DMM containing a pyrotechnic filler other than white phosphorus (e.g., flares, signals, simulators, smoke grenades) that have:         <ul> <li>Been damaged by burning or detonation</li> <li>Deteriorated to the point of instability.</li> </ul> </li> </ul>	20
High explosive (unused)	<ul> <li>DMM containing a high-explosive filler that:         <ul> <li>Have not been damaged by burning or detonation</li> <li>Are not deteriorated to the point of instability.</li> </ul> </li> </ul>	15
Propellant	<ul> <li>UXO containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor).</li> <li>DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are:         <ul> <li>Damaged by burning or detonation</li> <li>Deteriorated to the point of instability.</li> </ul> </li> </ul>	15
Bulk secondary high explosives, pyrotechnics, or propellant	<ul> <li>DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor).</li> <li>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.</li> </ul>	10
Pyrotechnic (not used or damaged)	<ul> <li>DMM containing a pyrotechnic filler (i.e., red phosphorus), other than white phosphorus filler, that:</li> <li>Have not been damaged by burning or detonation</li> <li>Are not deteriorated to the point of instability.</li> </ul>	10
Practice	<ul> <li>UXO that are practice munitions that are not associated with a sensitive fuze.</li> <li>DMM that are practice munitions that are not associated with a sensitive fuze and that have not:         <ul> <li>Been damaged by burning or detonation</li> <li>Deteriorated to the point of instability.</li> </ul> </li> </ul>	5
Riot control	• UXO or DMM containing a riot control agent filler (e.g., tear gas).	3
Small arms	<ul> <li>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.)</li> </ul>	2
Evidence of no munitions	<ul> <li>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.</li> </ul>	0
MUNITIONS TYPE	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 30).	25

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

The historical activities at the MRS are suspected to be associated with proof testing of 4.2-inch chemical and HE mortars, and impact ranges have been identified. In addition, German Tractor Rockets (GTRs), which historically have a CA fill, have been discovered. There is no information that would indicate that munitions were buried at the YLBA as a means of disposal. It is highly probable that MEC, CWM, MD, and CACM remain on the site. Potential CWM includes mustard, mustard/PD, and DA/PD.(SSFR, Section 1.0, Page 1-1).

Four 4.2-inch mortars (M2 series) with mustard fill were recovered across the site, at depths ranging from 15 to 40 inches bgs (DD, Section 2.5, Page 2-6).

# Table 2 EHE Module: Source of Hazard Data Element Table

**DIRECTIONS:** Below are 11 classifications describing sources of explosive hazards. Circle the scores that correspond with <u>all</u> the sources of explosive hazards known or suspected to be present at the MRS. **Note:** The terms *former range, practice munitions, small arms range, physical evidence,* and *historical evidence* are

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

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include impact or target areas and associated buffer and safety zones.	10
Former munitions treatment (i.e., OB/OD) unit	<ul> <li>The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.</li> </ul>	8
Former practice munitions range	• The MRS is a former military range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	<ul> <li>The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.</li> </ul>	5
Former industrial operating facilities	<ul> <li>The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.</li> </ul>	4
Former firing points	<ul> <li>The MRS is a firing point, where the firing point is delineated as an MRS separate from the rest of a former military range.</li> </ul>	4
Former missile or air defense artillery emplacements	<ul> <li>The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a military range.</li> </ul>	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms ammunition was used. (There must be evidence that no other types of munitions [e.g., grenades] were used or are present to place an MRS into this category.)	1
Evidence of no munitions	<ul> <li>Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.</li> </ul>	0
SOURCE OF HAZARD	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 10).	10

**DIRECTIONS:** Document any MRS-specific data used in selecting the *Source of Hazard* classifications in the space provided.

The historical activities at the MRS are suspected to be associated with proof testing of 4.2-inch chemical and HE mortars, and impact ranges have been identified (DD, Section 2.1, Page 2-1).

## Table 3 EHE Module: Location of Munitions Data Element Table

**DIRECTIONS:** Below are eight classifications of munitions locations and their descriptions. Circle the scores that correspond with <u>all</u> the locations where munitions are known or suspected to be present at the MRS.

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

Classification	Description	Score
Confirmed surface	<ul> <li>Physical evidence indicates that there are UXO or DMM on the surface of the MRS.</li> <li>Historical evidence (i.e., a confirmed report such as an explosive ordnance disposal [EOD], police, or fire department report that an incident or accident that involved UXO or DMM occurred) indicates there are UXO or DMM on the surface of the MRS.</li> </ul>	25
Confirmed subsurface, active	<ul> <li>Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS, and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM.</li> <li>Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM.</li> </ul>	20
Confirmed subsurface, stable	<ul> <li>Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed.</li> <li>Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed.</li> <li>Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed.</li> </ul>	15
Suspected (physical evidence)	<ul> <li>There is physical evidence (e.g., munitions debris such as fragments, penetrators, projectiles, shell casings, links, fins), other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.</li> </ul>	10
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	<ul> <li>There is physical or historical evidence indicating that UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.</li> </ul>	2
Small arms (regardless of location)	• The presence of small arms ammunition is confirmed or suspected, regardless of other factors such as geological stability. (There must be evidence that no other types of munitions [e.g., grenades] were used or are present at the MRS to place an MRS into this category.)	1
Evidence of no munitions	<ul> <li>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.</li> </ul>	0
LOCATION OF MUNITIONS	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 25).	20

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

MEC was found in the subsurface; none were found on the surface (DD, Section 2.5, Page 2-7).

Erosion is a concern at the MRS (RI/FS, Section 2.4.a, Page 2-8) (RI/FS, Section 4.1.6.0.3, Page 4-10) (RI/FS, Section 5.2.2, Page 5-14).

# Table 4 EHE Module: Ease of Access Data Element Table

**DIRECTIONS:** Below are four classifications of barrier types that can surround an MRS and their descriptions. The barrier type is directly related to the ease of public access to the MRS. Circle the score that corresponds with the ease of access to the MRS.

Note: The term *barrier* is defined in Appendix C of the Primer.

	r	
Classification	Description	Score
No barrier	<ul> <li>There is no barrier preventing access to any part of the MRS (i.e., all parts of the MRS are accessible).</li> </ul>	10
Barrier to MRS access is incomplete	<ul> <li>There is a barrier preventing access to parts of the MRS, but not the entire MRS.</li> </ul>	8
Barrier to MRS access is complete but not monitored	<ul> <li>There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.</li> </ul>	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
EASE OF ACCESS	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 10).	10
DIRECTIONS: Document any M provided.	RS-specific data used in selecting the <i>Ease of Access</i> classification in the sp	ace
There is no barrier to the MRS	5 (DD, Section 2.6.1, Page 2-8).	

# Table 5 EHE Module: Status of Property Data Element Table

**DIRECTIONS:** Below are three classifications of the status of a property within the Department of Defense (DoD) and their descriptions. Circle the score that corresponds with the status of property at the MRS.

Classification	Description	Score
Non-DoD control	<ul> <li>The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by DoD. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal, or local governments; and land or water bodies managed by other federal agencies.</li> <li>The MRS is at a location that is owned by DoD, but that DoD has leased to another entity and for which DoD does not control access 24 hours per day.</li> </ul>	5
Scheduled for transfer from DoD control	<ul> <li>The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD, and DoD plans to transfer that land or water body to the control of another entity (e.g., a state, tribal, or local government; a private party; another federal agency) within 3 years from the date the Protocol is applied.</li> </ul>	3
DoD control	<ul> <li>The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD. With respect to property that is leased or otherwise possessed, DoD must control access to the MRS 24 hours per day, every day of the calendar year.</li> </ul>	0
STATUS OF PROPERTY	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).	0
DIRECTIONS: Document any M provided.	IRS-specific data used in selecting the <i>Status of Property</i> classification in the	space
The MRS is under DoD Control	(DD, Section 2.1, Page 2-1).	

# Table 6 EHE Module: Population Density Data Element Table

- **DIRECTIONS:** Below are three classifications for population density and their descriptions. Determine the population density per square mile that most closely corresponds with the population of the MRS, including the area within a two-mile radius of the MRS's perimeter. Circle the most appropriate score.
- **Note:** Use the U.S. Census Bureau tract data available to capture the <u>highest</u> population density within a two-mile radius of the perimeter of the MRS.

Classification	Description	Score
> 500 persons per square mile	• There are more than 500 persons per square mile in the U.S. Census Bureau tract in which the MRS is located.	5
100–500 persons per square mile	There are 100 to 500 persons per square mile in the U.S. Census Bureau tract in which the MRS is located.	3
< 100 persons per square mile	There are fewer than 100 persons per square mile in the U.S. Census Bureau tract in which the MRS is located.	1
POPULATION DENSITY	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).	5
DIRECTIONS: Document any I provided.	MRS-specific data used in selecting the <b>Population Density</b> classification in th	e space
The city of White Hall is with	in two miles of the MRS boundary.	
There are 790.1 persons per	square mile in the town of White Hall, AR.	
https://www.census.gov/qui	ckfacts/fact/table/whitehallcityarkansas/PST045223	

#### EHE Module: Population Near Hazard Data Element Table

**DIRECTIONS:** Below are six classifications describing the number of inhabited structures near the MRS. The number of inhabited buildings relates to the potential population near the MRS. Determine the number of inhabited structures within two miles of the MRS boundary and circle the score that corresponds with the number of inhabited structures.

Note: The term *inhabited structures* is defined in Appendix C of the Primer.

Classification	Description	Score
26 or more inhabited structures	<ul> <li>There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.</li> </ul>	5
16 to 25 inhabited structures	There are 16 to 25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15 inhabited structures	There are 11 to 15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10 inhabited structures	There are 6 to 10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5 inhabited structures	There are 1 to 5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0 inhabited structures	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
POPULATION NEAR HAZARD	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).	5

**DIRECTIONS:** Document any MRS-specific data used in selecting the **Population Near Hazard** classification in the space provided.

There are more than 26 inhabited structures within two miles of the

MRS boundary. See GoogleEarth:

https://earth.google.com/web/@34.32191167,-92.06043327,65.90271723a,4526.05707654d,35y,0h,0t,0

### Table 8 EHE Module: Types of Activities/Structures Data Element Table

**DIRECTIONS:** Below are five classifications of activities and/or inhabited structures and their descriptions. Review the types of activities that occur and/or structures that are present within two miles of the MRS and circle the scores that correspond with all the activities/structure classifications at the MRS. **Note:** The term *inhabited structure* is defined in Appendix C of the Primer.

Classification Description Score Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with any of the following purposes: residential, educational, child care, critical assets Residential, educational, (e.g., hospitals, fire and rescue, police stations, dams), hotels, 5 commercial. or subsistence commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering. Activities are conducted, or inhabited structures are located up ٠ to two miles from the MRS's boundary or within the MRS's Parks and recreational areas boundary, that are associated with parks, nature preserves, or other recreational uses Activities are conducted, or inhabited structures are located up ٠ to two miles from the MRS's boundary or within the MRS's Agricultural, forestry 3 boundary, that are associated with agriculture or forestry. Activities are conducted, or inhabited structures are located up ٠ to two miles from the MRS's boundary or within the MRS's boundary, that are associated with industrial activities or Industrial or warehousing 2 warehousing. There are no known or recurring activities occurring up to two ٠ No known or recurring activities miles from the MRS's boundary or within the MRS's boundary. 1 TYPES OF **DIRECTIONS:** Record the single highest score from above in 5

**DIRECTIONS:** Document any MRS-specific data used in selecting the *Types of Activities/Structures* classifications in the space provided.

the box to the right (maximum score = 5).

The MRS is generally used for recreational purposes, primarily hunting and fishing. Yellow Lake is located in the western portion of the MRS and is used for fishing (DD, Section 2.1, Page 2-1).

The MRS has a pavilion (picnic) area (DD, Section 2.5, Page 2-5).

ACTIVITIES/STRUCTURES

The town of White Hall is within two miles of the MRS boundary. Farming occurs within two miles of the MRS boundary on the northeast side of the MRS.

https://earth.google.com/web/@34.32191167,-92.06043327,65.90271723a,4526.05707654d,35y,0h,0t,0r

# Table 9 EHE Module: Ecological and/or Cultural Resources Data Element Table

**DIRECTIONS:** Below are four classifications of ecological and/or cultural resources and their descriptions. Review the types of resources present and circle the score that corresponds with the ecological and/or cultural resources present on the MRS.

Note: The terms ecological resources and cultural resources are defined in Appendix C of the Primer.

Classification	Description	Score
Ecological and cultural resources present	There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	There are ecological resources present on the MRS.	3
Cultural resources present	There are cultural resources present on the MRS.	3
No ecological or cultural resources present	<ul> <li>There are no ecological resources or cultural resources present on the MRS.</li> </ul>	0
ECOLOGICAL AND/OR CULTURAL RESOURCES	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).	0
	/ MRS-specific data used in selecting the <i>Ecological and/or Cultural Resource</i> the space provided.	ces
		`
The sites have no known are	eas of archaeological or historical importance (DD Report, Section 2.5, Pa	age 2-5).

# Table 10 Determining the EHE Module Rating

#### DIRECTIONS:

- 1. From Tables 1–9, record the data element scores in the **Score** boxes to the right.
- 2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
- Add the three Value boxes and record this number in the EHE Module Total box below.
- 4. Circle the appropriate range for the **EHE Module Total** below.
- 5. Circle the EHE Module Rating that corresponds to the range selected and record this value in the EHE Module Rating box found at the bottom of the table.

#### Note:

An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

g the EHE Module Rating				
	Source	Score	Value	
Explosive Hazard Factor Data Elements				
Munitions Type	Table 1	25	35	
Source of Hazard	Table 2	10	00	
Accessibility Factor Data Elemer	nts			
Location of Munitions	Table 3	20		
Ease of Access	Table 4	10	30	
Status of Property	Table 5	0		
Receptor Factor Data Elements				
Population Density	Table 6	5		
Population Near Hazard	Table 7	5	15	
Types of Activities/Structures	Table 8	5	10	
Ecological and/or Cultural Resources	Table 9	0		
EHE	MODULE	TOTAL	80	
EHE Module Total EHE Module Ratin				
EHE Module Total	EHE	Module R	ating	
92 to 100	EHE	Module R	ating	
	EHE		ating	
92 to 100	EHE	A	ating	
92 to 100 82 to 91	EHE	A B	ating	
92 to 100 82 to 91 71 to 81	EHE	A B C	ating	
92 to 100 82 to 91 71 to 81 60 to 70	EHE	A B C D	ating	
92 to 100 82 to 91 71 to 81 60 to 70 48 to 59	EHE	A B C D E	ating	
92 to 100 82 to 91 71 to 81 60 to 70 48 to 59 38 to 47		A B C D E F		
92 to 100 82 to 91 71 to 81 60 to 70 48 to 59 38 to 47	Eva	A B C D E F G	ding	
92 to 100 82 to 91 71 to 81 60 to 70 48 to 59 38 to 47 less than 38	Eva No I	A B C D E F G Iuation Pend -onger Req own or Susp	ding uired pected	
92 to 100 82 to 91 71 to 81 60 to 70 48 to 59 38 to 47 less than 38	Eva No I	A B C D E F G Iuation Pend	ding uired	

The MRS is at Response Complete and all remedies have been completed in accordance with the DD (SSFR, Page ES-1). The regulators have concurred with the SSFR.

# Table 11 CHE Module: CWM Configuration Data Element Table

DIRECTIONS: Below are seven classifications of CWM configuration and their descriptions. Circle the scores that correspond with <u>all</u> the CWM configurations known or suspected to be present at the MRS.
 Note: The terms CWM/UXO, CWM/DMM, physical evidence, and historical evidence are defined in Appendix C of the

Primer.

Classification	Description	Score
CWM, that are either UXO, or explosively configured damaged DMM	<ul> <li>The CWM known or suspected of being present at the MRS are:</li> <li>CWM that are UXO (i.e., CWM/UXO)</li> <li>Explosively configured CWM that are DMM (i.e., CWM/DMM) that have been damaged.</li> </ul>	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are undamaged CWM/DMM or CWM not configured as a munition that are commingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are undamaged DMM	The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM/DMM, not explosively configured or CWM, bulk container	<ul> <li>The CWM known or suspected of being present at the MRS are:</li> <li>Nonexplosively configured CWM/DMM either damaged or undamaged</li> <li>Bulk CWM (e.g., ton container).</li> </ul>	15
CAIS K941 and CAIS K942	The CWM/DMM known or suspected of being present at the MRS are CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M- 2/E11.	12
CAIS (chemical agent identification sets)	<ul> <li>CAIS, other than CAIS K941 and K942, are known or suspected of being present at the MRS.</li> </ul>	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0
CWM CONFIGURATION	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 30).	30

**DIRECTIONS:** Document any MRS-specific data used in selecting the *CWM Configuration* classifications

The historical activities at the MRS are suspected to be associated with proof testing of 4.2-inch chemical and HE mortars, and impact ranges have been identified. In addition, German Tractor Rockets (GTRs), which historically have a CA fill, have been discovered. There is no information that would indicate that munitions were buried at the YLBA as a means of disposal. It is highly probable that MEC, CWM, MD, and CACM remain on the site. Potential CWM includes mustard, mustard/PD, and DA/PD.(SSFR, Section 1.0, Page 1-1).

Four 4.2-inch mortars (M2 series) with mustard fill were recovered across the site, at depths ranging from 15 to 40 inches bgs (DD, Section 2.5, Page 2-6).

CHEI	Table 12         Module: Sources of CWM Data Element Table	
<ul> <li>DIRECTIONS: Below are 11 sources of CWM hazards and their descriptions. Review these classifications and circle the scores that correspond with <u>all</u> the sources of CWM hazards known or suspected to be present at the MRS.</li> <li>Note: The terms <i>CWM/UXO</i>, <i>CWM/DMM</i>, <i>CAIS/DMM</i>, <i>surface</i>, <i>subsurface</i>, <i>physical evidence</i>, and <i>historical evidence</i> are defined in Appendix C of the Primer.</li> </ul>		
Classification	Description	Score
Live-fire involving CWM	<ul> <li>The MRS is a former military range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface.</li> <li>The MRS is a former military range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface commingled with conventional munitions that are UXO.</li> </ul>	10
Damaged CWM/DMM surface or subsurface	There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
CAIS/DMM surface	There are CAIS/DMM on the surface.	10
Undamaged CWM/DMM, subsurface	<ul> <li>There are undamaged CWM/DMM in the subsurface at the MRS.</li> </ul>	5
CAIS/DMM subsurface	There are CAIS/DMM in the subsurface at the MRS.	5
Former CA or CWM Production Facilities	<ul> <li>The MRS is a facility that formerly engaged in production of CA or CWM, and CWM/DMM is suspected of being present on the surface or in the subsurface.</li> </ul>	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM	• The MRS is at a facility that formerly was involved in non-live- fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	<ul> <li>The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWM, decontamination training) and CWM/DMM or CAIS/DMM are suspected of being present on the surface or in the subsurface.</li> </ul>	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	<ul> <li>Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.</li> </ul>	0
SOURCES OF CWM	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 10).	10

DIRECTIONS: Document any MRS-specific data used in selecting the Sources of CWM classifications

The historical activities at the MRS are suspected to be associated with proof testing of 4.2-inch chemical and HE mortars, and impact ranges have been identified (DD, Section 2.1, Page 2-1).

# Table 13 CHE Module: Location of CWM Data Element Table

**DIRECTIONS:** Below are seven classifications of CWM locations and their descriptions. Review these locations and circle the scores that correspond with <u>all</u> the locations where CWM are known or suspected of being found at the MRS.

**Note:** The terms *confirmed, surface, subsurface, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Confirmed surface	<ul> <li>Physical evidence indicates that there are CWM on the surface of the MRS.</li> <li>Historical evidence (i.e., a confirmed report such as an explosive ordnance disposal [EOD], police, or fire department report, that an incident or accident that involved CWM, regardless of configuration, occurred) indicates there are CWM on the surface of the MRS.</li> </ul>	25
Confirmed subsurface, active	<ul> <li>Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose CWM.</li> <li>Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose CWM.</li> </ul>	20
Confirmed subsurface, stable	<ul> <li>Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause CWM to be exposed.</li> <li>Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause CWM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause CWM to be exposed.</li> </ul>	15
Suspected (physical evidence)	There is physical evidence, other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	<ul> <li>There is physical or historical evidence indicating that CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.</li> </ul>	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence that there is no CWM present or there is historical evidence indicating that no CWM are present.	0
LOCATION OF CWM	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 25).	20

**DIRECTIONS:** Document any MRS-specific data used in selecting the *Location of CWM* classifications in the space provided.

Four 4.2-inch mortars (M2 series) with mustard fill were recovered across the site, at depths ranging from 15 to 40 inches bgs (DD, Section 2.5, Page 2-6).

MEC was found in the subsurface; none were found on the surface (DD, Section 2.5, Page 2-7).

Erosion is a concern at the MRS (RI/FS, Section 2.4.a, Page 2-8) (RI/FS, Section 4.1.6.0.3, Page 4-10) (RI/FS, Section 5.2.2, Page 5-14).

MD was present only in the subsurface (1,187 pounds). The majority of identifiable MD consisted of frag from 4.2-inch HE mortars and half shells from 4.2-inch chemical mortars. (DD, Section 2.5, Pages 2-6 & 2-7).

# Table 14 CHE Module: Ease of Access Data Element Table

**DIRECTIONS:** Below are four classifications of barrier types that can surround an MRS and their descriptions. The barrier type is directly related to the ease of public access to the MRS. Circle the score that corresponds with the ease of access to the MRS.

**Note:** The term *barrier* is defined in Appendix C of the Primer.

Description	Score
<ul> <li>There is no barrier preventing access to any part of the MRS (i.e., all parts of the MRS are accessible).</li> </ul>	10
• There is a barrier preventing access to parts of the MRS, but not the entire MRS.	8
• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 10).	10
MRS-specific data used in selecting the <i>Ease of Access</i> classification in the s 6 (DD, Section 2.6.1, Page 2-8).	pace
	<ul> <li>There is no barrier preventing access to any part of the MRS (i.e., all parts of the MRS are accessible).</li> <li>There is a barrier preventing access to parts of the MRS, but not the entire MRS.</li> <li>There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.</li> <li>There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.</li> <li>DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 10).</li> </ul>

# Table 15 CHE Module: Status of Property Data Element Table

**DIRECTIONS:** Below are three classifications of the status of a property within the Department of Defense (DoD) and their descriptions. Circle the score that corresponds with the status of property at the MRS.

Classification	Description	Score
Non-DoD control	<ul> <li>The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by DoD. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal or local governments; and land or water bodies managed by other federal agencies.</li> <li>The MRS is at a location that is owned by DoD, but that DoD has leased to another entity and for which DoD does not control access 24 hours per day.</li> </ul>	5
Scheduled for transfer from DoD control	<ul> <li>The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD, and DoD plans to transfer that land or water body to control of another entity (e.g., a state, tribal, or local government; a private party; another federal agency) within 3 years from the date the Protocol is applied.</li> </ul>	3
DoD control	<ul> <li>The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD. With respect to property that is leased or otherwise possessed, DoD controls access to the MRS 24 hours per day, every day of the calendar year.</li> </ul>	0
STATUS OF PROPERTY	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).	0
DIRECTIONS: Document any M provided.	MRS-specific data used in selecting the <b>Status of Property</b> classification in the	e space
The MRS is under DoD Contro	I (DD, Section 2.1, Page 2-1).	

# Table 16 CHE Module: Population Density Data Element Table

**DIRECTIONS:** Below are three classifications for population density and their descriptions. Determine the population density per square mile that most closely corresponds with the population of the MRS, including the area within a two-mile radius of the MRS's perimeter. Circle the most appropriate score.

**Note:** Use the U.S. Census Bureau tract data available to capture the <u>highest</u> population density within a two-mile radius of the perimeter of the MRS.

Classification	Description	Score			
> 500 persons per square mile	<ul> <li>There are more than 500 persons per square mile in the U.S. Census Bureau tract in which the MRS is located.</li> </ul>	5			
100–500 persons per square mile	There are 100 to 500 persons per square mile in the U.S. Census Bureau tract in which the MRS is located.	3			
< 100 persons per square mile	There are fewer than 100 persons per square mile in the U.S. Census Bureau tract in which the MRS is located.	1			
POPULATION DENSITY	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).	5			
<b>DIRECTIONS:</b> Document any MRS-specific data used in selecting the <i>Population Density</i> classification in the space provided.					
The city of White Hall is within two miles of the MRS boundary.					
There are 790.1 persons p	There are 790.1 persons per square mile in the town of White Hall, AR.				

https://www.census.gov/quickfacts/fact/table/whitehallcityarkansas/PST045223

#### CHE Module: Population Near Hazard Data Element Table

**DIRECTIONS:** Below are six classifications describing the number of inhabited structures near the MRS. The number of inhabited buildings relates to the potential population near the MRS. Determine the number of inhabited structures within two miles of the MRS boundary and circle the score that corresponds with the number of inhabited structures.

Note: The term *inhabited structures* is defined in Appendix C of the Primer.

Classification	Description	Score
26 or more inhabited structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5
16 to 25 inhabited structures	<ul> <li>There are 16 to 25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.</li> </ul>	4
11 to 15 inhabited structures	• There are 11 to 15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10 inhabited structures	• There are 6 to 10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5 inhabited structures	<ul> <li>There are 1 to 5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.</li> </ul>	1
0 inhabited structures	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
POPULATION NEAR HAZARD	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).	5

**DIRECTIONS:** Document any MRS-specific data used in selecting the *Population Near Hazard* classification in the space provided.

There are more than 26 inhabited structures within two miles of the

MRS boundary. See GoogleEarth: https://earth.google.com/web/@34.32191167,-92.06043327,65.90271723a,4526.05707654d,35y,0h,0t,0

# Table 18 CHE Module: Types of Activities/Structures Data Element Table

**DIRECTIONS:** Below are five classifications of activities and/or inhabited structures and their descriptions. Review the types of activities that occur and/or structures that are present within two miles of the MRS and circle the scores that correspond with <u>all</u> the activities/structures classifications at the MRS. **Note:** The term *inhabited structures* is defined in Appendix C of the Primer.

Classification	Description	Score
Residential, educational, commercial, or subsistence	<ul> <li>Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.</li> </ul>	5
Parks and recreational areas	<ul> <li>Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with parks, nature preserves, or other recreational uses.</li> </ul>	4
Agricultural, forestry	<ul> <li>Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with agriculture or forestry.</li> </ul>	3
Industrial or warehousing	<ul> <li>Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with industrial activities or warehousing.</li> </ul>	2
No known or recurring activities	• There are no known of recurring activities occurring up to two miles from the MRS's boundary or within the MRS's boundary.	1
TYPES OF ACTIVITIES/STRUCTURES	<b>DIRECTIONS:</b> Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).	5

**DIRECTIONS:** Document any MRS-specific data used in selecting the *Types of Activities/Structures* 

The MRS is generally used for recreational purposes, primarily hunting and fishing. Yellow Lake is located in the western portion of the MRS and is used for fishing (DD, Section 2.1, Page 2-1).

The MRS has a pavilion (picnic) area (DD, Section 2.5, Page 2-5).

The town of White Hall is within two miles of the MRS boundary. Farming occurs within two miles of the MRS boundary on the northeast side of the MRS.

### CHE Module: Ecological and/or Cultural Resources Data Element Table

**DIRECTIONS:** Below are four classifications of ecological and/or cultural resources and their descriptions. Review the types of resources present and circle the score that corresponds with the ecological and/or cultural resources present on the MRS.

Note: The terms ecological resources and cultural resources are defined in Appendix C of the Primer.

Classification	Description	Score		
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5		
Ecological resources present	<ul> <li>There are ecological resources present on the MRS.</li> </ul>	3		
Cultural resources present	There are cultural resources present on the MRS.	3		
<b>No ecological or cultural</b> <b>resources present</b> • There are no ecological resources or cultural resources present on the MRS.		0		
<b>ECOLOGICAL AND/OR</b> <b>CULTURAL RESOURCES</b> DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).		0		
<b>DIRECTIONS:</b> Document any MRS-specific data used in selecting the <i>Ecological and/or Cultural Resources</i> classification in the space provided.				
The sites have no known areas of archaeological or historical importance (DD Report, Section 2.5, Page 2-5).				
No threatened or endangered	species are currently documented at the MRS (DD, Section 2.7.3, Page	e 2-13).		

# Table 20 Determining the CHE Module Rating

**DIRECTIONS:** 

**CWM Hazard Factor Data Elements** 

Source

Score

Value

		CWM Configuration	Table 11	30	40	
1.	From Tables 11–19, record the data element scores in the	Sources of CWM	Table 12	10	40	
	Score boxes to the right.	Accessibility Factor Data Eleme	nts			
2.	Add the <b>Score</b> boxes for each	Location of CWM	Table 13	20		
	of the three factors and record this number in the <b>Value</b> boxes	Ease of Access	Table 14	10	30	
	to the right.	Status of Property	Table 15	0		
3.	Add the three <b>Value</b> boxes and record this number in the <b>CHE</b>	Receptor Factor Data Elements				
	Module Total box below.	Population Density	Table 16	5		
4.	Circle the appropriate range for	Population Near Hazard	Table 17	5	15	
	the CHE Module Total below.	Types of Activities/Structures	Table 18	5	15	
5.	Circle the <b>CHE Module Rating</b> that corresponds to the range	Ecological and/or Cultural Resources	Table 19	0		
	selected and record this value in the CHE Module Rating box	CHE MODULE TOTAL 85				
	found at the bottom of the table.	CHE Module Total	CHE N	CHE Module Rating		
Note:		92 to 100		A	-	
An alt	ernative module rating may be	82 to 91		В		
inapp	ned when a module letter rating is ropriate. An alternative module	71 to 81		С		
•	is used when more information is ed to score one or more data	60 to 70		D		
	ents, contamination at an MRS was busly addressed, or there is no	48 to 59	E			
reaso	n to suspect contamination was	38 to 47	F			
ever present at an MRS.		less than 38	G			
			Evalu	ation Penc	ling	
		Alternative Module Ratings	No Longer Required		uired	
				wn or Susp WM Hazard		
		CHE MODULE RATING		NLR		
The N	IRS is at Response Complete and all	remedies have been complete	ed in accord	lance wit	h the	

The MRS is at Response Complete and all remedies have been completed in accordance with the DD (SSFR, Page ES-1). The regulators have concurred with the SSFR.

#### HHE Module: Groundwater Data Element Table

#### Contaminant Hazard Factor (CHF)

**DIRECTIONS:** Record the **maximum concentrations** of all contaminants in the MRS's groundwater and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional groundwater contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the groundwater, select the box at the bottom of the table.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios	
Methane	630	Not in Appendix B-1	N / A	
Arsenic	.031	4.5	.007	
Barium	.65	2900	.0002	
Chromium	.002	Not in Appendix B-1	N / A	
		From Table 27-1	.19251	
CHF Scale	CHF Value	Sum The Ratios	.19971	
CHF > 100	H (High)	- Maximum Concentration of Co	ontaminantl	
100 > CHF > 2	M (Medium)	$CHF = \sum [Maximum Concentration of Concentration of Concentration of Concentration Views for Contents$	minont	
2 > CHF	L (Low)	[Comparison Value for Conta	minanij	
CONTAMINANT HAZARD FACTOR	<b>DIRECTIONS:</b> Record <u>the CHF Value</u> (maximum value = H).	from above in the box to the right	L	
DIRECTIONS: Circle th	<u>Migratory Pathway Factor</u> DIRECTIONS: Circle the value that corresponds most closely to the groundwater migratory pathway at the MRS.			
Classification	Description		Value	
Evident	Analytical data or observable evidence indicates that contamination in the groundwater is present at, moving toward, or has moved to a point of exposure.		Н	
Potential	Contamination in groundwater has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.		М	
Confined	Information indicates a low potential for contaminant migration from the source via the groundwater to a potential point of exposure (possibly due to the presence of geological structures or physical controls).			
MIGRATORY PATHWAY FACTOR	DIRECTIONS:         Record the single highest value         from above in the box to the right (maximum value = H).			
DIRECTIONS: Circle th	<b>Receptor F</b> ace that corresponds most closely to			
Classification	Description		Value	
Identified	There is a threatened water supply well downgradient of the source and the groundwater is a current source of drinking water or source of water for other beneficial uses such as irrigation/agriculture (equivalent to Class I or IIA aguifer).		Н	
Potential	There is no threatened water supply well downgradient of the source and the groundwater is currently or potentially usable for drinking water, irrigation, or agriculture (equivalent to Class I, IIA, or IIB aquifer).		Μ	
Limited	There is no potentially threatened water supply well downgradient of the source and the groundwater is not considered a potential source of drinking water and is of limited beneficial use (equivalent to Class IIIA or IIIB aquifer, or where perched aquifer exists only).			
RECEPTOR FACTOR	<b>DIRECTIONS:</b> Record <u>the single highest value</u> from above in the box to the right (maximum value = H).			
	No Kno	wn or Suspected Groundwater MC Hazard		

Sampling Data can be found in the SSFR, Table 5-3, Pages 174-179.

#### HHE Module: Surface Water – Human Endpoint Data Element Table

#### **Contaminant Hazard Factor (CHF)**

**DIRECTIONS:** Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional surface water contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard with human endpoints present in the surface water, select the box at the bottom of the table.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
ARSENIC	.0026 4.5		.0005
CHF Scale	CHF Value	Sum The Ratios	.0005
CHF > 100	H (High)	— Maximum Concentration of Co	ontaminantl
100 > CHF > 2	M (Medium)	$CHF = \sum \frac{[Maximum Concentration of Concentration]}{[Maximum Concentration]}$	
2 > CHF	L (Low)	[Comparison Value for Conta	minantj
CONTAMINANT HAZARD FACTOR	<b>DIRECTIONS:</b> Record <u>the CHF Value</u> (maximum value = H).	from above in the box to the right	L
	Migratory Pathw	av Factor	
DIRECTIONS: Circle t		b the surface water migratory pathway at the	MRS.
Classification	Description		Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.		Н
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.		
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to the presence of geological structures or physical controls).		
MIGRATORY PATHWAY FACTOR	<b>DIRECTIONS:</b> Record <u>the single highest value</u> from above in the box to the right (maximum value = H).		
	Receptor F	actor	
DIRECTIONS: Circle t		the surface water receptors at the MRS.	
Classification	Desc	cription	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.		Н
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.		М
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.		
RECEPTOR FACTOR	DIRECTIONS: Record <u>the single high</u> the right (maximum valu		М

No Known or Suspected Surface Water (Human Endpoint) MC Hazard

Sampling Data can be found in the SSFR, Table 5-4, Pages 181 and 182.

Table 23         HHE Module: Sediment – Human Endpoint Data Element Table         Contaminant Hazard Factor (CHF)         DIRECTIONS:       Record the maximum concentrations of all contaminants in the MRS's sediment and their comparison values (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the ratios for each contaminant by dividing the maximum concentration by the comparison value. Determine the CHF by adding the contaminant ratios together, including any additional sediment contaminants recorded on Table 27. Based on the CHF, use the CHF Scale to determine and record the CHF Value. If there is no known or suspected MC hazard with human endpoints present in the sediment, select the box at the bottom of the table.				
Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios	
CHF Scale	CHF Value	Sum The Ratios		
CHF > 100	H (High)	Maximum Concentration of C	entensin entl	
100 > CHF > 2	<b>M</b> (Medium) $CHF = \sum_{i=1}^{i} Miaximum Concentration of Cor$			
2 > CHF	L (Low) [Comparison Value for Contam			
CONTAMINANT HAZARD FACTOR	<b>DIRECTIONS:</b> Record <u>the CHF Value</u> from above in the box to the right maximum value = H).			
		o the sediment migratory pathway at the MR		
Classification	Desc Analytical data or observable evidence indicates	cription that contamination in the sediment is present at.	Value	
Evident	moving toward, or has moved to a point of expos	ure.	Н	
Potential	but is not moving appreciably, or information is no Confined.	tly beyond the source (i.e., tens of feet), could move ot sufficient to make a determination of Evident or	М	
Confined	Information indicates a low potential for contamin potential point of exposure (possibly due to the p	ant migration from the source via the sediment to a resence of geological structures or physical controls).	L	
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record <u>the single high</u> right (maximum value =	<b>nest value</b> from above in the box to the = H).		
	ne value that corresponds most closely to	o the sediment receptors at the MRS.	Malaa	
Classification	Desc Identified receptors have access to sediment to v	cription which contamination has moved or can move.	Value	
Identified			Н	
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.			
Limited	Little or no potential for receptors to have access can move.	L		
RECEPTOR FACTOR	DIRECTIONS: Record <u>the single high</u> the right (maximum val			
No Known or Suspected Sediment (Human Endpoint) MC Hazard				

Media Not Sampled. In accordance with the DD, Sediment sampling was not conducted during the SSFR for this MRS.

No action is required to address ecological concerns, for soil, surface water, or sediment (DD, Section 2.7.3, Page 2-13).

#### HHE Module: Surface Water – Ecological Endpoint Data Element Table

#### **Contaminant Hazard Factor (CHF)**

DIRECTIONS: Record the maximum concentrations of all contaminants in the MRS's surface water and their comparison values (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the ratios for each contaminant by dividing the maximum concentration by the comparison value. Determine the CHF by adding the contaminant ratios together, including any additional surface water contaminants recorded on Table 27. Based on the CHF, use the CHF Scale to determine and record the CHF Value. If there is no known or suspected MC hazard with ecological endpoints present in the surface water, select the box at the bottom of the table.

Contaminant	Maximum Concentration (μg/L)	Comparison Value (µg/L)	Ratios
ARSENIC	.0026	150	.00001
CHF Scale	CHF Value	Sum the Ratios	.00001
CHF > 100	H (High)	<b>CHF</b> = $\sum_{i=1}^{i}$ [Maximum Concentration of C	ontaminant]
100 > CHF > 2	M (Medium)	CHF =[Comparison Value for Conta	minantl
2 > CHF			armang
CONTAMINANT HAZARD FACTOR	<b>DIRECTIONS:</b> Record <u>the CHF Value</u> (maximum value = H).	from above in the box to the right	L
	Migratory Pathw	vay Factor	
DIRECTIONS: Circle th	ne value that corresponds most closely to	o the surface water migratory pathway at the	MRS.
Classification	Des	cription	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.		Н
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.		
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to the presence of geological structures or physical controls).		
MIGRATORY PATHWAY FACTOR			
	Receptor Fa		
		the surface water receptors at the MRS.	
Classification		cription	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.		Н
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.		М
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.		
RECEPTOR FACTOR	<b>DIRECTIONS:</b> Record <u>the single highest value</u> from above in the box to the right (maximum value = H).		
No Known or Suspected Surface Water (Ecological Endpoint) MC Hazard			

Sampling Data can be found in the SSFR, Table 5-4, Pages 181 and 182 .

Table 25           HHE Module: Sediment – Ecological Endpoint Data Element Table			
values Table 2 concer togethe the CHI	(from Appendix B of the Primer) in the t 7. Calculate and record the <b>ratios</b> for entration by the <b>comparison value</b> . Det er, including any additional sediment con <b>F Scale</b> to determine and record the <b>CH</b>	<b>D Factor (CHF)</b> ontaminants in the MRS's sediment and their of able below. Additional contaminants can be r each contaminant by dividing the <b>maximum</b> termine the <b>CHF</b> by adding the contaminant <b>r</b> taminants recorded on Table 27. Based on the <b>IF Value</b> . If there is no known or suspected M ent, select the box at the bottom of the table.	ecorded on atios ne CHF, use
Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
CHF Scale	CHF Value	Sum the Ratios	
CHF > 100	H (High)	<b>CHF</b> = $\sum_{n=1}^{\infty}$ [Maximum Concentration of Co	ontaminant]
100 > CHF > 2 2 > CHF	M (Medium) L (Low)	[Comparison Value for Conta	minant]
CONTAMINANT HAZARD FACTOR         DIRECTIONS: Record the CHF Value (maximum value = H).         from above in the box to the right			
DIRECTIONS: Circle th	Migratory Path ne value that corresponds most closely	way Factor to the sediment migratory pathway at the MRS	6.
Classification Description			Value
Evident	Analytical data or observable evidence indicates moving toward, or has moved to a point of expo	s that contamination in the sediment is present at, sure.	Н
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.		
Confined		nant migration from the source via the sediment to a presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record the single hig right (maximum value	hest value from above in the box to the = H).	
	Receptor I	actor	
DIRECTIONS: Circle th	ne value that corresponds most closely		
Classification Description			Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.		
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.		М
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.		L
<b>RECEPTORDIRECTIONS:</b> Record <u>the single highest value</u> from above in the box to the right (maximum value = H).			
No Known or Suspected Sediment (Ecological Endpoint) MC Hazard			

Media Not Sampled. In accordance with the DD, Sediment sampling was not conducted during the SSFR for this MRS.

No action is required to address ecological concerns, for soil, surface water, or sediment (DD, Section 2.7.3, Page 2-13).

HHE Module: Surface Soil Data Element Table				
compar recorde concen togethe use the	rison values (from Appendix B of the F d on Table 27. Calculate and record th tration by the comparison value. De r, including any additional surface soil of	ontaminants in the MRS's surface soil and the Primer) in the table below. Additional contamin he <b>ratios</b> for each contaminant by dividing the termine the <b>CHF</b> by adding the contaminant <b>ra</b> contaminants recorded on Table 27. Based or e <b>CHF Value</b> . If there is no known or suspect	nants can be <b>maximum</b> atios n the CHF,	
Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratio	
CHF Scale	CHF Value	Sum the Ratios		
CHF > 100	H (High)		ontaminantl	
100 > CHF > 2			minont	
2 > CHF L (Low) [Comparison Value for Contan			minanij	
CONTAMINANT HAZARD FACTORDIRECTIONS: Record the CHF Value (maximum value = H).from above in the box to the right (maximum value = H).				
DIRECTIONS: Circle the Classification		way Factor to the surface soil migratory pathway at the M scription	RS. Value	
Evident	Analytical data or observable evidence indicate	es that contamination in the surface soil is present at,	H	
Potential		osure. slightly beyond the source (i.e., tens of feet), could tion is not sufficient to make a determination of Evident	Μ	
Confined	Information indicates a low potential for contaminant migration from the source via the surface soil to a potential point of exposure (possibly due to the presence of geological structures or physical controls).		L	
MIGRATORY         DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).				
Receptor Factor DIRECTIONS: Circle the value that corresponds most closely to the surface soil receptors at the MRS.				
Classification Description			Value	
Identified	Identified receptors have access to surface so	I to which contamination has moved or can move.	Н	
Potential	Potential for receptors to have access to surface	ce soil to which contamination has moved or can move.	М	

L Limited can move. RECEPTOR DIRECTIONS: Record the single highest value from above in the box to the FACTOR right (maximum value = H). No Known or Suspected Surface Soil MC Hazard 

Little or no potential for receptors to have access to surface soil to which contamination has moved or

Media Not Sampled. In accordance with the DD, Soil sampling was not conducted during the SSFR for this MRS.

No action is required to address ecological concerns, for soil, surface water, or sediment (DD, Section 2.7.3, Page 2-13).

## Table 27-1

### HHE Module: Supplemental Contaminant Hazard Factor Table

#### Contaminant Hazard Factor (CHF)

DIRECTIONS: Only use this table if there are more than five contaminants in any given medium present at the MRS. This is a supplemental table designed to hold information about contaminants that do not fit in the previous tables. Indicate the media in which these contaminants are present. Then record all contaminants, their maximum concentrations and their comparison values (from Appendix B of the Primer) in the table below. Calculate and record the ratio for each contaminant by dividing the maximum concentration by the comparison value. Determine the CHF for each medium on the appropriate media-specific tables.

**Note:** Do not add ratios from different media.

Media	Contaminant	Maximum Concentration	Comparison Value	Ratio
GW (T21)	Manganese	1.9	320	.006
GW (T21)	Chloride by EPA300	190	Not in Appendix B-1	N / A
GW (T21)	Sulfate by EPA300	330	Not in Appendix B-1	N / A
GW (T21)	Total organic carbon by SW9060A	8.2	Not in Appendix B-1	N / A
GW (T21)	Dissolved organic carbon by SW9060A	8.3	Not in Appendix B-1	N / A
GW (T21)	Perchlorate	.19	11	.017
GW (T21)	1,1,1-Trichloroethane	4	7500	.0005
GW (T21)	cis-1,2-Dichloroethene	4.9	29	.00001
GW (T21)	Nitrate by EPA353.2	1.4	25000	.169
			Total GroundWater This Page	.19251

# Table 28 Determining the HHE Module Rating

#### DIRECTIONS:

- 1. Record the letter values (H, M, L) for the **Contaminant Hazard**, **Migration Pathway**, and **Receptor Factors** for the media (from Tables 21–26) in the corresponding boxes below.
- 2. Record the media's three-letter combinations in the **Three-Letter Combination** boxes below (three-letter combinations are arranged from Hs to Ms to Ls).
- 3. Using the **HHE Ratings** provided below, determine each media's rating (A–G) and record the letter in the corresponding **Media Rating** box below.

Media (Source)	Contaminant Hazard Factor Value	Migratory Pathway Factor Value	Receptor Factor Value	Three-Letter Combination (Hs-Ms-Ls)	Media Rating (A-G)
Groundwater (Table 21)	L	М	М	MML	E
Surface Water/Human Endpoint (Table 22)	L	М	М	MML	E
Sediment/Human Endpoint (Table 23)					
Surface Water/Ecological Endpoint (Table 24)	L	М	М	MML	E
Sediment/Ecological Endpoint (Table 25)					
Surface Soil (Table 26)					

#### **DIRECTIONS** (cont.):

4. Select the single highest Media Rating (A is highest; G is lowest) and enter the letter in the **HHE Module Rating** box.

#### Note:

An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more media, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

HHE Ratings (for reference only)					
Combination	Rating				
ННН	А				
HHM	В				
HHL					
HMM	С				
HML	D				
MMM					
HLL	E				
MML					
MLL	F				
LLL	G				
	Evaluation Pending				
Alternative Module Ratings	No Longer Required				
	No Known or Suspected MC Hazard				

HHE MODULE RATING

NLR

The MRS is at Response Complete and all remedies have been completed in accordance with the DD (SSFR, Page ES-1). The regulators have concurred with the SSFR.

No action is required to address ecological concerns, for soil, surface water, or sediment (DD, Section 2.7.3, Page 2-13).

### Table 29 MRS Priority

- **DIRECTIONS:** In the chart below, circle the letter **rating** for each module recorded in Table 10 (EHE), Table 20 (CHE), and Table 28 (HHE). Circle the corresponding numerical **priority** for each module. If information to determine the module rating is not available, choose the appropriate alternative module rating. The MRS Priority is the single highest priority; record this relative priority in the **MRS Priority or Alternative MRS Rating** at the bottom of the table.
- **Note:** An MRS assigned Priority 1 has the highest relative priority; an MRS assigned Priority 8 has the lowest relative priority. Only an MRS with CWM known or suspected to be present can be assigned Priority 1; an MRS that has CWM known or suspected to be present cannot be assigned Priority 8.

EHE Rating	Priority	CHE Rating	Priority	HHE Rating	Priority
		A 1			
A	2	В	2	A	2
В	3	С	3	В	3
С	4	D	4	С	4
D	5	E	5	D	5
E	6	F	6	E	6
F	7	G	7	F	7
G	8			G	8
Evaluation Pending		Evaluation Pending		Evaluation Pending	
No Longer Required		No Longer Required		No Longer Required	
No Known or Suspected Explosive Hazard		No Known or Suspected CWM Hazard		No Known or Suspected MC Hazard	
, r	MRS PRIORITY	Ν	LR		