Table A MRS Background Information

DIRECTIONS: Record the background information below for the MRS to be evaluated. Much of this information is available from Service and DoD databases. If the MRS is located on a FUDS property, the suitable FUDS property information should be substituted. In the **MRS Summary**, briefly describe the UXO, DMM, or MC that are known or suspected to be present, the exposure setting (the MRS's physical environment), any other incidental 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.

Munitions Response Site Name: FTLE-001-R-01 WEBCASS #: 51315.1033 Component: U.S. Army (active) Installation/Property Name: Fort Gregg-Adams Location (City, County, State): Fort Gregg-Adams, Chesterfield County, Virginia Site Name/Project Name (Project No.): FTLE-001-R-01 Farrar Island Artillery Range

Date Information Entered/Updated: 18 NOVEMBER 2024 Point of Contact (Name/Phone): Hector Anchondo (520) 674-1786 Project Phase (check only one):

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

Media Evaluated (check all that apply):

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

MRS Summary:

Documents referenced in this MRSPP include:

- Munitions Safety Education Program (MSEP) Plan, Dated October 2024.

- Decision Document (DD), Dated May 2022.

- Feasibility Study (FS), Dated January 2019.

The MRS is 5,666 acres and current land use includes residential housing, light industry and commercial; and recreation, education, and wildlife preservation. The land associated with the MRS is currently owned by Chesterfield County, Dominion Energy, Inc., and other private owners, and is not used by Fort Gregg-Adams (MSEP, Section 1, Page 1).

The MRS served as an impact area for artillery during WWI. The duration of use was relatively short, specifically, from March 15 through June 19, 1918. The MRS was never formally part of the installation. Based on the available historical information, it appears that a short-range artillery firing range and a long-range artillery firing range existed. Both ranges used the MRS as a target impact area (MSEP, Section 1, Page 1).

Munitions Known or Suspected at the MRS include: 75mm/3-inch projectiles; 120mm/4.7-inch projectiles; and 6-inch Newton/Stokes mortars; 16-pound artillery shells; Model 1907 Fuze; small arms ammunition (DD, Section 2.2.2.4, Pg 1). No MEC or MD was identified during the RI (MSEP, Section 1, Page 2).

The selected remedy for the MRS is Alternative 2 – Risk Management (MSEP, Section 1, Page 2).

EHE Rated as NLR: All risk management remedies have been completed IAW the DD and the MRS will be subject to five-year reviews. These actions are documented in the Adminstrative Record (MESP, Section 1, Page 2) & (MESP, Section 2, Page 4) & (MESP, Section 4, Page 6).

CHE Rated as NKSH: CWM was not used at the MRS and is not suspected to have been used at the MRS (DD, Section 2.2.2.4, Page 1).

HHE Rated as NKSH: Because no MRS-related MEC or MD was identified and the historical encounters of MEC have been isolated and limited to individual MEC items, MC sampling was not warranted at the MRS. No MC source has been identified at the Farrar Island MRS Incomplete pathways were identified for surface soil, surface water/sediment, and groundwater for all receptors (DD, Section 2.5.2, Page 2-8).

Table A MRS Background Information

DIRECTIONS: Record the background information below for the MRS to be evaluated. Much of this information is available from Service and DoD databases. If the MRS is located on a FUDS property, the suitable FUDS property information should be substituted. In the **MRS Summary**, briefly describe the UXO, DMM, or MC that are known or suspected to be present, the exposure setting (the MRS's physical environment), any other incidental 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.

Stakeholder Involvement: TBD

Description of Pathways for Human and Ecological Receptors:

Incomplete MC pathways were identified for surface soil, surface water/sediment, and groundwater for all receptors (DD, Section 2.5.2, Page 2-8) & (DD, Section 2.7, Page 2-8).

Partially complete MEC exposure pathways exist for receptors at the MRS in surface and subsurface soils (DD, Section 2.5.2, Page 2-7/8) & (DD, Section 2.7, Page 2-8).

Description of Receptors (Human and Ecological):

Human receptors include recreational users of the area, residents, industrial and commercial users, construction workers, road and utility maintenance personnel (DD, Section 2.6, Page 2-8).

There are ecological receptors on the MRS (DD, Section 2.6, Page 2-8).

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

Munitions Known or Suspected at the MRS include: 75mm projectiles; 3-inch projectiles; 20mm projectiles; 4.7-inch projectiles; and 6-inch Newton/Stokes mortars; small arms ammunitions (MSEP, Section 1, Page 1).

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.	
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	The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	
Former industrial operating facilities	The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	
• The MRS is a firing point, where the firing point is delineated as an MRS separate from the rest of a former military range.		4
Former missile or air defense artillery emplacements		
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
 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	 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. 	0
SOURCE OF HAZARD	DIRECTIONS: 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 MRS served as an impact area for artillery. There was a short-range artillery firing range and a long-range artillery firing range. Both ranges used the MRS as a target impact area (MSEP, Section 1, Page 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		
Confirmed surface	 Physical evidence indicates that there are UXO or DMM on the surface of the MRS. 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. 		
Confirmed subsurface, active	 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. 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, dredging) 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. 	20	
 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. 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. 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. 		15	
Suspected (physical evidence)	• 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.		
Suspected (historical evidence)	There is historical evidence indicating that UXO or DMM may be present at the MRS.		
Subsurface, physical constraint	• 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.		
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.)		
Evidence of no munitions	 Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present. 		
LOCATION OF MUNITIONS	DIRECTIONS: 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.

Munitions collected by a local resident within the MRS included 16-pound artillery shells, a Model 1907 fuze, and 4.7-inch artillery shells (DD, Section 2.2.2.4, Page 2-3).

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	There is no barrier preventing access to any part of the MRS (i.e., all parts of the MRS are accessible).		
Barrier to MRS access is incomplete	 There is a barrier preventing access to parts of the MRS, but not the entire MRS. 		
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	ensure that the harrier is effectively preventing access to all parts of		
EASE OF ACCESS	DIRECTIONS: 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 Ease of Access classification in the space provided.			
There is no barrier to the MRS (MSEP, Section 1, Page 1).			

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	 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. 		
Scheduled for transfer from DoD control	• 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.	3	
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 must control access to the MRS 24 hours per day, every day of the calendar year.	0	
STATUS OF PROPERTY	DIRECTIONS: 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 Status of Property classification in the space provided.			
The MRS is not under DoD control (MSEP, Section 1, Page 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.	
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.	
POPULATION DENSITY	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).	5
DIRECTIONS: Document any MR provided.	S-specific data used in selecting the Population Density classification in the space	ce

The MRS is located in Chesterfield County. The cities of Chester and Rivers Bend are within two miles of the MRS boundary. There are 1779.2 persons per square mile in the city of Chester.

https://www.census.gov/quickfacts/fact/table/chesterfieldcountyvirginia,chestercdpvirginia/PST045223

Table 7 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	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.		
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	DIRECTIONS: 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 on the MRS (DD, Figure A-2, Page 34).

https://earth.google.com/web/@37.36789767,-77.37592166,-1.57659908a,5436.12273409d,35y,-0h,0t,0r/

data=Cj4aOBlyCiUweDg5YjEwNjFjNGU5Y2EwYWY6MHgzZGYzOWEyOGQyNTUzYzUwKglEdXRjaCBHYXAYAiABQgIIAUICCABKDQj_____8BEAA

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
Residential, educational, commercial, or subsistence	 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. 	5
Parks and recreational areas	• 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.	4
Agricultural, forestry	• 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.	3
 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. 		2
No known or recurring activities	• There are no known or recurring activities occurring up to two miles from the MRS's boundary or within the MRS's boundary.	1
TYPES OF ACTIVITIES/STRUCTURES	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).	5

The current land use includes residential housing, light industry, commercial use, recreation, education, and wildlife preservation (DD, Section 2.6, Page 2-8) & (DD, Figure A-2, Page 34).

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.	
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 RESOURCES	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).	5
DIRECTIONS: Document any M the space provided	RS-specific data used in selecting the <i>Ecological and/or Cultural Resources</i> classif	ication in
Wetlands are present on	the MRS (DD, Section 2.5.1.4, Page 2-7).	
There are cutural resource	es on the MRS (FS, Section 1.2.3, Page 1-3/4/5).	

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.

	Source	Score	Value		
Explosive Hazard Factor Data Elements					
Munitions Type	Table 1	25	25		
Source of Hazard	Table 2	10	35		
Accessibility Factor Data Elemen	its				
Location of Munitions	Table 3	25			
Ease of Access	Table 4	10	40		
Status of Property	Table 5	5			
Receptor Factor Data Elements					
Population Density	Table 6	5			
Population Near Hazard	Table 7	5			
Types of Activities/Structures	Table 8	5	20		
Ecological and/or Cultural Resources	Table 9	5			
EHE	MODULI	E TOTAL	95		
EHE Module Total	EHE Module Rating				
92 to 100	A				
82 to 91	В				
71 to 81	С				
60 to 70	D				
48 to 59	E				
38 to 47	F				
less than 38	G				
	Evaluation Pending				
Alternative Module Ratings	No Longer Required				
	No Known or Suspected Explosive Hazard				
EHE MODULE RATING		NLR			

All risk management remedies have been completed IAW the DD and the MRS will be subject to fiveyear reviews. These actions are documented in the Adminstrative Record (MESP, Section 1, Page 2) & (MESP, Section 2, Page 4) & (MESP, Section 4, Page 6).

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	 The CWM known or suspected of being present at the MRS are: CWM that are UXO (i.e., CWM/UXO) Explosively configured CWM that is DMM (i.e., CWM/DMM) that have been damaged. 	30
CWM mixed with UXO	The CWM known or suspected of being present at the MRS is 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	 The CWM known or suspected of being present at the MRS are: Nonexplosively configured CWM/DMM either damaged or undamaged Bulk CWM (e.g., ton container). 	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. 		
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	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 30).	0

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

CWM was not used at the MRS and is not suspected to have been used at the MRS (DD, Section 2.2.2.4, Page 1).

Tables 12 through 19 are IntentionallyOmitted According to Army Guidance

Table 20 **Determining the CHE Module Rating**

	CTIONS:	CWM Hazard Factor Data Elements		
		CWM Configuration	Table 11	
1. From Tables 11–19, record the data element scores in the	Sources of CWM	Table 12		
	Score boxes to the right.	Accessibility Factor Data Elemer	its	
2.	Add the Score boxes for each	Location of CWM	Table 13	
	of the three factors and record this number in the Value boxes	Ease of Access	Table 14	
	to the right.	Status of Property	Table 15	
		Receptor Factor Data Elements		
record this number in the CHE Module Total box below.	Population Density	Table 16		
4	Circle the engraphists range for	Population Near Hazard	Table 17	
4.	Circle the appropriate range for the CHE Module Total below.	Types of Activities/Structures	Table 18	
5.	Circle the CHE Module Rating	Ecological and/or Cultural Resources	Table 19	
that corresponds to the range selected and record this value in				
	the CHE Module Rating box found at the bottom of the table.	CHE Module Total	CHE N	/loc
		92 to 100		

Note:

DIRECTIONS:

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.

CWM Configuration	Table 11	0	0
Sources of CWM	Table 12		
Accessibility Factor Data Elements			
Location of CWM	Table 13		
Ease of Access	Table 14		
Status of Property	Table 15		
Receptor Factor Data Elements			
Population Density	Table 16		
Population Near Hazard	Table 17		
Types of Activities/Structures	Table 18		
Ecological and/or Cultural Resources	Table 19		
CHE	MODULI	E TOTAL	0
CHE Module Total	CHE	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 l	_onger Requ	iired
	No Know	n or Suspec Hazard	ted CWM
CHE MODULE RATING	No Know	n or Suspec Hazard	ted CWM

Source

Score

Value

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) 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 ratios for each medium together, including additional 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.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (μ g/L)Comparison Value (μ g/L)		Ratios
CHF Scale	CHF Value	Sum The Ratios	
CHF > 100	H (High)	Maximum Concentration of Co	ontaminantl
100 > CHF > 2	M (Medium)	CHF = [[Maximum Concentration of Concentratio of Concentration of Concentration of Concentration of Concent	Jilaninanij
2 > CHF	L (Low)	[Comparison Value for Conta	aminant]
CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record <u>the CHF Value</u> (maximum value = H).	from above in the box to the right	
	Migratory Pathw		
Classification	ne value that corresponds most closely to the groundwater migratory pathway at the MF Description		
Evident	Analytical data or observable evidence indicates moving toward, or has moved to a point of expos	Value H	
Potential	Contamination in groundwater has moved only s move but is not moving appreciably, or information or Confined.	М	
Confined	Information indicates a low potential for contamir a potential point of exposure (possibly due to get	ant migration from the source via the groundwater to ological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record the single high right (maximum value =		
Receptor Factor			
DIRECTIONS: Circle th	ne value that corresponds most closely to	· ·	
Classification		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).		
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).		
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	DIRECTIONS: Record <u>the single high</u> right (maximum value =		
		No Known or Suspected Groundwater M	C Hazard 🛛

MC sampling was not conducted the RI due to no MEC or MD discoveries (DD, Section 2.2.2.6, Page 2-4). Because no MRS-related MEC or MD was identified and the historical encounters of MEC have been isolated and limited, MC sampling was not warranted at the MRS. No MC source has been identified at the MRS. Incomplete pathways were identified for groundwater for all receptors (DD, Section 2.5.2, Page 2-8).

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) 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 ratios for each medium together, including additional 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 for human endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (μ g/L)	Comparison Value (µg/L)	Ratios	
CHF Scale	CHF Value	Sum The Ratios		
CHF > 100	H (High)			
100 > CHF > 2	M (Medium) CHF = [• [Maximum Concentration of Co			
2 > CHF	L (Low)	[Comparison Value for Conta	iminant]	
CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record <u>the CHF Value</u> (maximum value = H).			
	Migratory Pathy			
		the surface water migratory pathway at the	MRS. Value	
Classification		Description		
Evident	moving toward, or has moved to a point of expos	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	move but is not moving appreciably, or informatio or Confined.	slightly beyond the source (i.e., tens of feet), could n is not sufficient to make a determination of Evident		
Confined		ant migration from the source via the surface water to sence of geological structures or physical controls).		
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record <u>the single high</u> right (maximum value =			
	Receptor F			
Classification	the value that corresponds most closely to	cription	Value	
Identified	Identified receptors have access to surface water to which contamination has moved or can move.			
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.			
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 highest value</u> from above in the box to the right (maximum value = H).			
	No Known or Suspected Su	rface Water (Human Endpoint) MC Hazard		

MC sampling was not conducted the RI due to no MEC or MD discoveries (DD, Section 2.2.2.6, Page 2-4). Because no MRS-related MEC/MD was identified and the historical encounters of MEC have been isolated and limited, MC sampling was not warranted at the MRS. No MC source has been identified at the MRS. Incomplete pathways were identified for surface water for all receptors (DD, Section 2.5.2, Page 2-8).

Table 23 HHE Module: Sediment – Human Endpoint Data Element Table Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the site's sediment and their **comparison values** (from Appendix B) 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 **ratios** for each medium together, including additional 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 for 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 (`ontaminant]
100 > CHF > 2	M (Medium)	CHF = [Maximum Concentration of Conta	
2 > CHF	L (Low)	[Comparison Value for Con	aminant]
CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record <u>the CHF Value</u> maximum value = H).	from above in the box to the right	

Migratory Pathway Factor

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

Classification	Description	
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	
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	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	

Receptor Factor

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

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

MC sampling was not conducted the RI due to no MEC or MD discoveries (DD, Section 2.2.2.6, Page 2-4). Because no MRS-related MEC/MD was identified and the historical encounters of MEC have been isolated and limited, MC sampling was not warranted at the MRS. No MC source has been identified at the MRS. Incomplete pathways were identified for sediment for all receptors (DD, Section 2.5.2, Page 2-8).

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) 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 ratios for each medium together, including additional 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 for ecological endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (μ g/L)	Comparison Value (µg/L)	Ratios
	-		
CHF Scale	CHF Value Sum the Ratios		
CHF > 100	H (High)	CHF = [[Maximum Concentration of C	ontaminant1
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)	[Comparison Value for Conta	aminantj
CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record <u>the CHF Value</u> (maximum value = H).	from above in the box to the right	
	Migratory Pathy		
	he value that corresponds most closely to	the surface water migratory pathway at the	MRS.
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	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 contamin to a potential point of exposure (possibly due to p controls).		
MIGRATORY	DIRECTIONS: Record the single high		
PATHWAY FACTOR	right (maximum value =		
DIRECTIONS: Circle th	Receptor F he value that corresponds most closely to		
Classification	Des	cription	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.		
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.		
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 highest value</u> from above in the box to the right (maximum value = H).		
	No Known or Suspected Surfac	ce Water (Ecological Endpoint) MC Hazard	

MC sampling was not conducted the RI due to no MEC or MD discoveries (DD, Section 2.2.2.6, Page 2-4). Because no MRS-related MEC/MD was identified and the historical encounters of MEC have been isolated and limited, MC sampling was not warranted at the MRS. No MC source has been identified at the MRS. Incomplete pathways were identified for surface water for all receptors (DD, Section 2.5.2, Page 2-8).

Table 25 HHE Module: Sediment– Ecological 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) 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 ratios for each medium together, including additional 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 for ecological 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 H (High) CHF > 100 [Maximum Concentration of Contaminant] CHF = ! • 100 > CHF > 2 M (Medium) [Comparison Value for Contaminant] 2 > CHF L (Low) CONTAMINANT DIRECTIONS: Record the CHF Value from above in the box to the right HAZARD FACTOR (maximum value = H).Migratory Pathway Factor **DIRECTIONS:** Circle the value that corresponds most closely to the surface water migratory pathway at the MRS. Classification Description Value Analytical data or observable evidence indicates that contamination in the sediment is present at, **Evident** moving toward, or has moved to a point of exposure. Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move Potential but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined Information indicates a low potential for contaminant migration from the source via the sediment to a Confined potential point of exposure (possibly due to presence of geological structures or physical controls). MIGRATORY DIRECTIONS: Record the single highest value from above in the box to the **PATHWAY FACTOR** right (maximum value = H). **Receptor Factor DIRECTIONS:** Circle the value that corresponds most closely to the surface water receptors at the MRS. Classification Description Value Identified receptors have access to sediment to which contamination has moved or can move. Identified Potential for receptors to have access to sediment to which contamination has moved or can move. Potential Little or no potential for receptors to have access to sediment to which contamination has moved or 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 Sediment (Ecological Endpoint) MC Hazard

MC sampling was not conducted the RI due to no MEC or MD discoveries (DD, Section 2.2.2.6, Page 2-4). Because no MRS-related MEC/MD was identified and the historical encounters of MEC have been isolated and limited, MC sampling was not warranted at the MRS. No MC source has been identified at the MRS. Incomplete pathways were identified for sediment for all receptors (DD, Section 2.5.2, Page 2-8).

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) 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 ratios for each medium together, including additional 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	
CHF Scale	CHF Value	Sum the Ratios		
CHF > 100	H (High)	CHE - 1. [Maximum Concentration of Co	ontaminantl	
100 > CHF > 2	M (Medium)			
2 > CHF	L (Low)	[Comparison Value for Conta	minantj	
CONTAMINANT HAZARD FACTORDIRECTIONS: Record the CHF Value (maximum value = H).from above in the box to the right (maximum value = 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.			
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.			
Confined		minant migration from the source via the surface soil to presence of geological structures or physical controls).		
MIGRATORY DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).				
DIRECTIONS: Circle th	Receptor ne value that corresponds most closely	• Factor to the surface soil receptors at the MRS.		
Classification	D	escription	Value	
Identified	Identified receptors have access to surface so	il to which contamination has moved or can move.		
Potential	Potential for receptors to have access to surface soil to which contamination has moved or can move.			
Limited	Little or no potential for receptors to have acce can move.	ess to surface soil to which contamination has moved or		
RECEPTOR FACTOR	DIRECTIONS: Record <u>the single hid</u> right (maximum value	ahest value from above in the box to the e = H).		
	No ł	Known or Suspected Surface Soil MC Hazard		

MC sampling was not conducted the RI due to no MEC or MD discoveries (DD, Section 2.2.2.6, Page 2-4). Because no MRS-related MEC/MD was identified and the historical encounters of MEC have been isolated and limited, MC sampling was not warranted at the MRS. No MC source has been identified at the MRS. Incomplete pathways were identified for soil for all receptors (DD, Section 2.5.2, Page 2-8).

HHE Module: Supplemental Contaminant Hazard Factor Table
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Contaminant Hazard Factor (CHF)

DIRECTIONS: Only use this table if there are more than five contaminants 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) 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: Remember not to add ratios from different media.

Media	Contaminant	Maximum Concentration	Comparison Value	Ratio

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 reference 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)					
Surface Water/Human Endpoint (Table 22)					
Sediment/Human Endpoint (Table 23)					
Surface Water/Ecological Endpoint (Table 24)					
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 below.

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	_					
MML	E					
MLL	F					
LLL	G					
	Evaluation Pending					
Alternative Module Ratings	No Longer Required					
	No Known or Suspected MC Hazard					

HHE MODULE RATING

NKSH

MC sampling was not conducted the RI due to no MEC or MD discoveries (DD, Section 2.2.2.6, Page 2-4). Because no MRS-related MEC/MD was identified and the historical encounters of MEC have been isolated and limited, MC sampling was not warranted at the MRS. No MC source has been identified at the MRS. Incomplete pathways were identified for surface and subsurface soils, surface water/sediment, and groundwater for all receptors (DD, Section 2.5.2, Page 2-8).

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 number in the **MRS or Alternative Priority** box 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			
А	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 CWM Ha		No Known or Suspected MC Hazard	
	М	Ν	LR		