FINAL TECHNICAL PROJECT PLANNING MEMORANDUM AND ASSOCIATED DOCUMENTATION

in support of

REMEDIAL INVESTIGATION/FEASIBILITY STUDY

for the

CONWAY BOMBING AND GUNNERY RANGE
MYRTLE BEACH, SOUTH CAROLINA

Prepared for:

U.S. Army Engineering & Support Center, Huntsville
Attn: Ms. Chris Cochrane
4820 University Square
Huntsville, Alabama 35816-1822

Contract: W912DY-04-D-0018
Task Order: 0012

Prepared by:

EODT
EOD TECHNOLOGY, INC.
2229 Old Highway 95
Lenoir City, TN 37771

January 2009

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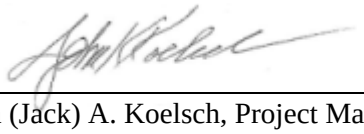

John (Jack) A. Koelsch, Project Manager

January 2009

TABLE OF CONTENTS

LIST OF TABLES

ACRONYMS

ASR	Archives Search Report
BGR	Bombing and Gunnery Range
DoD	Department of Defense
EE/CA	Engineering Evaluation/Cost Analysis
EODT	EOD Technology, Inc.
GIS	Geographical Information System
MC	Munitions Constituents
MD	munitions debris
MEC	munitions and explosives of concern
MIS	multi-increment sampling
MMRP	Military Munitions Response Program
MRS	Munitions Response Site
NELAC	National Environmental Laboratory Accreditation Conference
NELAP	National Environmental Laboratory Accreditation Program
PA	Preliminary Assessment
PWS	Performance Work Statement
QSM	Quality Systems Manual
RI/FS	Remedial Investigation/Feasibility Study
ROE	Right-of-entry
SCDHEC	South Carolina Department of Health and Environmental Control
SCDOT	South Carolina Department of Transportation
TCRA	Time Critical Removal Action
TPP	Technical Project Planning
USACE	U.S. Army Corps of Engineers
USAESCH	U.S. Army Engineering and Support Center, Huntsville
UXO	Unexploded Ordnance

SECTION 1
TECHNICAL PROJECT PLANNING MEMORANDUM

SUBJECT: Remedial Investigation/Feasibility Study Technical Project Planning Team Meetings

Site: Former Conway Bombing and Gunnery Range, Myrtle Beach, South Carolina

Contract: Contract Number W912DY-04-D-0018, Task Order 0012

Date: October 22, 2008

This is a summary and listing of data for all three Technical Project Planning (TPP) meetings for the Remedial Investigation/Feasibility Study (RI/FS) of the ranges at the Former Conway Bombing and Gunnery Range (BGR) in Horry County, South Carolina (Myrtle Beach). The team members who participated in the meeting provided their input to the objectives and path forward for the Conway BGR. Each meeting was held in the Myrtle Beach area because it was convenient to all stakeholders. During the first meeting, a presentation provided a brief overview of the U.S. Army Corps of Engineers (USACE) TPP process. The clean-up data that was collected previously from the Engineering Evaluation/Cost Analysis (EE/CA), the Time Critical Removal Action (TCRA), and the Munitions Constituent (MC) Sampling evaluation were presented to the stakeholders. The Site Closeout Statement, along with the proposed land use, was developed and agreed to by the stakeholders and the TPP Team. It was also agreed in the second meeting that the technical approach for developing data gaps and implementing the required field activity would be discussed with the South Carolina regulators. The third TPP addressed the data gaps and investigative approach, including the number of initial transects locations, number of MC samples to be collected, and the projected schedule. All agreed during the TPP meeting that this approach was acceptable. The final technical details as documented herein will be discussed further in the forthcoming RI/FS Work Plan. This work plan will be submitted to the TPP team members for their review.

During the time when the EE/CA was investigated, the Corps was addressing the entire site. The range areas were identified based on the data available at that time.

Since the time of the EE/CA, the Corps has developed standard range designs from the old reference documents for the time period of the World War II. The historical data also identified

the ranges used at the old Conway BGR. The new maps indicate these new ranges and the acreage from the standard range designs.

The RI will characterize these ranges and bound the Munitions and Explosives of Concern (MEC) from those ranges. Then the acreage will be determined and inserted into the applicable databases.

The former Conway BGR is a former U.S. Army installation located northwest of Myrtle Beach, South Carolina. The former Conway BGR contains Ranges II, III, IV, VII, XX, a strafing range, two turret ranges, and an MG/rifle range as designed when it was part of the Myrtle Beach General BGR. However, a portion of Range III has been purchased by Goodson Construction Company for residential and commercial development. Also, a 65-acre lake was developed within this parcel of property. The soil excavated during the development of the lake was used as borrow material for the South Carolina Department of Transportation (SCDOT) Carolina Bay Parkway expansion. This land is exempt from this RI/FS because Goodson has reached an agreement with the U.S. Army to perform the clean up on this property.

During the third TPP meeting, the TPP Team agreed that the RI data collection effort will focus on using two different investigation methods for the reconnaissance. One method will be used on the Strafing Range, Turret Ranges I & II, and MG Rifle Range utilizing an all-metal detector within the proposed transects. The second method will involve a magnetometer (e.g., Schonstedt) that will be used to identify the anomaly location which will be dug to identify the type, depth and extent of the anomaly for Ranges III, IV, VII and XX.

The TPP Team also agreed during the third TPP meeting that the RI data collection effort will focus on using two different investigation methods for the reconnaissance. By utilizing this approach, it would further define the nature and extent of the investigation.

A discussion was held pertaining to which MCs are to be tested for at each range at Conway BGR. It was agreed that the location of soil/sediment/surface water samples would occur within the highest density of anomalies. It was also agreed that the objective for the environmental sampling is to determine if potential MCs attributable to Department of Defense (DoD) activities at the site exists and if the contaminants present a threat to the human health and environment. The number and type of samples were discussed and agreed to. Prior investigation data is presented on the range maps in the technical section of this document.

The details for the reconnaissance activities will be fully documented in the RI Work Plan. The grid locations and MCs sample collection method locations will be determined during field work/reconnaissance where there are high concentrations of anomalies. The final approach as presented in this document and agreed to by the TPP Team will not be modified without consultation and agreement of the TPP team members listed below:

Mr. Shawn Boone
USACE, Charleston District
Project Manager

Ms. Maureen Lawrence
U.S. Army Engineering and Support Center, Huntsville (USAESCH) Project Manager

Ms. Audrey Nore
USAESCH Technical Support

Mr. William Veith
USAESCH Unexploded Ordnance (UXO) Technical Expert

Ms. Stacey French
South Carolina Department of Health and Environmental Control (SCDHEC)

Mr. David Scaturo
SCDHEC

Mr. Jack Koelsch
EOD Technology, Inc. (EODT) Project Manager

Ms. Donna Sharp
EODT Technical Support.

Note: Above are the names of TPP members who participated in the development of the data needs and methods for obtaining the required data. However, if one of the current team members is replaced, the new individual taking over that position will become responsible.

RI/FS Activities

The USACE contracted EODT to perform a Military Munitions Response Program (MMRP) RI/FS at the former Conway BGR per Performance Work Statement (PWS), Revision 1 dated 03 March 2008. Nine (9) Munitions Response Sites (MRSs) are included in the RI/FS, as presented in Section 5. They include:

- Strafing Range – 720 Acres
- Turret Range I – 640 Acres
- Turret Range II – 640 Acres
- MG/Rifle Range – 2500 Acres
- Range II – 649 Acres
- Range III – 649 Acres
- Range IV – 649 Acres
- Range VII – 649 Acres
- Range XX – 640 Acres

Previous Investigations

The previous investigations at the Conway BGR are presented in Table 1 below.

TABLE 1: HISTORY

MRS	Investigation	Date	MEC Present?	Comments
Strafing Range (Small Arms)	ASR	1995	None reported.	Formerly reported as the moving target range. No observed MEC.
Turret Range I (Small Arms)	Archives Search Report (ASR)	1995	None reported.	No observed MEC.
Turret Range II (Small Arms)	ASR	1995	None reported.	No observed MEC.
MG/Rifle Range (Small Arms)	ASR	1995	None reported.	No observed MEC. Overlap Range III boundary, Items found in that area associated with Range III
Range II (Multiple/Combined)	Preliminary Assessment	1991	Yes	.50 caliber bullet and 1 practice rocket
	ASR	1995	None reported.	No observed MEC
	EE/CA	1999-2004	No MEC found, 6 munitions debris (MD) items	
Range III (Multiple/Combined)	Preliminary Assessment	1991	None Reported.	Impact craters observed
	ASR	1995	None Reported.	Impact craters observed, historic activities suggest high probability

MRS	Investigation	Date	MEC Present?	Comments
	EE/CA	1999-2004	3 UXO items, 197 MD items	
	TCRA	2002	2156 UXO items, 76726 MD items	
	MC Characterization	2006	Soils and surface water sampling only	No explosives detected. Few metals may be elevated, however, background inadequate for comparison
Range IV (Bombing)	Preliminary Assessment	1991	MD items found, bomb components, fuzes	Historic and local information suggests high probability
	ASR	1995	None reported.	
	EE/CA	1999-2004	42 MD items, no UXO	
Range VII (Bombing)	Preliminary Assessment	1991	None reported.	
	ASR	1995	2 MD items reported.	
	EE/CA	1999-2004	0 MEC or MD items reported.	
Range XX (Multiple/Combined)	Preliminary Assessment	1991	None reported.	
	ASR	1995	None reported.	
	EE/CA	1999-2004	0 MEC or MD items reported.	

RI/FS Field Activities

The objective of the RI field activities is to adequately characterize the nature and extent of MEC, MD, and MC at the nine former ranges for the purpose of evaluating and developing effective remedial alternatives. Reconnaissance, intrusive investigation of identified anomalies, and MC sampling will be the basis of the RI characterization**.** The Work Plan will further explain the requirements for each range in order to meet the requirements of this investigation.

MEC Reconnaissance

EODT will conduct qualitative reconnaissance with intrusive operations to better define the extent in ranges where previous investigations have been conducted. At the small arms ranges, where no previous geophysical or intrusive investigations have been conducted, nature and extent will be determined. The reconnaissance will be performed in 3-foot wide transects. The data from the RI MEC reconnaissance with intrusive operations will be used to:

- Delineate the MRS footprint
- Define the type of surface and subsurface MD/MEC
- Determine MC sample locations

An all-metal detector (Whites XLT or Vallon) will be used for the reconnaissance operations at the small arms ranges (Turret Range I, Turret Range II, Strafing Range, and the MG/Rifle Range). A ferrous metal detector (Schonstedt) will be used for the reconnaissance operations at the bombing and multiple/combined ranges (Range III, Range IV, Range VII, and Range XX). No additional geophysical or intrusive investigation is required at Range II. A desktop RI/FS for this range will be written using the existing Preliminary Assessment (PA), ASR and EE/CA data with supplemental MC data from this RI field investigation. The MC sample will be collected in an area where MD was found during the EE/CA investigation and the ground surface has not been disturbed. Results of the EE/CA indicated very little MEC or MD presence at Range II. Proposed transects locations, as discussed and modified during the third TPP meeting, were agreed to by all TPP members. The proposed transects for each range is at the end of Section 1 and list the history and proposed investigative approach. The original transects locations are illustrated in the PowerPoint presentation attached to this Memorandum. Rights-of-entry (ROEs) will be acquired by the USACE. If ROEs cannot be obtained, the team will move around that property. After all transects are completed, 50' x 50' grid(s) will be selected in areas of highest density anomalies to further delineate the nature and extent of contamination. If there are no areas of high density anomalies, then no grids will be utilized. Anomalies will be recorded and entered into the Geographical Information System (GIS) database and progress reports will be available to all team members as the project progresses. Optional transects have been selected if additional investigations are required for a particular MRS. Table 2 summarizes the transect mileage, acreage, and the number of potential grids.

Intrusive Operations

Anomalies will be investigated by hand digging until that location is cleared by the handheld detector for Ranges III, IV, VII and XX. It is anticipated that intrusive operations will not exceed four (4) feet below ground surface.

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TABLE 2: TRANSECT SUMMARY

Range/Type	Proposed Transect Miles	Optional Transect Miles	Total Transect Miles	Transect Acres	Grids* 50'x50'
Turret Range I	1.99	0	1.99	0.73	3
Turret Range II	1.34	0.28	1.62	0.59	3
Strafing	2.12	0	2.12	0.77	3
MG/Rifle Range	8.33	0	8.33	2.73	4
Range II	0	0	0.00	0.00	0
Range III	6.8	0	6.80	2.48	3
Range IV	8.53	0.67	9.20	3.45	4
Range VII	2.85	3.2	6.05	2.20	3
Range XX	2	6.01	8.01	2.91	3
Total	**33.96**	**10.16**	**44.12**	**15.86**	**26**

* Total grid acres equals 1.67 acres

Intrusive Investigation and MEC Disposal

Intrusive investigations will be performed in accordance with procedures outlined in the U.S. Army's EP 110-1-18, *Ordnance and Explosives Response*, and the OSHA requirements for excavations in 29 CFR 1926, Subpart P. MEC disposal operations will be performed in accordance with EP 385-1-95a, *Basic Safety Concepts and Considerations for Munitions and Explosives of Concern Response Action Operations*, TM 60A-1-1-31, *EOD Disposal Procedures*. A site safety health plan will be delivered as an Appendix D in the RI/FS Work Plan which explains all the procedures to be followed as outlined in DoD 6055-9-STD, *Ammunition and Explosives Safety Standards*.

MEC Excavation Locations

Any MEC encountered during field work activities will be dealt with according to the procedures outlined in this section of the Work Plan. The locations of successfully reacquired anomalies will be provided to the intrusive teams for excavation.

MEC Identification

Any suspected or known MEC encountered during excavation will be clearly marked and its position noted on the anomaly dig sheet and other appropriate site maps. The UXO Supervisor (UXO Technician III) will evaluate the item found and immediately report the condition of the item to the SUXOS and UXOSO.

MEC Storage

Any MEC recovered during this project will be disposed of on site. No MEC will be stored. MD and range-related debris will be stored in separate containers until verified by the USACE Safety Specialist and certified by the SUXOS in accordance with EM 1110-1-4009, *Engineering and Design – Military Munitions Response Actions*. After inspection, MD and range-related debris will be stored in a secured area within locked containers to prevent materials from being added that may not have been through the inspection process.

MEC Disposal

During disposal of MEC and related material, safety is the primary concern. The most obvious requirements are to protect personnel, the public, and the environment from fire, blast, noise, fragmentation, and toxic releases. Planned detonation of explosives requires more stringent safety distance requirements than those for ordnance in storage and will be conducted in accordance with the requirements outlined in the data contained in the appropriate Fragmentation Data Review Form and DoD 6055.09-STD. This will be explained in more detail in the RI/FS Work Plan.

MEC

UXO will be detonated the day they are found, if possible. If an UXO item cannot be detonated on the day it is found, 24-hour security will be provided until the item(s) can be detonated. All demolition/disposal operations will be conducted in accordance with the demolition standard operating procedure as detailed in the RI/FS Work Plan.

Evacuation and Site Control

Evacuations will be conducted in accordance with the Evacuation Plan provided in the RI/FS Work Plan.

Environmental Sampling and Analysis

The primary objective of this task is to determine the presence and extent of MC detected above applicable regulatory criteria. The sampling design will be sufficient to allow completion of Human Health and Ecological Risk Assessments. Sampling will include:

- Surface soil sample collected from MEC/MD anomaly locations using multi-increment sampling (MIS) which require triplicate sampling
- Surface water and sediment samples in areas down gradient to the MIS decision unit

Proposed Sampling Strategy

After the MEC reconnaissance data has been collected and combined with the existing data compiled from the PA, EE/CA, and the TCRA, sampling locations will be selected in areas (soil) where MEC items have been encountered and/or confirmed. Surface water and sediment samples shall be collected from areas down-gradient of highest MEC densities. If no anomalies are encountered at any given MRS, environmental samples will not be collected. Tables 3 and 4 present sampling types, quantities, rationale, methods, and chemical analyses. The screening limits and Data Quality Objectives (DQOs) will be addressed in the RI/FS Work Plan.

TABLE 3: SAMPLING QUANTITIES

Range/Type	Surface Soil (MIS) (In Triplicate)	Surface Water Samples	Sediment Samples
Range II	1	1	1
Range III	3	3	3
Range IV	2	2	2
Range VII	2	2	2
Range XX	1	1	1
Strafing	1	1	1
MG/Rifle Range	2	2	2
Turret Range I	1	1	1
Turret Range II	1	1	1
Duplicate/Replicate	NA	3	3
MS/MSD	1	2	2
Background	1	10	10

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TABLE 4: SAMPLING RATIONALE AND METHODS

Sample Type	Strafing I04SC002501R06	Turret Range I I04SC002501R07	Turret Range II I04SC002501R08	MG/Rifle Range I04SC002501R09
Surface Soil (MIS)	Collect one surface soil sample by MIS method. The 100' X 100' decision unit (collecting plugs on 10' spacing) will cover the area of highest anomaly density. Analyses: 6010B: Sb, Cu, Pb 8330B: Explosives, including NG and PETN	Collect one surface soil sample by MIS method. The 100' X 100' decision unit (collecting plugs within 10' grids) will cover the area of highest anomaly density. Analyses: 6010B: Sb, Cu, Pb 8330B:explosives, including NG and PETN	Collect one surface soil sample by MIS method. A 100' X 100" decision unit (collecting within 10' grid spacing) will cover the area of highest anomaly count. Analyses: 6010B: Sb, Cu, Pb 8330B:explosives, including NG and PETN	Collect two surface soil samples by MIS method. The 100' X 100' decision units (collecting plugs on 10' grid spacing) will be determined after the magnetometer-directed dig data is collected. The MIS grid locations will be selected within the areas of highest MEC/MD densities. Analyses: 6010B: Sb, Cu, Pb 8330B: Explosives, including NG and PETN
Surface Water Samples	Collect one surface water sample (prior to collecting the collocated sediment sample) in a down-gradient area of the MIS decision unit to ensure potential contamination is not migrating. Analyses: 6010B: Sb, Cu, Pb 8330B:explosives, including NG and PETN	Collect one surface water sample (prior to collocated sediment sample) in a down-gradient area of the MIS decision unit to ensure that potential contamination is not migrating. Analyses: 6010B: Sb, Cu, Pb 8330B:explosives, including NG and PETN	Collect one surface water sample (collected prior to the collocated sediment sample) in a down-gradient area of the MIS decision unit to ensure that potential contamination is not migrating. Analyses: 6010B: Sb, Cu, Pb 8330B:explosives, including NG and PETN	Collect two surface water samples (prior to collection of collocated sediment samples) in down-gradient areas of the MIS decision unit to ensure that potential contamination is not moving off-site. Analyses: 6010B: Sb, Cu, Pb 8330B: Explosives, including NG and PETN
Sediment Samples	Collect one sediment sample (after the collocated surface water sample) in down-gradient area of the MIS sampling grids to ensure potential contamination is not migrating. Analyses: 6010B: Sb, Cu, Pb 8330B:explosives, including NG and PETN	Collect one sediment sample (collected after the collocated surface water sample) in a down-gradient area of the MIS decision unit to ensure that potential contamination is not migrating. Analyses: 6010B: Sb, Cu, Pb 8330B:explosives, including NG and PETN	Collect one sediment sample (collected after the collocated surface water sample) in a down-gradient area of the MIS decision unit to ensure that potential contamination is not migrating. Analyses: 6010B: Sb, Cu, Pb 8330B:explosives, including NG and PETN	Collect two sediment samples (after the collocated surface water samples) in down-gradient areas of the MIS grid to ensure that potential contamination is not moving off-site. Analyses: 6010B: Sb, Cu, Pb 8330B: Explosives, including NG and PETN

TABLE 4: SAMPLING RATIONALE AND METHODS (Continued)

Sample Type	Range II I04SC002501R01	Range III I04SC002501R02	Range IV I04SC002501R03	Range VII I04SC002501R04	Range XX I04SC002501R05
Surface Soil (MIS)	Collect two surface soil samples by MIS method. 100' X 100' decision units (collecting plugs on 10' spacing) will cover area where 100-pound practice bomb fragments were found if ground disturbance has not occurred. Analyses: 6010B: Ba, Cd, Pb, Zn 7471B: Hg 8330B: Explosives, including NG and PETN	Collect three surface soil samples by MIS method. The 100' X 100' decision units will be determined after the magnetometer-directed dig data is incorporated with the existing site data. MIS decision units will be selected in the two areas of highest MEC/MD densities. Analyses: 6010B: Ba, Cd, Pb, Zn 7471B: Hg 8330B: Explosives, including NG and PETN	Collect two surface soil samples by MIS method. The 100' X 100' decision units will be determined after the magnetometer-directed dig data is incorporated with the existing site data. MIS decision units will be selected in the two areas of highest MEC/MD densities. Analyses: 6010B: Ba, Cd, Pb, Zn 7471B: Hg 8330B: Explosives, including NG and PETN	Collect two surface soil samples by MIS method. The 100' X 100' decision units will be determined after the magnetometer-directed and dig data is incorporated with the existing site data. MIS decision units will be selected in the two areas of highest MEC/MD densities. Analyses: 6010B: Ba, Cd, Pb, Zn 7471B: Hg 8330B: Explosives, including NG and PETN	Collect one surface soil sample by MIS method. The 100' X 100' decision unit (collecting plugs on 10' grid spacing) will be determined after the magnetometer-directed dig data is collected. The MIS decision unit location will be selected the area of highest MEC/MD densities. Analyses: 6010B: Ba, Cd, Pb, Zn 7471B: Hg 8330B: Explosives, including NG and PETN
Surface Water Samples	Collect one surface water sample (prior to collection of collocated sediment sample) in the eastern stream down-gradient of the MIS decision unit to ensure that potential contamination is not moving off-site. Analyses: 6010B: Ba, Cd, Pb, Zn 7470A: Hg 6850: Perchlorate 8330B: Explosives, including NG and PETN	Collect three surface water samples (prior to collection of collocated sediment sample) in the down-gradient stream of the MIS decision unit to ensure that potential contamination is not moving off-site. Analyses: 6010B: Ba, Cd, Pb, Zn 7470A: Hg 6850: Perchlorate 8330B: Explosives, including NG and PETN	Collect two surface water samples (prior to collection of collocated sediment samples) in down-gradient areas of the MIS decision units to ensure that potential contamination is not moving off-site. Analyses: 6010B: Ba, Cd, Pb, Zn 7470A: Hg 6850: Perchlorate 8330B: Explosives, including NG and PETN	Collect two surface water samples (prior to collection of collocated sediment samples) in down-gradient areas of the MIS decision units to ensure that potential contamination is not moving off-site. Analyses: 6010B: Ba, Cd, Pb, Zn 7470A: Hg 6850: Perchlorate 8330B: Explosives, including NG and PETN	Collect one surface water sample (prior to collection of collocated sediment sample) in a down-gradient area of the MIS decision unit to ensure that potential contamination is not moving off-site. Analyses: 6010B: Ba, Cd, Pb, Zn 7470A: Hg 6850: Perchlorate 8330B: Explosives, including NG and PETN

TABLE 4: SAMPLING RATIONALE AND METHODS (Continued)

Sample Type	Range II I04SC002501R01	Range III I04SC002501R02	Range IV I04SC002501R03	Range VII I04SC002501R04	Range XX I04SC002501R05
Sediment Samples	Collect one sediment sample (after the collocated surface water sample) in the eastern stream down-gradient of the MIS decision unit to ensure that potential contamination is not moving off-site. Analyses: 6010B: Ba, Cd, Pb, Zn 7471B: Hg 8330B: Explosives, including NG and PETN	Collect three sediment samples (after the collocated surface water samples) down-gradient of the MIS decision units to ensure that potential contamination is not moving off-site. Analyses: 6010B: Ba, Cd, Pb, Zn 7471B: Hg 8330B: Explosives, including NG and PETN	Collect two sediment samples (after the collocated surface water samples) in down-gradient areas of the MIS decision units to ensure that potential contamination is not moving off-site. Analyses: 6010B: Ba, Cd, Pb, Zn 7471B: Hg 8330B: Explosives, including NG and PETN	Collect two sediment samples (after the collocated surface water samples) in down-gradient areas of the MIS decision units to ensure that potential contamination is not moving off-site. Analyses: 6010B: Ba, Cd, Pb, Zn 7471B: Hg 8330B: Explosives, including NG and PETN	Collect one sediment sample (after the collocated surface water sample) in a down-gradient area of the MIS grid to ensure that potential contamination is not moving off-site. Analyses: 6010B: Ba, Cd, Pb, Zn 7471B: Hg 8330B: Explosives, including NG and PETN

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Laboratory and Validation

GPL Laboratories has been selected to provide services for this sampling event and has been provisionally approved to conduct analysis for Department of Defense (DoD)-related projects. They meet their contractual requirements based on having National Environmental Laboratory Accreditation Program (NELAP) accreditation (AL, AR, CA, CT, DE, FL, KS, ME, MD, MA, NV, NJ, NY, PA, TN, UT, VA) and/or National Environmental Laboratory Accreditation Conference (NELAC) accreditation and having performed self-declaration according to the DoD Quality Systems Manual (QSM), which was reviewed by the Environmental and Munitions Center of Expertise on behalf of USAESCH.

GPL Laboratories	Laboratory Director: Paul Ioannides
7210A Corporate Court	Technical Director: Virginia Zusman
Frederick, MD 21703	QA Officer: Yemane Yohannes
301-694-5310	

Independent of laboratory review, a minimum of 100% of laboratory data will be validated in accordance with flagging conventions presented in the DoD QSM and the less stringent requirements presented in the National Function Guidelines.

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Strafing Range (I04SC002501R06)

Small Arms Range

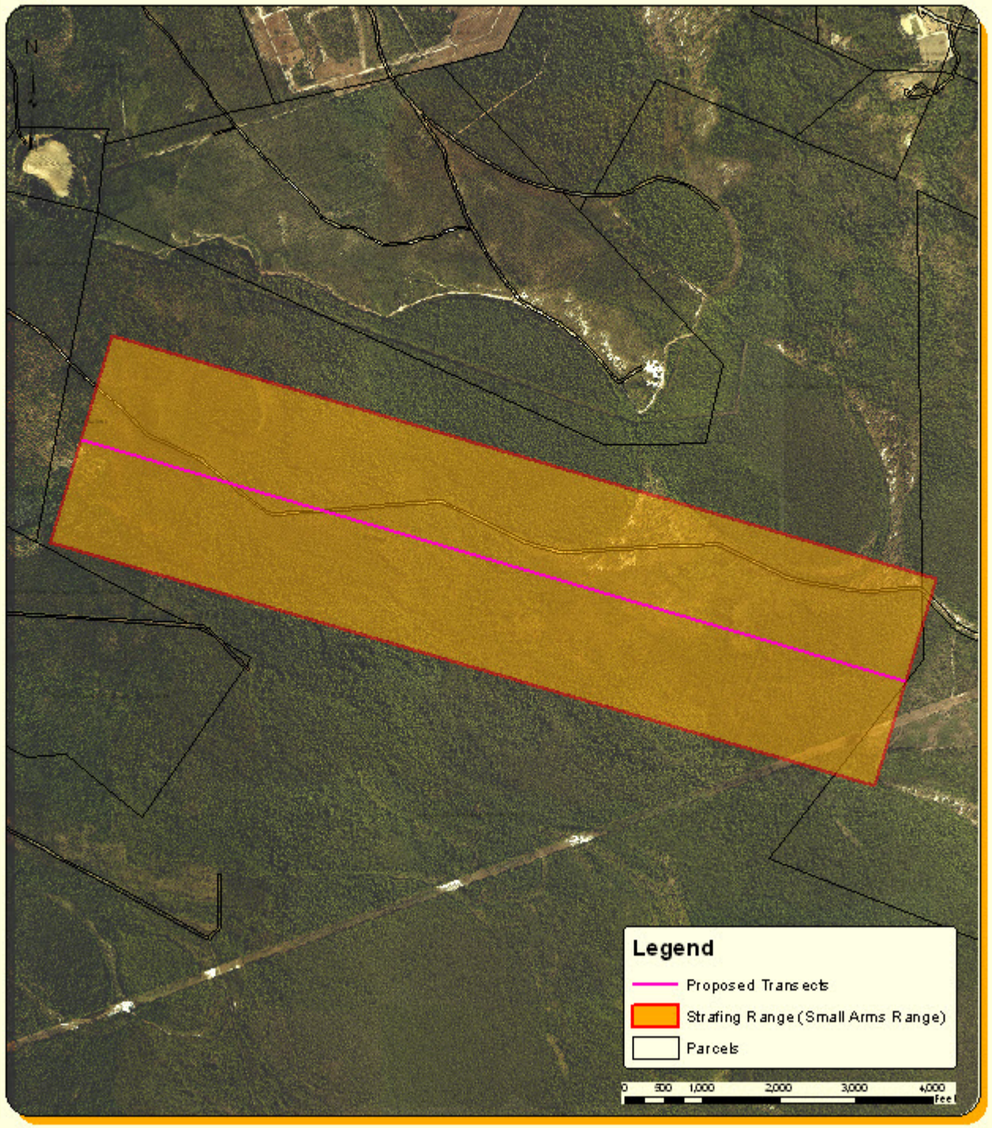
Site Description and History

- Range Size: 720 Acres
- Historic Range Use:
  - Small arms range - limited to 0.30 rifle and 0.50 caliber machine gun
- Current Land Use: Recreational, Hunting, Logging, Agricultural
  - Primary Landowner South Carolinia Wildlife and Marine Resources Department
- Future Land Use: Hunting, Logging Recreation, Agricultural

Previous Investigations

- 1995 Archive Search Report, USACE
  - No observed MEC or munitions debris during site inspection
  - No munitions constituent sampling in Strafing Range
- Subsequent reports did not include investigation of the Turret Ranges I and II, MG/Rifle Range, or the Strafing Range

Strafing Range



Strafing Range (I04SC002501R06)
Technical Approach

Small Arms Range, 720 Acres

MEC/MD Investigation Summary

- **Strategy**

Perform MEC reconnaissance by conducting geophysics in a transect line (3' wide) down the center of the range using an all-metal detector (see Strafing Range - Proposed Transects figure). Grid locations will be determined after the MEC reconnaissance and will be placed in 3 areas of the highest numbers of anomalies. Rights of Entry (ROE) will be provided by USACE for all areas of investigative work. The duration of the investigation is dependent on obtaining most of the ROEs. If teams must move around areas not accessible, production rates will decrease.

Instrument: **All-Metal Detector (Whites XLT or Vallon)**
Transect Miles: **2.12**
Grids: **3 (50' x 50')**
Grids will be placed, if needed, only in high density anomaly areas

Environmental Investigation Summary

- Surface Soil Samples (MIS): **1**

Collect one surface soil sample (0 – 2") by multi-increment sampling method. A 100' x 100' grid (collecting plugs on 10 foot grid spacing) will cover the area of highest anomaly counts.
Reported Analytes: Sb, Cu, and Pb, explosive including NG and PETN.

- Surface Water Samples: **1**

Collect one surface water sample (with a collocated sediment sample) in a surface water body downgradient of the MIS grid to ensure potential contamination is not migrating.
Reported Analytes: Sb, Cu, and Pb, explosive including NG and PETN.

- Sediment Samples: **1**

Collect one sediment samples (with collocated surface water samples) in downgradient areas of the MIS grids to ensure potential contamination is not migrating.
Reported Analytes: Sb, Cu, and Pb, explosive including NG and PETN.

Turret Range I

Turret Range I (I04SC002501R07)
Small Arms Range

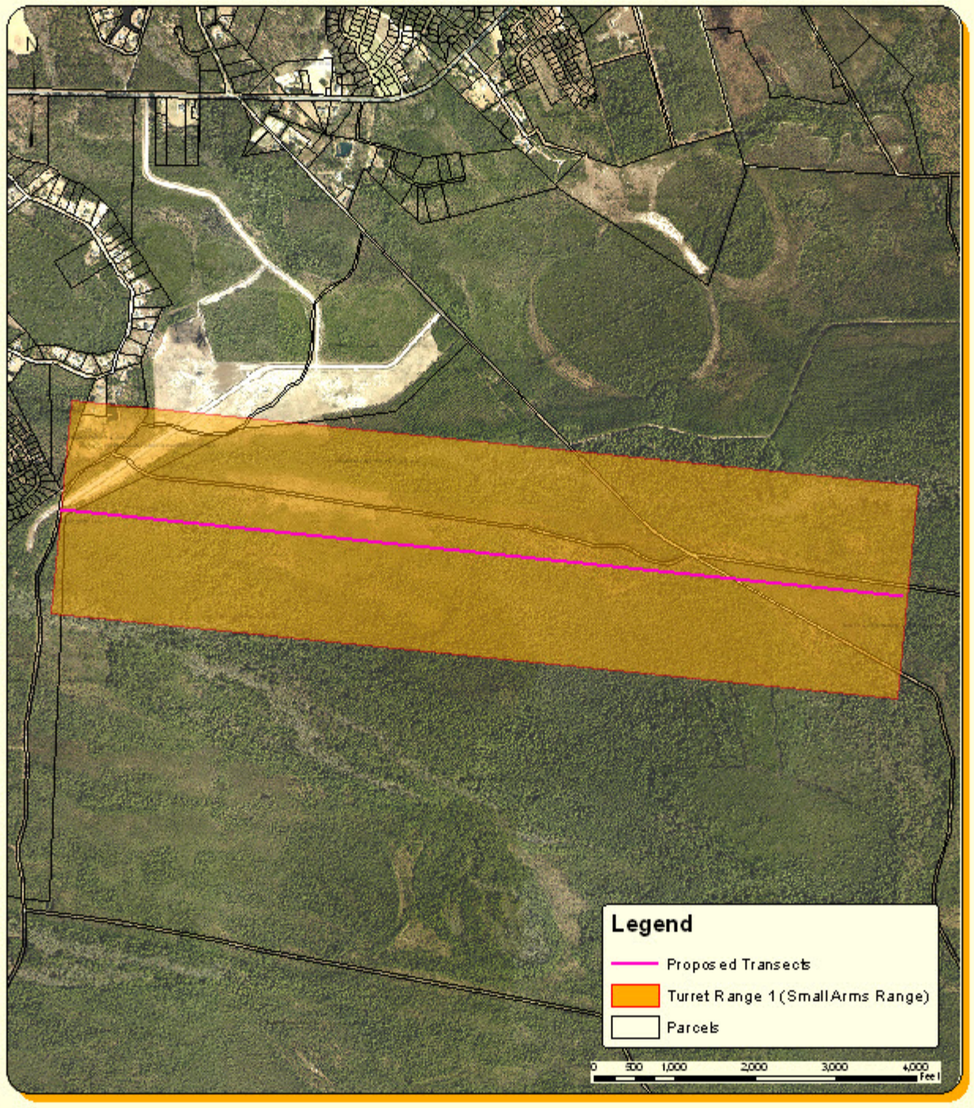
Site Description and History

- Range Size: 640 Acres

Historic Range Use:
- Small arms range - limited to 0.30 rifle and 0.50 caliber machine gun
- Current Land Use: Primarily undeveloped, Hunting, Logging, Agricultural
- Future Land Use: Residential, Hunting, Logging Recreation, Agriculture

Previous Investigations

- 1995 Archive Search Report, USACE
  - No observed MEC or munitions debris during site inspection
- Subsequent reports did not include investigation of the Turret Ranges I and II, MG/Rifle Range, or the Strafing Range



Turret Range I (I04SC002501R07)
Technical Approach
Small Arms Range, 640 Acres

MEC/MD Investigation Summary

◆**Strategy**

Perform MEC reconnaissance by conducting geophysics in a transect line (3' wide) down the center of the range using an all-metal detector (see the Turret Range I - Proposed Transects figure). Grid locations will be determined after the MEC reconnaissance and will be placed in 3 areas of the highest numbers of anomalies. Rights of Entry (ROE) will be provided by USACE for all areas of investigative work. The duration of the investigation is dependent on obtaining most of the ROEs. If teams must move around areas not accessible, production rates will decrease.

Instrument: **All-Metal Detector (Whites XLT or Vallon)**
Transect Miles: **1.99**
Transect Acreage: **0.73**
Grids: **3 (50' x 50')**
Grids will be placed, if needed, only in high density anomaly areas

Environmental Investigation Summary

◆Surface Soil Samples (MIS): **1**

Collect one surface soil sample (0 – 2" by multi-increment sampling method. A 100' x 100' grid (collecting plugs on 10 foot grid spacing) will cover the area of highest anomaly counts.
Reported Analytes: Sb, Cu, Pb, and explosives including NG and PETN.

◆Surface Water Samples: **1**

Collect one surface water sample (with a collocated sediment sample) in a surface water body downgradient of the MIS grid to ensure potential contamination is not migrating.
Reported Analytes: Sb, Cu, Pb, and explosives including NG and PETN.

◆Sediment Samples: **1**

Collect one sediment samples (with collocated surface water samples) in downgradient areas of the MIS grids to ensure potential contamination is not migrating.
Reported Analytes: Sb, Cu, Pb, and explosives including NG and PETN.

Turret Range II (I04SC002501R08)

Small Arms Range

Site Description and History

- Range Size: 640 Acres
- Historic Range Use:
  - Small arms range - limited to 0.30 rifle and 0.50 caliber machine gun
- Current Land Use: Recreational, Residental, (Western portion) Hunting, Logging, Agricultural (Eastern portion)
- Future Land Use: Residential, Hunting, Logging, Recreation, Agriculture

Previous Investigations

- 1995 Archive Search Report, USACE
  - No observed MEC or munitions debris during site inspection
  - No munitions constituent sampling in Turret Range II
- Subsequent reports did not include investigation of the Turret Ranges I and II, MG/Rifle Range, or the Strafing Range

Turret Range II

Turret Range II (I04SC002501R08)
Technical Approach

Small Arms Range, 640 Acres

MEC/MD Investigation Summary

- **Strategy**

Perform MEC reconnaissance by conducting geophysics in a transect line (3' wide) down the center of the range with 6 branches extending 200' diagonally, using an all-metal detector (see the Turret Range II - Proposed Transects figure). The western end of the range is currently inaccessible due to the presence of a golfcourse., Grid locations will be determined after the MEC reconnaissance and will be placed in 3 areas of the highest numbers of anomalies. Rights of Entry (ROE) will be provided by USACE for all areas of investigative work. The duration of the investigation is dependent on obtaining most of the ROEs. If teams must move around areas not accessible, production rates will decrease.

Instrument: **All-Metal Detector (Whites XLT or Vallon)**
Transect Miles: **1.34**
Proposed Transect Miles: **0.28**
Optional Transect will be investigated if items are found in the Proposed Transects.
Grids: **3 (50' x 50')**
Grids will be placed, if needed, only in high density anomaly areas

Environmental Investigation Summary

- Surface Soil Samples (MIS): **1**

Collect one surface soil sample (0 – 2") by multi-increment sampling method. A 100' x 100' grid (collecting plugs on 10 foot grid spacing) will cover the area of highest anomaly counts.
Reported Analytes: Sb, Cu, Pb, and explosives including NG and PETN.

- Surface Water Samples: **1**

Collect one surface water sample (with a collocated sediment sample) in a surface water body downgradient of the MIS grid to ensure potential contamination is not migrating.
Reported Analytes: Sb, Cu, Pb, and explosives including NG and PETN.

- Sediment Samples: **1**

Collect one sediment samples (with collocated surface water samples) in downgradient areas of the MIS grids to ensure potential contamination is not migrating.
Reported Analytes: Sb, Cu, Pb, and explosives including NG and PETN.

MG/Rifle Range (I04SC002501R09)

Small Arms Range

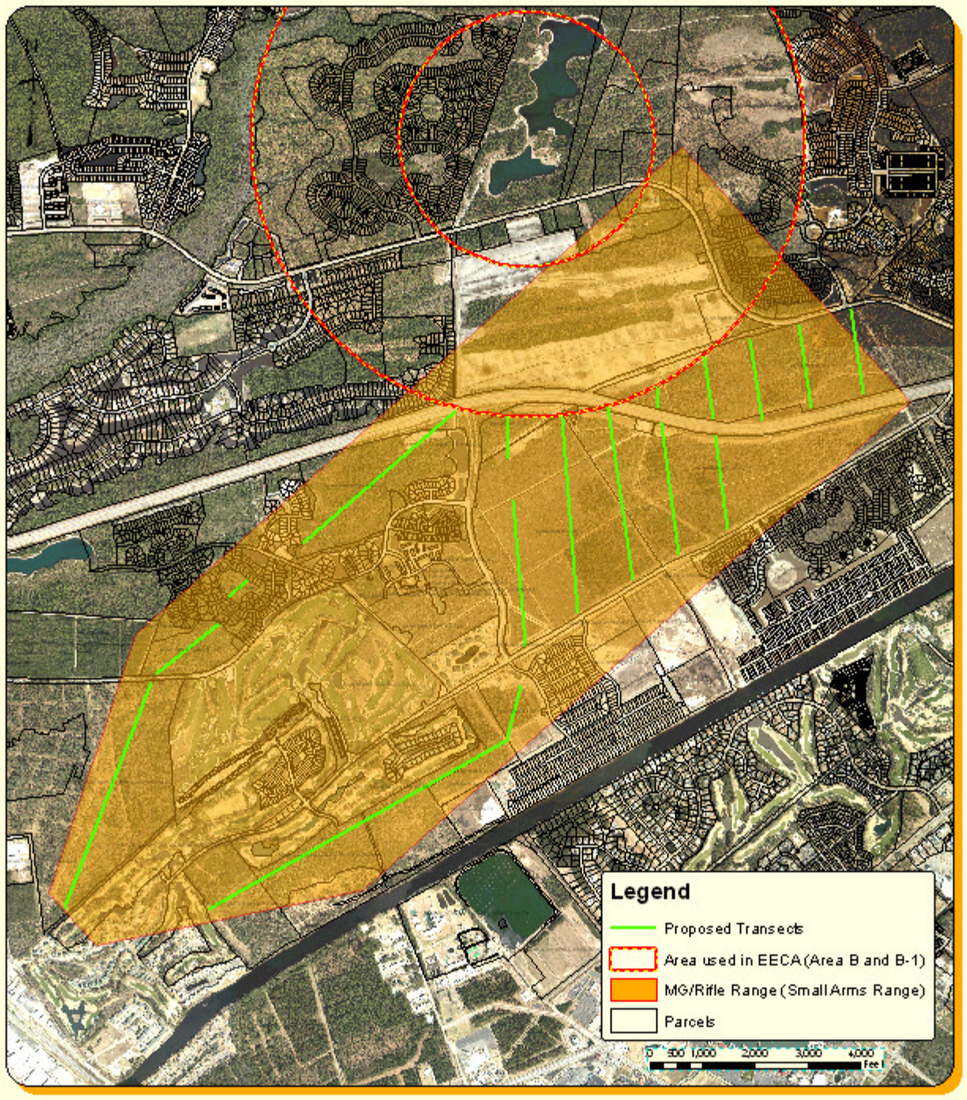
Site Description and History

- Range Size: 2500 Acres
- Historic Range Use:
  - Small arms range - Machine gun and rifle - limited to 0.30 rifle and 0.50 caliber
  - Range overlaps in northern portion of Range III (bombing) rifle - limited to 0.30 rifle and 0.50 caliber
- Current Land Use: Recreational, Residental, Agricultural
- Future Land Use: Recreational, Residental

Previous Investigations

- 1995 Archive Search Report, USACE
  - No observed MEC or munitions debris during site inspection
  - No munitions constituent sampling performed in MG/Rifle Range
- Subsequent reports did not include investigation of the Turret Ranges I and II, MG/Rifle Range, or the Strafing Range
- Intrusive investigation has been performed in the northern portion of the MG/Rifle Range during Range III investigations. MEC and MD not associated with MG/Rifle Range have been identified. See Range III for information.

MG/Rifle Range



MG/Rifle Range (I04SC002501R09) Technical Approach

Small Arms Range, 2500 Acres

MEC/MD Investigation Summary

- **Strategy**

Determine the extent of MEC and MD by conducting geophysical transects (3' wide) using an all-metal detector with intrusive investigation (mag and dig). Transect coverage will consist of two transects along the length of the range, avoiding residential areas and golf courses, and diagonal transects in the area to the south of overlap with Range III. Bombing range (see the MG/Rifle Range - Proposed Transects figure). Because no previous data exists in the southeastern portions of the MG/Rifle range, this type of coverage should determine areas of high concentrations of MEC/MD items. Although transect lines are displayed on the figure, transects will extend 200' beyond last MEC item or MD identified to ensure complete delineation. Transects may extend farther than what is shown on figure. Grid locations will be determined after the mag and dig and will be placed in 4 areas of the highest numbers of identified MEC/MD items. Rights of Entry (ROE) will be provided by USACE for all areas of investigative work. The duration of the investigation is dependent on obtaining most of the ROEs. If teams must move around areas not accessible, production rates will decrease.

Instrument: **All-Metal Detector (Whites XLT or Vallon)**
Transect Miles: **8.33**
Grids: **4 (50' x 50')**
Grids will be placed, if needed, only in high density anomaly areas

Environmental Investigation Summary

- Surface Soil Samples (MIS): **2**

Collect 2 surface soil samples (0-2") by multi-increment sampling (MIS) method. The 100' x 100' grids (collecting plugs on 10 foot spacing) will be determined after the mag and dig data is collected. MIS grids locations will be selected in the areas of highest MEC/MD concentrations. **Reported Analytes: Sb, Cu, and Pb, explosive including NG and PETN**

- Surface Water Samples: **2**

Collect 2 surface water sample (with collocated sediment samples) in down gradient areas of the MIS grids to ensure potential contamination is not migrating. **Reported Analytes: Sb, Cu, and Pb, explosives including NG and PETN.**

- Sediment Samples: **2**

Collect 2 sediment samples (with collocated surface water samples) in downgradient areas of the MIS grids to ensure potential contamination is not migrating. **Reported Analytes: Sb, Cu, and Pb, explosives including NG and PETN.**

Range II (I04SC002501R01)

Multiple/Combined Range, 649 Acres

Site Description and History

Range Size: 649 Acres

Historic Range Use:
- Practice Bombing
- Skip Bombing
- High and Medium Altitude Bombing
- Parafrag bombing
- Rocket firing

Current Land Use: Recreational (golf course) and residential

Previous Investigations

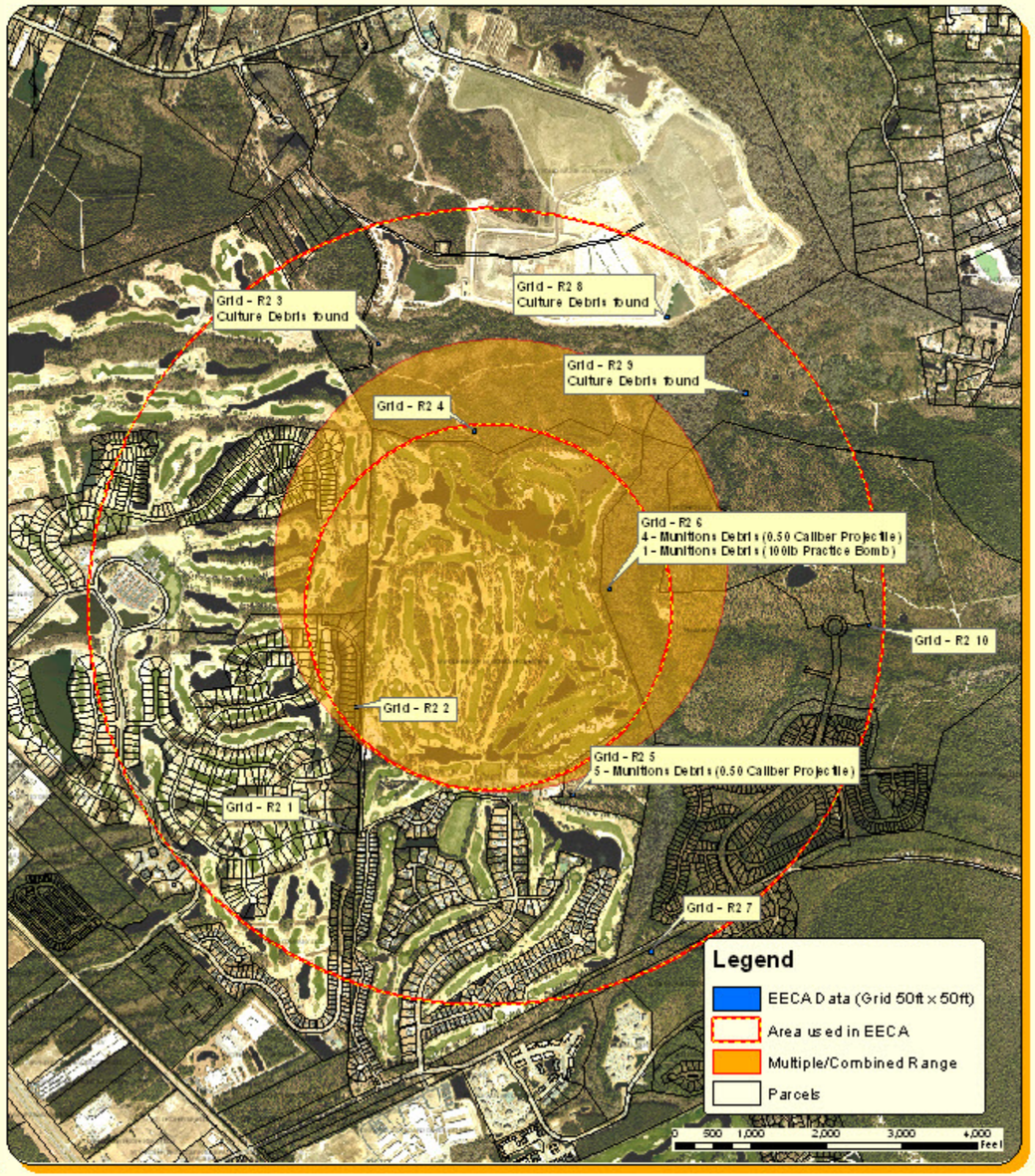
- 1991 Preliminary Assessment, Twin City Testing
  - Items found – 1 practice rocket and .50 caliber bullets
- 1995 Archive Search Report, USACE
  - No Items reported
- 1999-2004 Engineering Evaluation/Cost Analysis, Parsons

Grids * acreage	Transects acreage	Instrument	Anomalies
0.57	0	EM61	17

Munitions Debris**	UXO/MEC	Environmental Samples
6	0	Not Collected

*Range II is comprised of Area A (target) and A-1 (safety zone)
**Munitions debris found during EE/CA: 50 Caliber bullets (5), 100-lb bomb debris (1) at 40 inches below ground surface

Range II



Range II (I04SC002501R01) Technical Approach

Multiple/Combined Range, 649 Acres

MEC/MD Investigation Summary

- **Strategy**

  No additional geophysical or intrusive investigation required at Range II. A desktop RI/FS will be written using the existing PA, ASR and EE/CA data with supplemental environmental data from this RI. Results of the EE/CA indicated very little MEC or MD presence.

Environmental Investigation Summary

Surface Soil Samples (MIS): **1**

- Collect one surface soil sample by multi-increment sampling method. A 100' x 100' grid (collecting plugs on a 10 foot spacing) will cover the area where a fragment of a 100 lb practice bomb was found if ground surface has not been disturbed.
- **Analytes: Ba, Cd, Pb, Hg, Zn, and explosives including NG and PETN**

Surface Water Samples (MIS): **1**

- Collect one surface water sample (with a collocated sediment sample) in the eastern stream downgradient of the MIS grid to ensure potential contamination is not moving off-site.
- **Analytes: Ba, Cd, Pb, Hg, Zn, explosives including NG, PETN and perchlorate**

Sediment Samples: **1**

- Collect one sediment sample (with a collocated surface water sample) in the eastern stream downgradient of the MIS grid to ensure potential contamination is not moving off-site.
- **Analytes: Ba, Cd, Pb, Hg, Zn, explosives including NG, PETN**

Range III (I04SC002501R02)

Multiple/Combined Range

Site Description and History

- Range Size: 649 Acres
- Historic Range Use:
  - Practice Bombing, Rocket Firing, Medium Altitude Practice Bombing, Demolition Bombing, Dive Bombing, Strafing, Incendiary Bombing, High and Medium Altitude Bombing, Skip Bombing
- Current Land Use: Recreational (golf course) and residential, Logging
- Future Land Use: Recreational (golf course) and residential

Previous Investigations

- 1991 Preliminary Assessment, Twin City Testing
  - Craters observed
- 1995 Archive Search Report, USACE
  - Demolition bombing craters observed, no MEC observed, but historical information suggests high probability
- 1999-2004 Engineering Evaluation/Cost Analysis, Parsons

Grids * acreage	Transects acreage	Instrument	Anomalies
8.15	0.57	EM61	528

Munitions Debris**	UXO/MEC	Environmental Samples
197	3	Not Collected

**Range III is comprised of Area B (target) and B-1 (safety zone)(safety zone)*
***Munitions debris found during EE/CA: 4 lb incendiary bomb fragments, 20 lb bomb fragments, 2.25" rockets, and 100-lb bomb fragments in surface and subsurface.*

- 2002 Time Critical Removal Action, Parsons

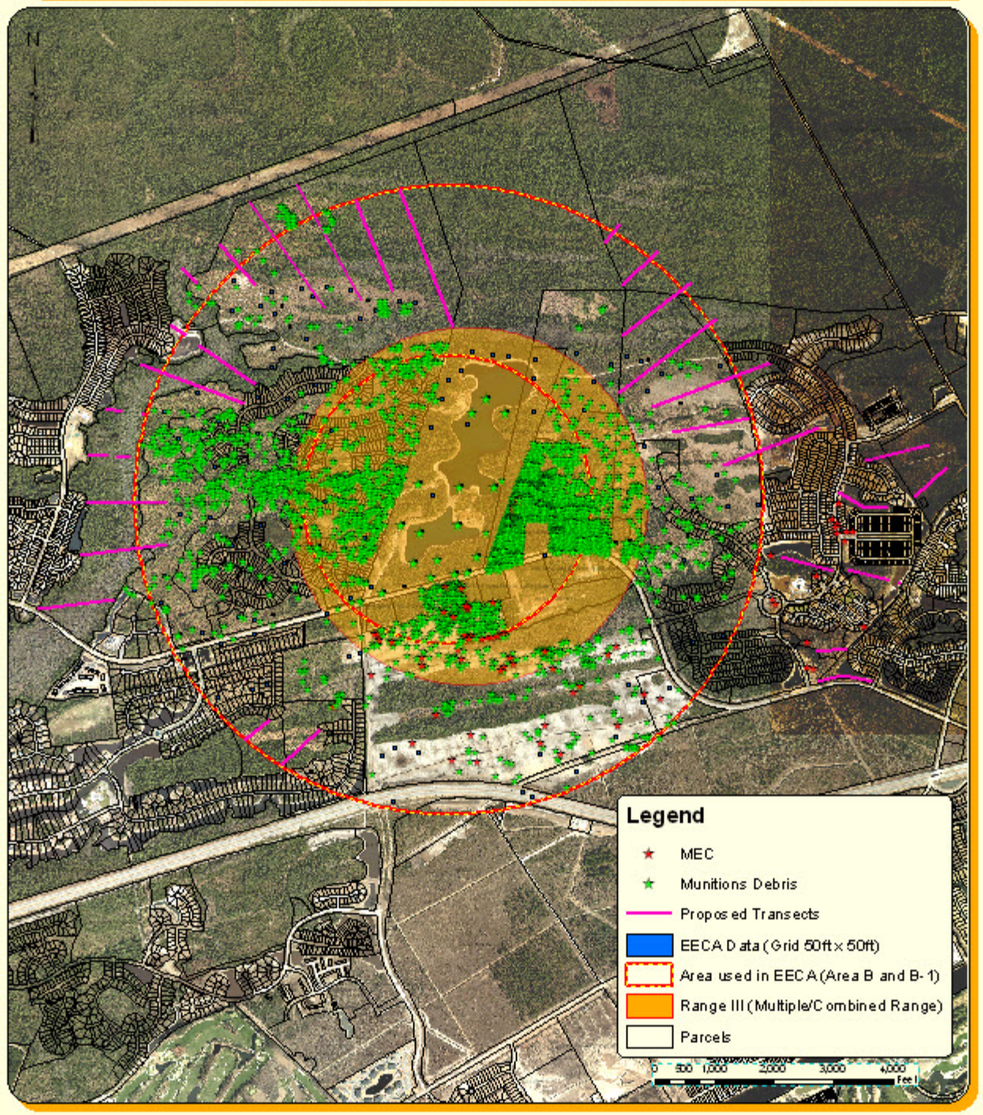
Grids * acreage	Transects acreage	Instrument	Anomalies
~40	0	G-858 Magnetometer	79797

Munitions Debris**	UXO/MEC	Environmental Samples
76726	2156	Not Collected

**MEC and MD consists of 4 lb incendiary bombs, 20 lb practice frag bombs, 5" practice HVAR Warheads, 6 lb incendiary bombs, 100-lb practice bombs, and 1 M57 250 lb HE bomb (old style) in surface and subsurface.*

- 2006 Munitions Constituents Sampling, Analysis, and Evaluation, Parsons
  - Samples collected on International Paper Property (Center of Range III) within current lake boundary
  - 15 surface soils collected, no explosives detected, potential contaminants of concern – lead, zinc, cadmium, and mercury (not confirmed, only one background sample).
  - 6 surface water samples collected, no explosives detected, no background sample collected, potential contaminants of concern not discernable.
- Numerous private MEC clearance operations - data not available

Range III



Range III (I04SC002501R02) Technical Approach

Multiple/Combined Range, 649 Acres

MEC/MD Investigation Summary

- **Strategy**

Determine the extent of MEC and MD by conducting geophysical transects (3' wide) using a ferrous metal detector with intrusive investigation (mag and dig) in areas not previously investigated (see the Range III - Proposed Transects figure). Although transect lines are displayed on the figure, transects will extend 200' beyond last MEC item or MD identified to ensure complete delineation. Transects may extend farther than what is shown on figure. Grid locations will be placed in 3 areas of the highest numbers of identified MEC/MD items. Rights of Entry (ROE) will be provided by USACE for all areas of investigative work. The duration of the investigation is dependent on obtaining most of the ROEs. If teams must move around areas not accessible, production rates will decrease.

Instrument: **Ferrous Metal Detector (Schonstedt)**
Transect Miles: **6.80**
Grids: **3 (50' x 50')**
Grids will be placed, if needed, only in high density anomaly areas

Environmental Investigation Summary

- Surface Soil Samples (MIS): **3**

Collect 3 surface soil samples (0-2") by multi-increment sampling (MIS) method. The 100' x 100' grids (collecting plugs on 10 foot spacing) will be determined after the mag and dig data is incorporated with the existing data. MIS grids locations will be selected in the areas of highest MEC/MD concentrations.
Reported Analytes: Ba, Cd, Pb, Hg, Zn, and explosives including NG and PETN

- Surface Water Samples: **3**

Collect 3 surface water sample (with collocated sediment samples) in down gradient areas of the MIS grids to ensure potential contamination is not migrating.
Reported Analytes: Ba, Cd, Pb, Hg, Zn, explosives including NG, PETN and perchlorate.

- Sediment Samples: **3**

Collect 3 sediment samples (with collocated surface water samples) in downgradient areas of the MIS grids to ensure potential contamination is not migrating.
Reported Analytes: Ba, Cd, Pb, Hg, Zn, explosives including NG, PETN.

Range IV (I04SC002501R03)

Bombing Range

Site Description and History

- Range Size: 649 Acres
- Historic Range Use:
  - Practice Bombing
  - Medium Altitude Practice Bombing
- Current Land Use: Recreational (golf course) and residential
- Future Land Use: Recreational (golf course) and residential

Previous Investigations

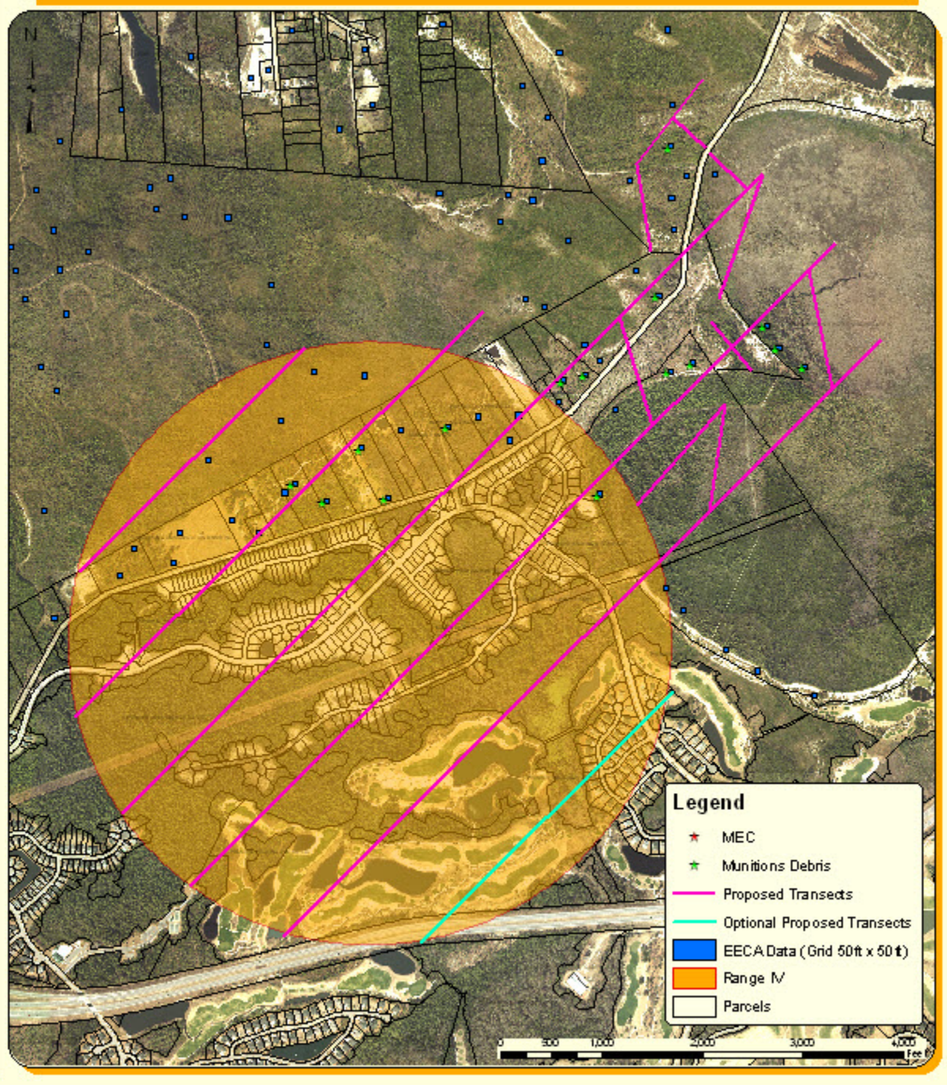
- 1991 Preliminary Assessment, Twin City Testing
  - Items found - Bombing components, including fuzes
- 1995 Archive Search Report, USACE
  - No Items reported during site inspection, but previous observations by Twin City Testing and by a local resident high probablilty of MEC.
- 1999-2004 Engineering Evaluation/Cost Analysis, Parsons

Grids * (50'x50')	Transects (3' wide) Acreage	Instrument	Anomalies
4.37	0.17	EM61	158

Munitions Debris**	UXO/MEC	Environmental Samples
42	None found	Not Collected

*Range IV is comprised of Area C (target) and C-1 (safety zone)
**Munitions debris found during EE/CA: 4 lb incendiary bomb fragments (14), 20 lb bomb fragments (10), and 100-lb bomb fragments (21) in surface and subsurface

Range IV



Range IV (I04SC002501R03) Technical Approach

Bombing Range, 649 Acres

MEC/MD Investigation Summary

Strategy

Determine the nature and extent of MEC and MD by conducting geophysical transects (3' wide) using a ferrous metal detector with intrusive investigation. Parallel straight line transects spaced 500 feet apart will be performed with additional shorter transects in areas of identified MEC/MD to ensure extent is delineated (see the Range IV - Proposed Transects figure). Although transect lines are displayed on the figure, transects will extend 200' beyond last MEC item or MD identified to ensure complete delineation. Transects may extend farther than what is shown on figure. Grid locations will be placed in 4 areas of the highest numbers of identified MEC/MD items. Rights of Entry (ROE) will be provided by USACE for all areas of investigative work. The duration of the investigation is dependent on obtaining most of the ROEs. If teams must move around areas not accessible, production rates will decrease.

Instrument: Ferrous Metal Detector (Schonstedt)
Transect Miles: 8.53
Optional Transect Miles: 0.67
Optional Transect will be investigated if items are found in the Proposed Transects.
Grids: 4 (50' x 50')
Grids will be placed, if needed, only in high density anomaly areas

Environmental Investigation Summary

Surface Soil Samples (MIS): 2

Collect 2 surface soil sample (0 – 2") by multi-increment sampling (MIS) method. A 100' x 100' grid (collecting plugs on 10 foot grid spacing) will be determined after the mag and dig data is incorporated with the existing data. MIS grid locations will be selected in the 2 areas of highest MEC/MD concentrations..
Reported Analytes: Ba, Cd, Pb, Hg, Zn, and explosives including NG and PETN.

Surface Water Samples: 2

Collect 2 surface water sample (with a collocated sediment sample) in downgradient areas of the MIS grid to ensure potential contamination is not migrating.
Reported Analytes: Ba, Cd, Pb, Hg, Zn explosives including NG, PETN and perchlorate

Sediment Samples: 2

Collect 2 sediment samples (with collocated surface water samples) in downgradient areas of the MIS grids to ensure potential contamination is not migrating.
Reported Analytes: Ba, Cd, Pb, Hg, Zn, and explosives including NG and PETN.

Range VII

Range VII (I04SC002501R04)
Bombing Range

Site Description and History

- Range Size: 649 Acres
- Historic Range Use:
  - Skip Bombing
- Current Land Use: Recreational and agricultural
- Future Land Use: Residental, recreational and agricultural

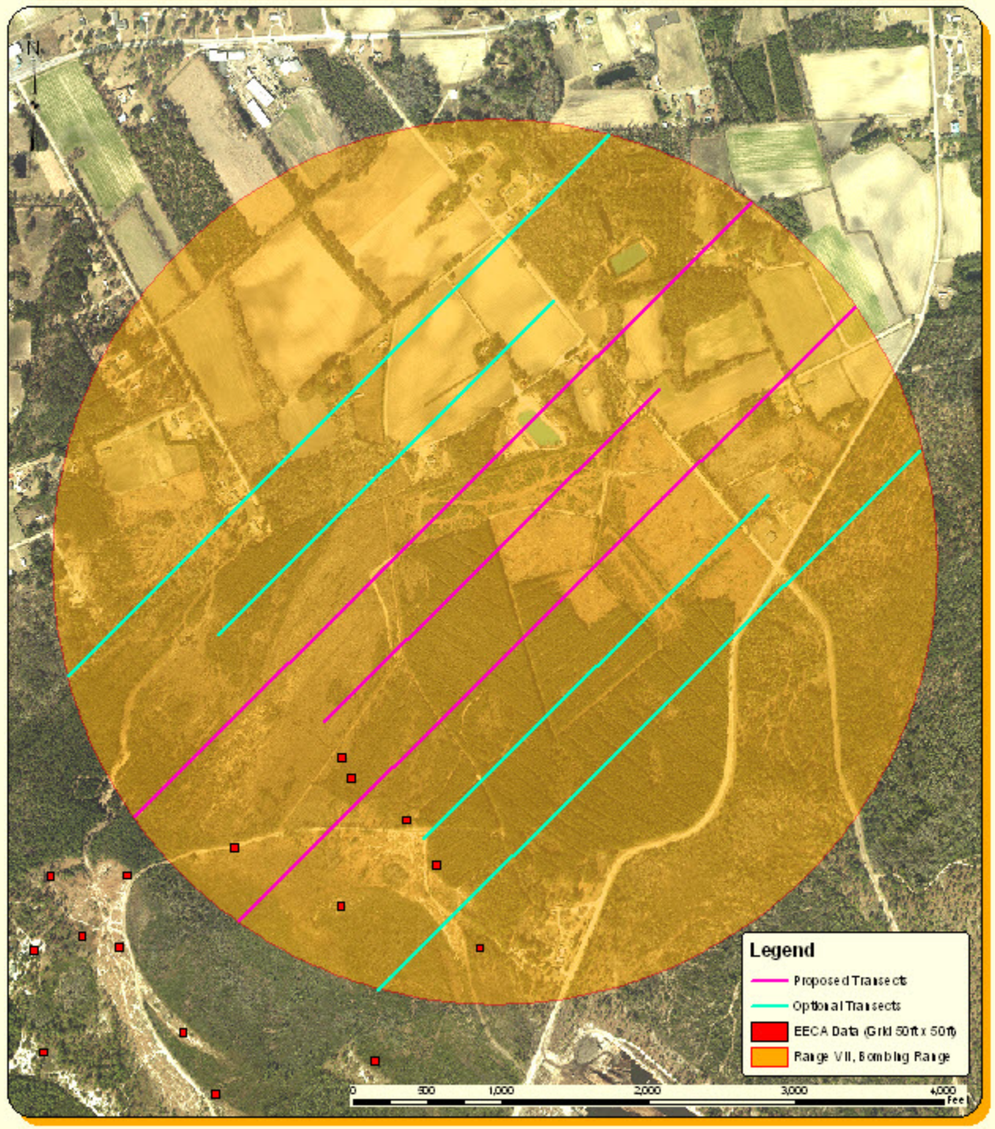
Previous Investigations

- 1991 Preliminary Assessment, Twin City Testing
  - Not items found
- 1995 Archive Search Report, USACE
  - Items reported during site inspection, 2 pieces of bomb shrapnel
- 1999-2004 Engineering Evaluation/Cost Analysis, Parsons

Grids * (50'x50')	Transects (3' wide) Acreage	Instrument	Anomalies
1.49	0.18	EM61	53

Munitions Debris	UXO/MEC	Environmental Samples
0	0	Not Collected

*Range VII is comprised of Area (target) and D-1 (safety zone)



Range VII (I04SC002501R04) Technical Approach

Bombing Range, 649 Acres

MEC/MD Investigation Summary

Strategy

Determine the nature and extent of MEC and MD by conducting geophysical transects (3' wide) using a ferrous metal detector with intrusive investigation. Seven parallel straight line geophysical transects will be performed within the center of the range boundary to determine the nature of potential MEC/MD items (see the Range VII - Proposed Transects figure). Although transect lines are displayed on the figure, transects will extend 200' beyond last MEC item or MD identified to ensure complete delineation of extent. Transects may extend farther than what is shown on figure. Grid locations will be placed in 4 areas of the highest numbers of identified MEC/MD items. Rights of Entry (ROE) will be provided by USACE for all areas of investigative work. The duration of the investigation is dependent on obtaining most of the ROEs. If teams must move around areas not accessible, production rates will decrease.

Instrument: **Ferrous Metal Detector (Schonstedt)**
Transect Miles: **2.85**
Optional Transect will be investigated if items are found in the Proposed Transects.
Optional Transect Miles: **3.20**
Grids: **3 (50' x 50')**
Grids will be placed, if needed, only in high density anomaly areas

Environmental Investigation Summary

- Surface Soil Samples (MIS): **2**
  Collect 2 surface soil sample (0 – 2") by multi-increment sampling (MIS) method. A 100' x 100' grid (collecting plugs on 10 foot grid spacing) will be determined after the mag and dig data is incorporated with the existing data. MIS grid locations will be selected in the 2 areas of highest MEC/MD concentrations..
  Reported Analytes: Ba, Cd, Pb, Hg, Zn, and explosives including NG and PETN
- Surface Water Samples: **2**
  Collect 2 surface water sample (with a collocated sediment sample) in downgradient areas of the MIS grid to ensure potential contamination is not migrating.
  ReportedAnalytes: Ba, Cd, Pb, Hg, Zn, explosives including NG, PETN and perchlorate
- Sediment Samples: **2**
  Collect 2 sediment samples (with collocated surface water samples) in downgradient areas of the MIS grids to ensure potential contamination is not migrating.
  Reported Analytes: Ba, Cd, Pb, Hg, Zn, and explosives including NG and PETN

Range XX (I04SC002501R05)

Multiple/Combined Range

Site Description and History

- Range Size: 640 Acres
- Historic Range Use:
  - Skip Bombing
  - Rocket
  - Strafing
  - Position Firing Course
  - Air to Ground Gunnery
- Current Land Use: Nature Preserve, Wildlife Refuge
- Future Land Use: Nature Preserve, Wildlife Refuge
- Landowner: South Carolina Wildlife and Marine Resources Department

Previous Investigations

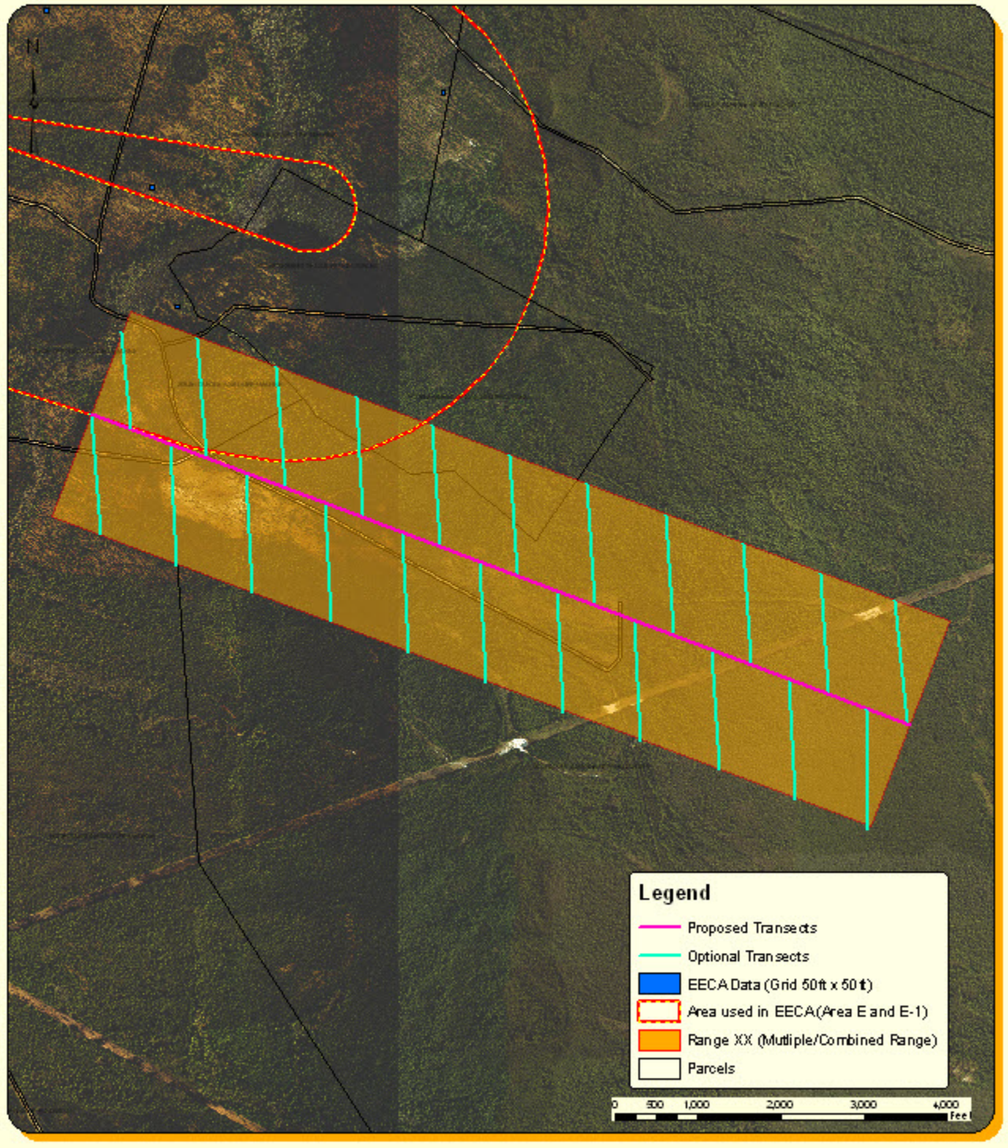
- 1991 Preliminary Assessment, Twin City Testing
  - No items found
- 1995 Archive Search Report, USACE
  - No Items reported during visual site inspection
- 1999-2004 Engineering Evaluation/Cost Analysis, Parsons

Grids * (50'x50')	Transects (3' wide) Acreage	Instrument	Anomalies
0.35	0	EM61	0

Munitions Debris	UXO/MEC	Environmental Samples
0	0	Not Collected

*Range XX is comprised of Area E (target) and E-1(safety zone)

Range XX



Range XX (I04SC002501R05) Technical Approach

Multiple/Combined Range, 640 Acres

MEC/MD Investigation Summary

- **Strategy**

Determine the extent of MEC and MD by conducting geophysical transects (3' wide) using an all-metal detector with intrusive investigation.
Transect coverage will consist of a center line placed along the length of the range with diagonal transects placed 500 feet apart from the center line (see the Range XX and - Proposed Transects figure). Because no previous data exists at Range XX, this type of coverage should determine areas of high concentrations of MEC/MD items. Although transect lines are displayed on the figure, transects will extend 200' beyond last MEC item or MD identified to ensure complete delineation. Transects may extend farther than what is shown on figure. Grid locations will be placed in 3 areas of the highest numbers of identified MEC/MD items. Rights of Entry (ROE) will be provided by USACE for all areas of investigative work. The duration of the investigation is dependent on obtaining most of the ROEs. If teams must move around areas not accessible, production rates will decrease.

Instrument: **All-Metal Detector (Whites XLT or Vallon)**
Transect Miles: **2.00**
Optional Transect Miles: **6.01**
Optional Transect will be investigated if items are found in the Proposed Transects.
Grids: **3 (50' x 50')**
Grids will be placed, if needed, only in high density anomaly areas

Environmental Investigation Summary

- Surface Soil Samples (MIS): **1**

Collect one surface soil sample (0 – 2") by multi-increment sampling (MIS) method. A 100' x 100' grid (collecting plugs on 10 foot grid spacing) will be determined after the mag and dig data is collected. The MIS grid location will be selected in the area of highest MEC/MD concentrations.
Reported Analytes: Ba, Cd, Pb, Hg, Zn, and explosives including NG and PETN.

- Surface Water Samples: **1**

Collect 1 surface water sample (with a collocated sediment sample) in downgradient areas of the MIS grid to ensure potential contamination is not migrating.
Reported Analytes: Ba, Cd, Pb, Hg, Zn, explosives including NG, PETN and perchlorate.

- Sediment Samples: **1**

Collect one sediment samples (with collocated surface water samples) in downgradient areas of the MIS grids to ensure potential contamination is not migrating.
Reported Analytes: Ba, Cd, Pb, Hg, Zn, explosives including NG, PETN.

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geneeuchler@carolina.rr.com

SECTION 3
TPP MEETING ATTENDEES/SIGN-IN SHEETS

24 January 2008 Meeting

Amazing Grace Lutheran Church
Malia, John
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20 March 2008 Meeting

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dmacdonald@ricemaclaw.com

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Mount Pleasant, SC 29464
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okbagwell@drhorton.com

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24 September 2008

Name: Tanya Morse Affiliation: EODT
Address: 2229 Old Highway 95 Lenior City Tn
Phone: 202-9201 Email: tmorse@eodt.com

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Phone: 256 895-1592	**Email:** William.D.Veith@USACE.Army.mil
Name: Jack Koelsch	**Affiliation:** EODT
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Phone: 865-803-3720	**Email:** Jack.Koelsch@EODT.com
Name: Donna Sharp	**Affiliation:** EODT
Address: 2229 Old Highway 95 Lenior City Tn	
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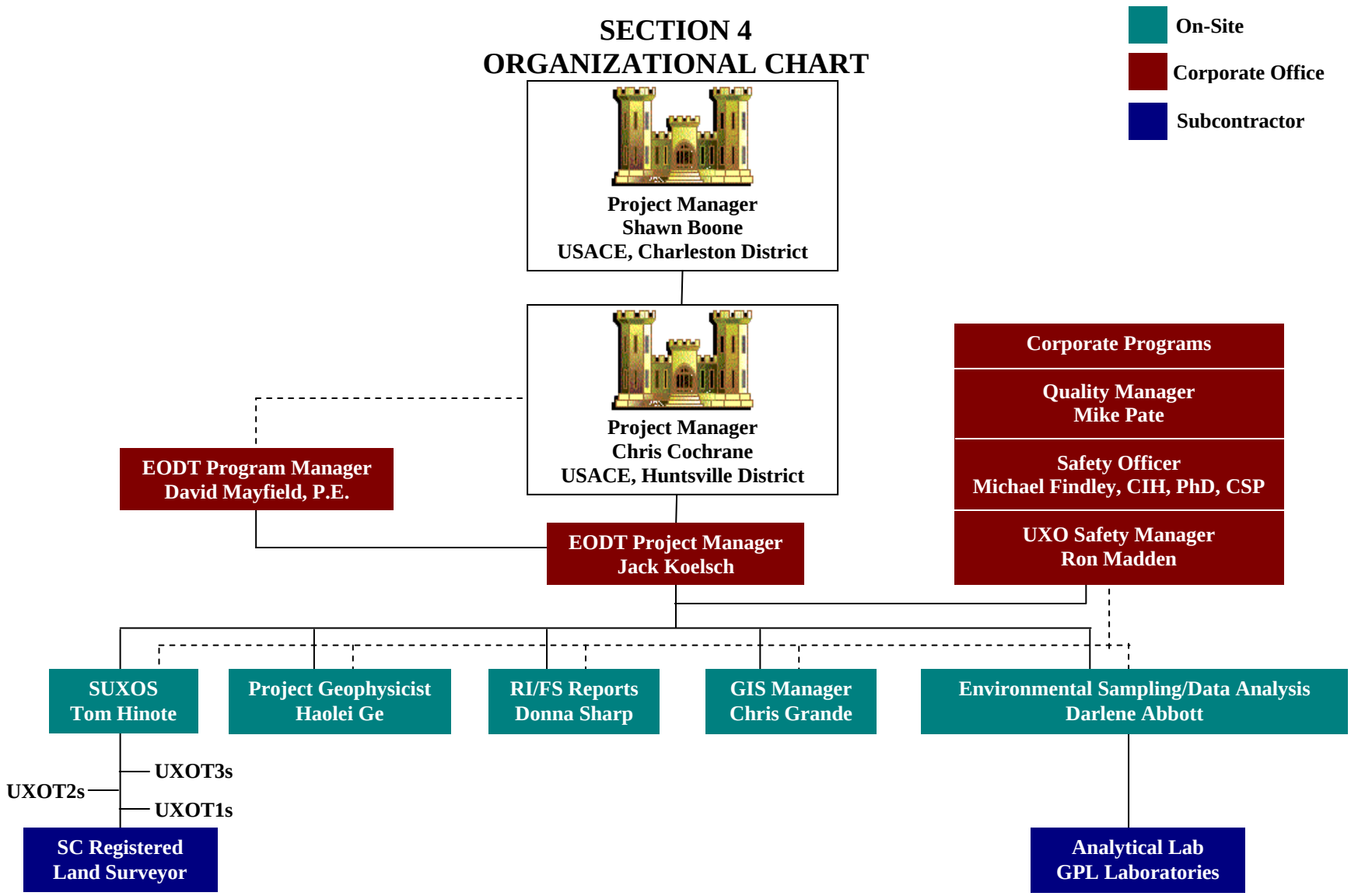
Address:	
Phone:	**Email:**
Name:	**Affiliation:**
Address:	
Phone:	**Email:**
Name:	**Affiliation:**
Address:	
Phone:	**Email:**

SECTION 4
ORGANIZATIONAL CHART



SECTION 5
SITE LOCATION

The Site Location Map can be found on the following page.

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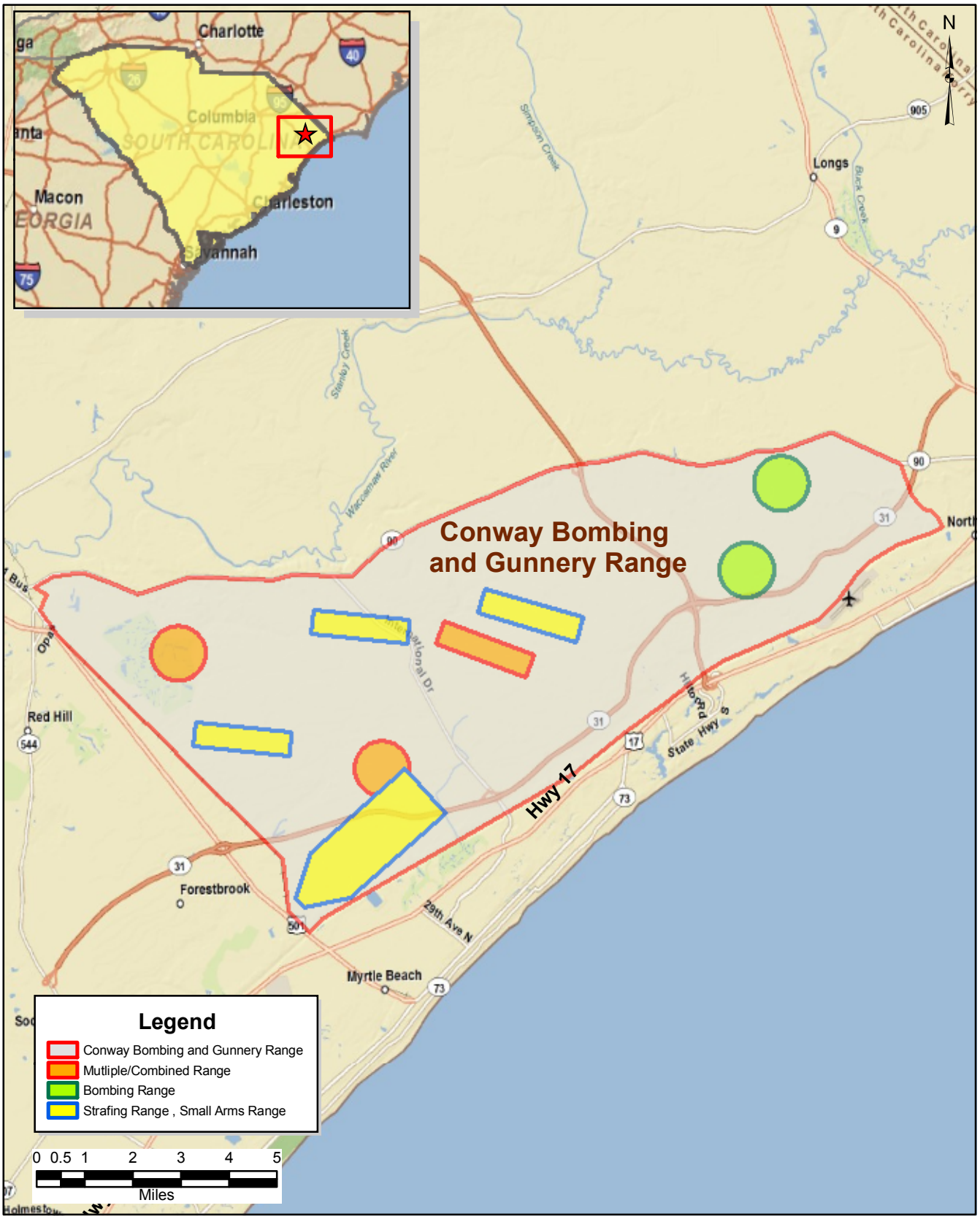

Site Location Map

SECTION 6
SCHEDULE

The Schedule can be found following this page.

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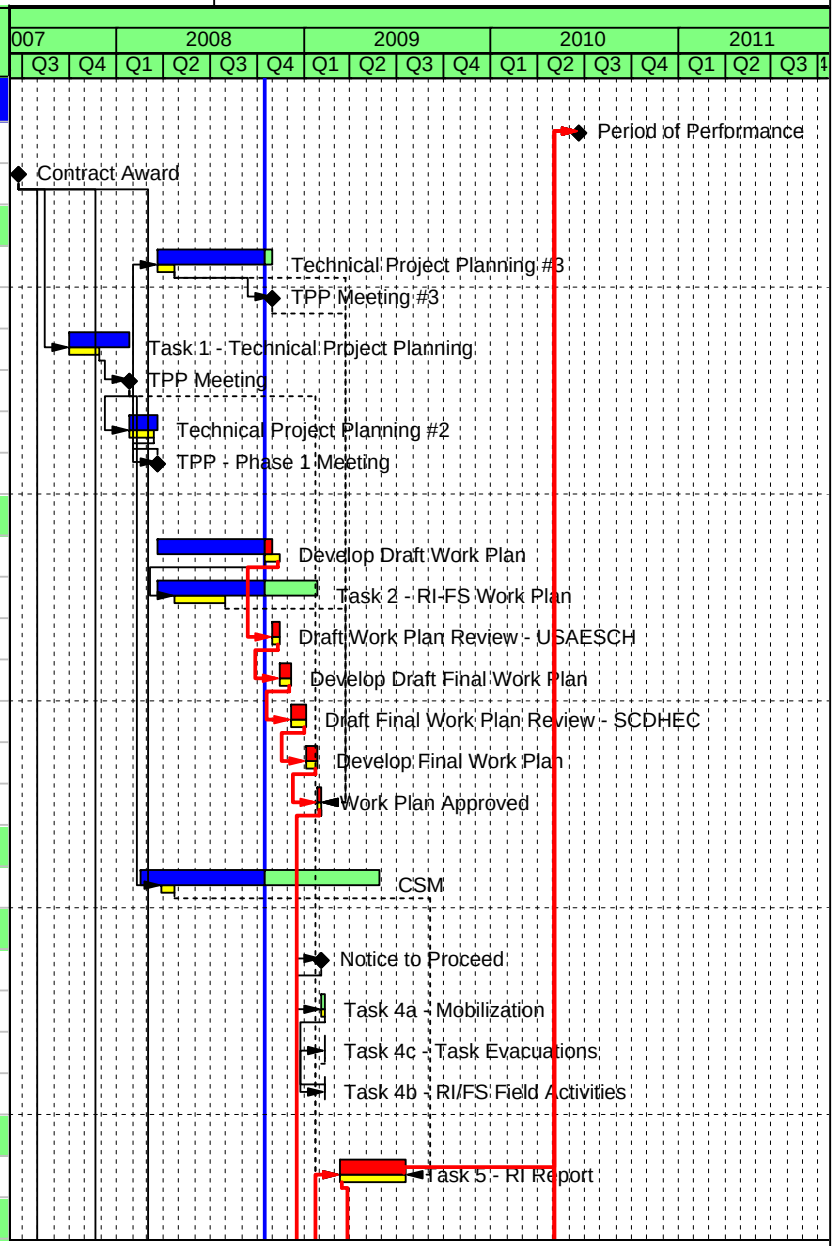
Activity ID	Activity Name	Original Duration	Start	Finish
4250. Conway RI-FS		1093d	06/25/07 A	06/21/10
A1000	Period of Performance	0d		06/21/10*
0010	Contract Award	0d	06/25/07 A	
4250..1 Technical Project Planning		395d	10/01/07 A	10/29/08
A1030	Technical Project Planning #3	23d	03/21/08 A	10/29/08
A1050	TPP Meeting #3	0d		10/29/08
0100	Task 1 - Technical Project Planning	40d	10/01/07 A	01/24/08 A
A1010	TPP Meeting	0d		01/24/08 A
A1020	Technical Project Planning #2	35d	01/24/08 A	03/20/08 A
A1040	TPP - Phase 1 Meeting	0d		03/20/08 A
4250..2 Work Plan		284d	03/21/08 A	02/01/09
0210	Develop Draft Work Plan	30d	03/21/08 A	10/31/08
0200	Task 2 - RI-FS Work Plan	97d	03/21/08 A	01/26/09
0220	Draft Work Plan Review - USAESCH	14d	11/01/08	11/14/08
0230	Develop Draft Final Work Plan	21d	11/15/08	12/05/08
0240	Draft Final Work Plan Review - SCDHEC	31d	12/06/08	01/05/09
0250	Develop Final Work Plan	20d	01/06/09	01/25/09
0260	Work Plan Approved	7d	01/26/09	02/01/09
4250..3 Geospatial Data		28d	02/19/08 A	05/27/09
0300	CSM	20d	02/19/08 A	05/27/09
4250..4 RI/FS Field Activities		10d	02/02/09	02/11/09
0400	Notice to Proceed	0d	02/02/09	
0410	Task 4a - Mobilization	7d	02/03/09	02/09/09
0430	Task 4c - Task Evacuations	1d	02/10/09	02/10/09
0420	Task 4b - RI/FS Field Activities	2d	02/10/09	02/11/09
4250..5 Remedial Investigation		128d	03/12/09	07/17/09
0500	Task 5 - RI Report	90d	03/12/09	07/17/09
4250..6 Feasibility Study		129d	05/12/09	09/17/09

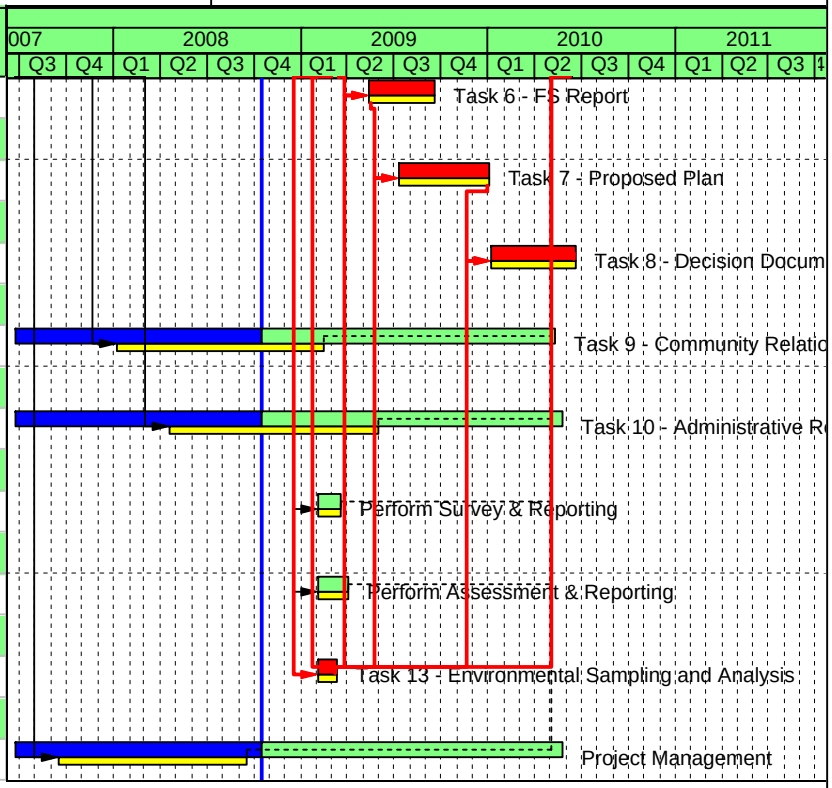


Primary Baseline | Remaining Work | Actual Work | Critical Remaining Work

Data Date: 10/17/08

EODT EOD TECHNOLOGY, INC.

Activity ID	Activity Name	Original Duration	Start	Finish
0600	Task 6 - FS Report	90d	05/12/09	09/17/09
4250..7	**Proposed Plan**	179d	07/10/09	01/04/10
0700	Task 7 - Proposed Plan	120d	07/10/09	01/04/10
4250..8	**Decision Document**	168d	01/05/10	06/21/10
0800	Task 8 - Decision Document	120d	01/05/10	06/21/10
4250..9	**Community Relations Support**	404d	06/25/07 A	05/10/10
0900	Task 9 - Community Relations Support	281d	06/25/07 A	05/10/10
4250..10	**Administrative Record**	409d	06/25/07 A	05/24/10
1000	Task 10 - Administrative Record	281d	06/25/07 A	05/24/10
4250..11	**Cultural Resources Survey**	47d	02/02/09	03/20/09
1100	Perform Survey & Reporting	35d	02/02/09	03/20/09
4250..12	**Biological Assessment**	61d	02/02/09	04/03/09
1200	Perform Assessment & Reporting	45d	02/02/09	04/03/09
4250..13	**Sampling & Analysis**	38d	02/02/09	03/11/09
1300	Task 13 - Environmental Sampling and Anal...	28d	02/02/09	03/11/09
4250..14	**Project Management**	368d	06/25/07 A	05/25/10
1400	Project Management	255d	06/25/07 A	05/25/10



Primary Baseline | Remaining Work | Actual Work | Critical Remaining Work

Data Date: 10/17/08

EODT
EOD TECHNOLOGY, INC.

SECTION 7
CONCEPTUAL SITE MODEL EXPOSURE PATHWAYS

The Conceptual Site Model Exposure Pathways can be found on the following pages.

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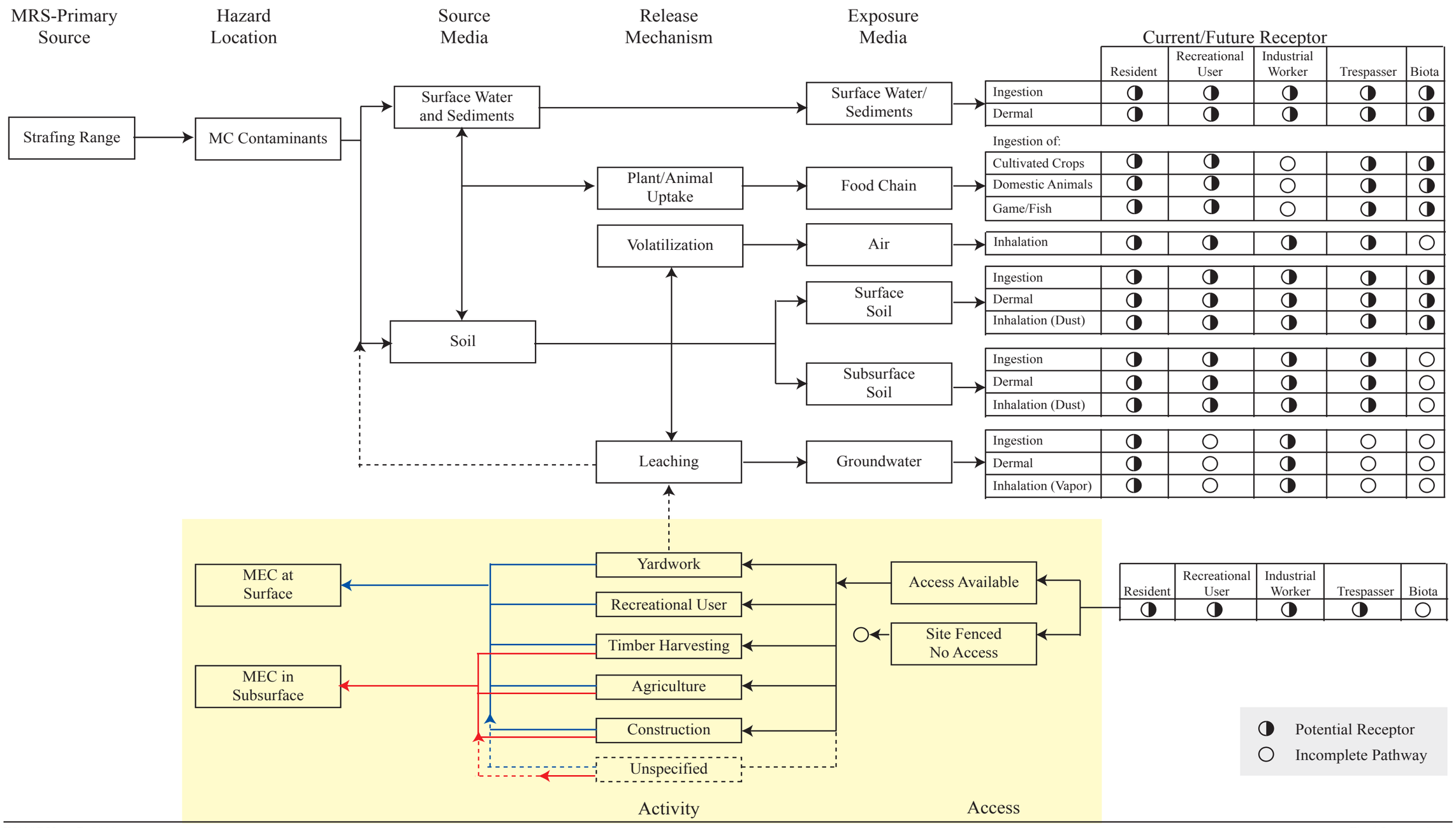
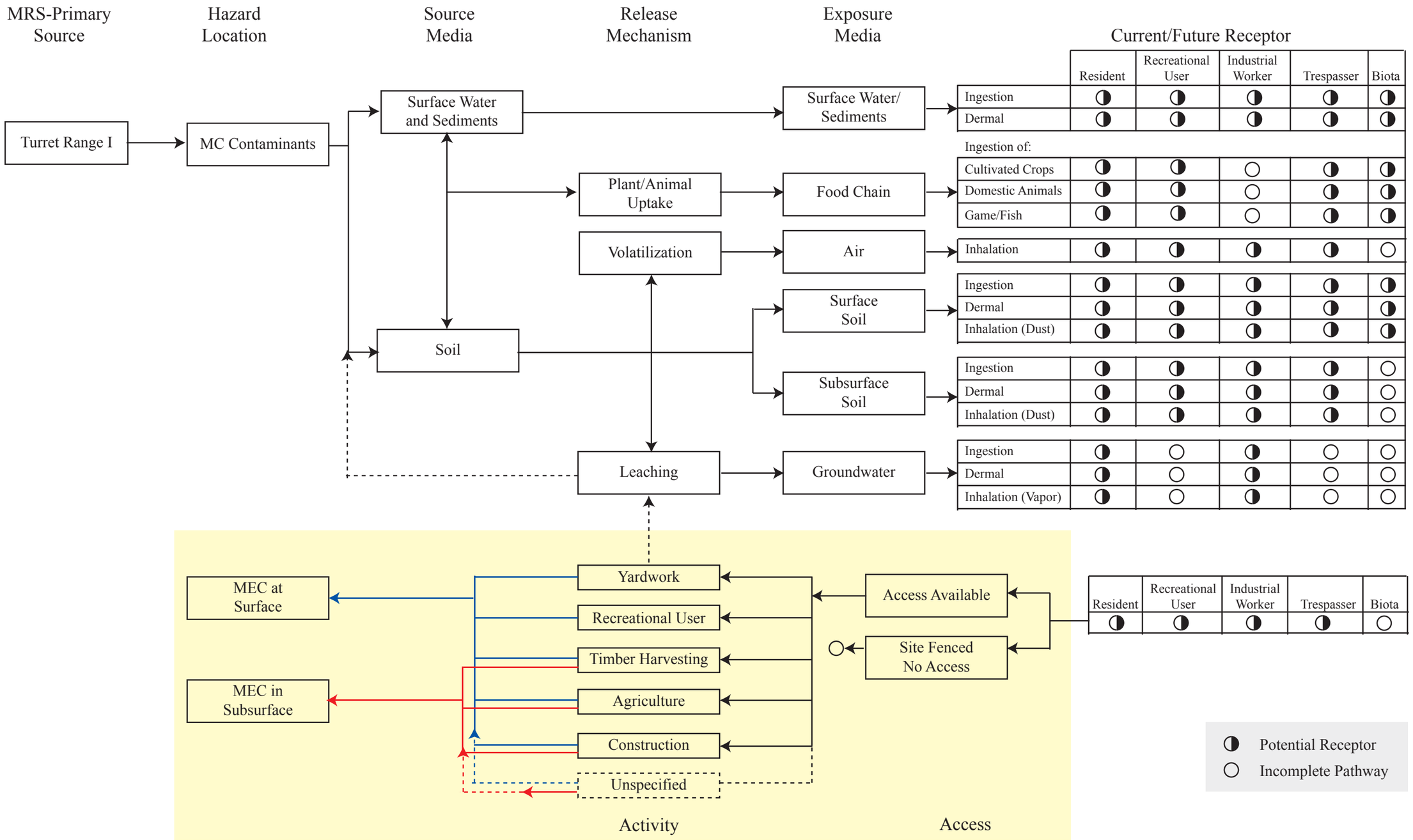
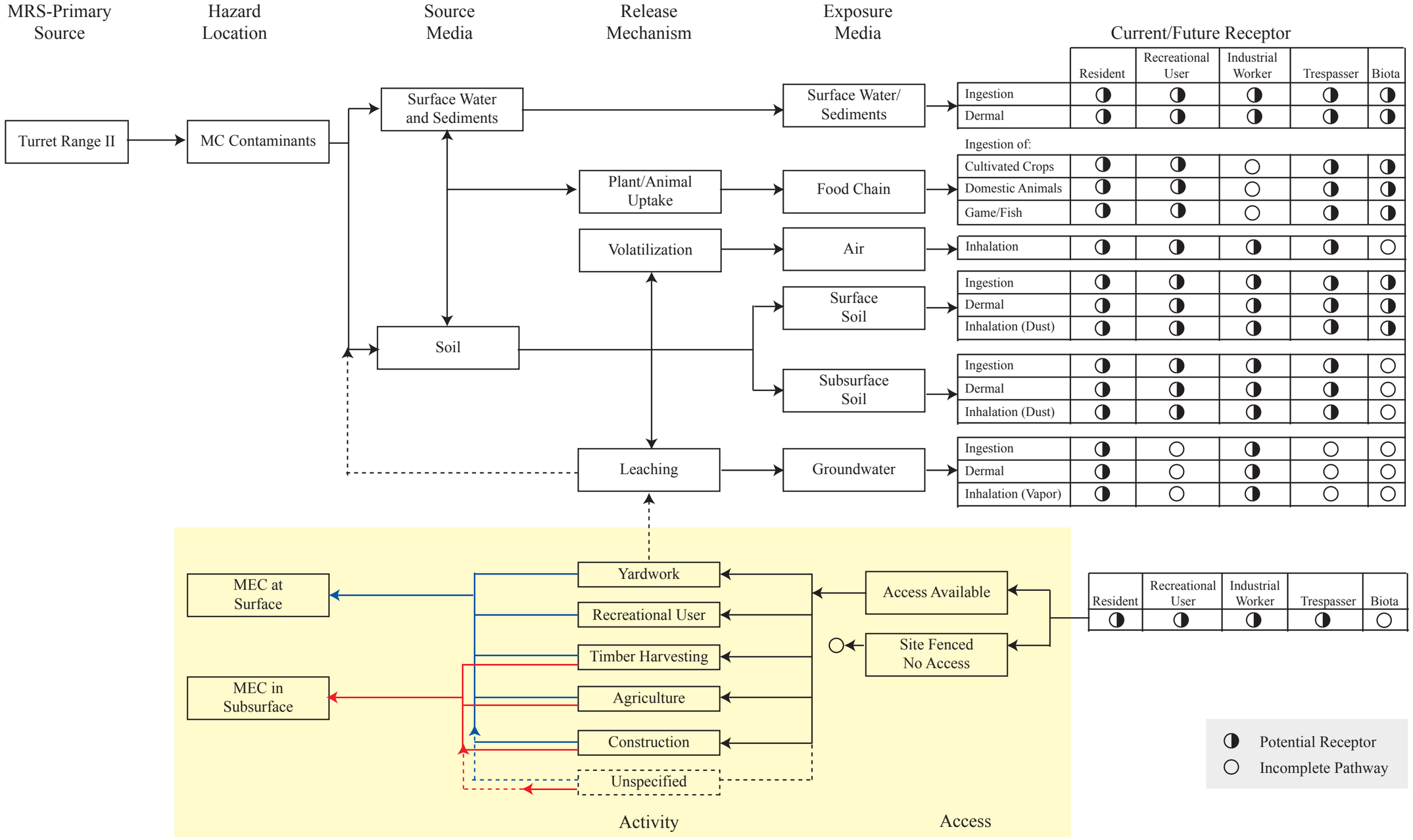
STRAFING RANGE CONCEPTUAL SITE EXPOSURE MODEL



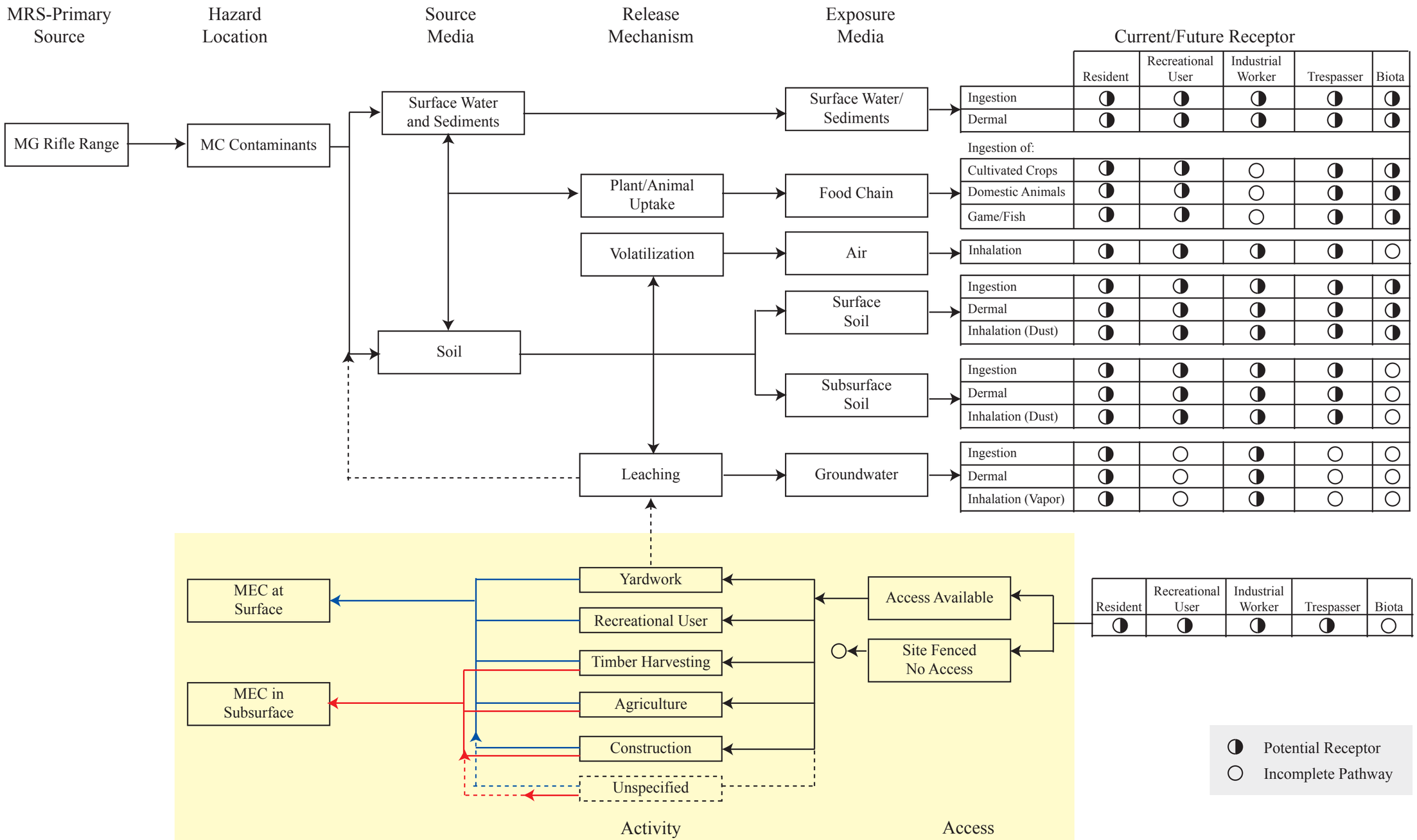
TURRET RANGE I CONCEPTUAL SITE EXPOSURE MODEL



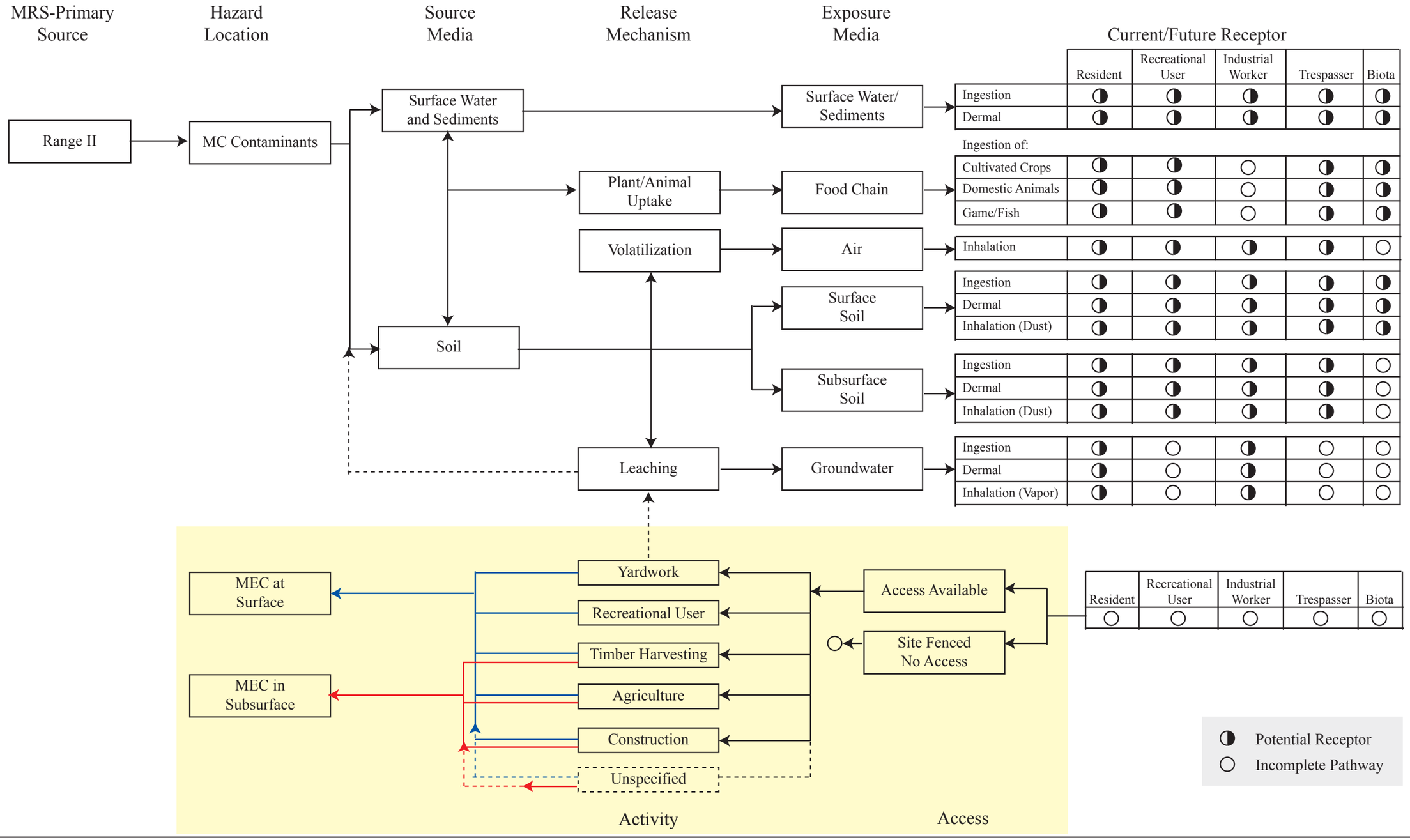
TURRET RANGE II CONCEPTUAL SITE EXPOSURE MODEL



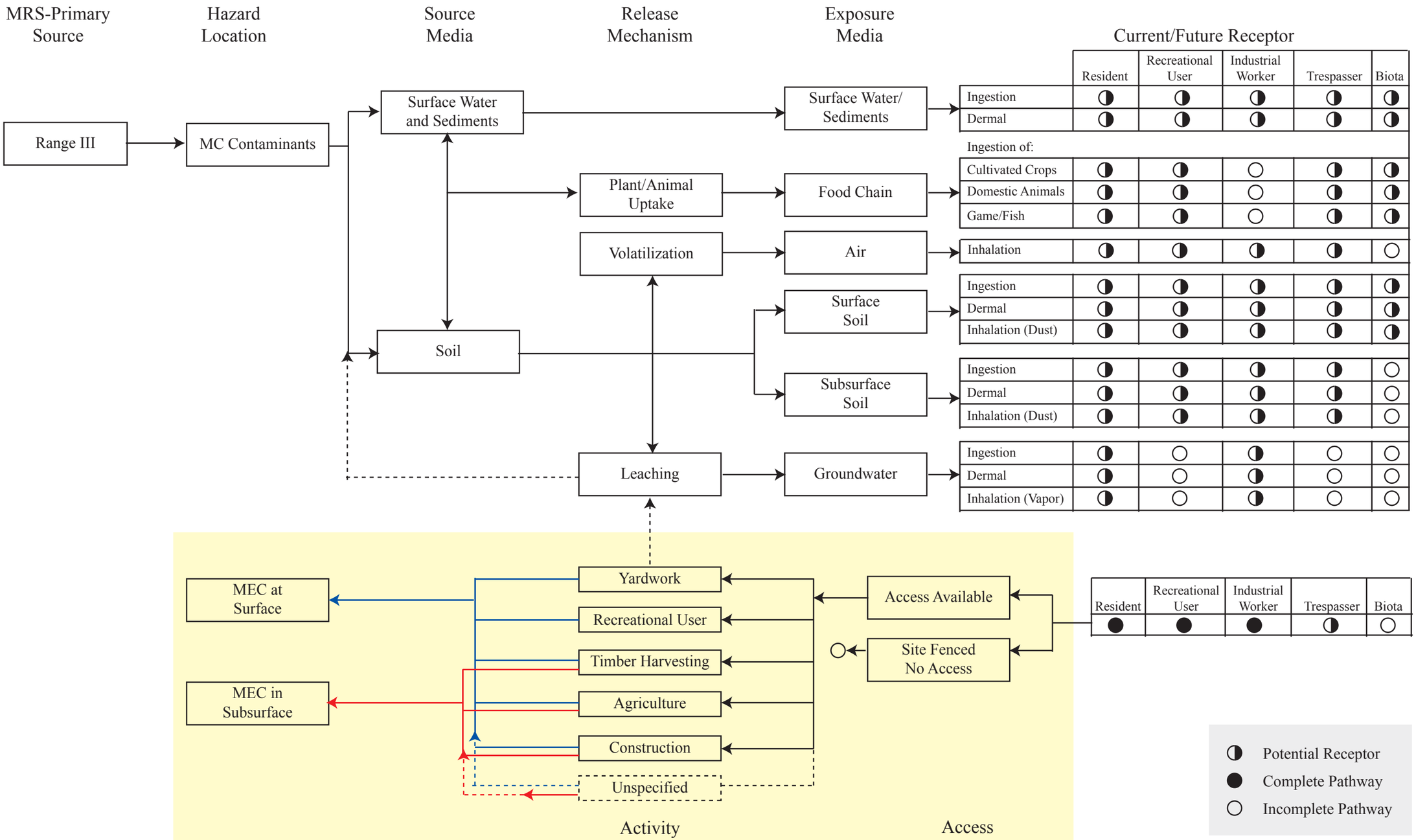
MG RIFLE RANGE CONCEPTUAL SITE EXPOSURE MODEL



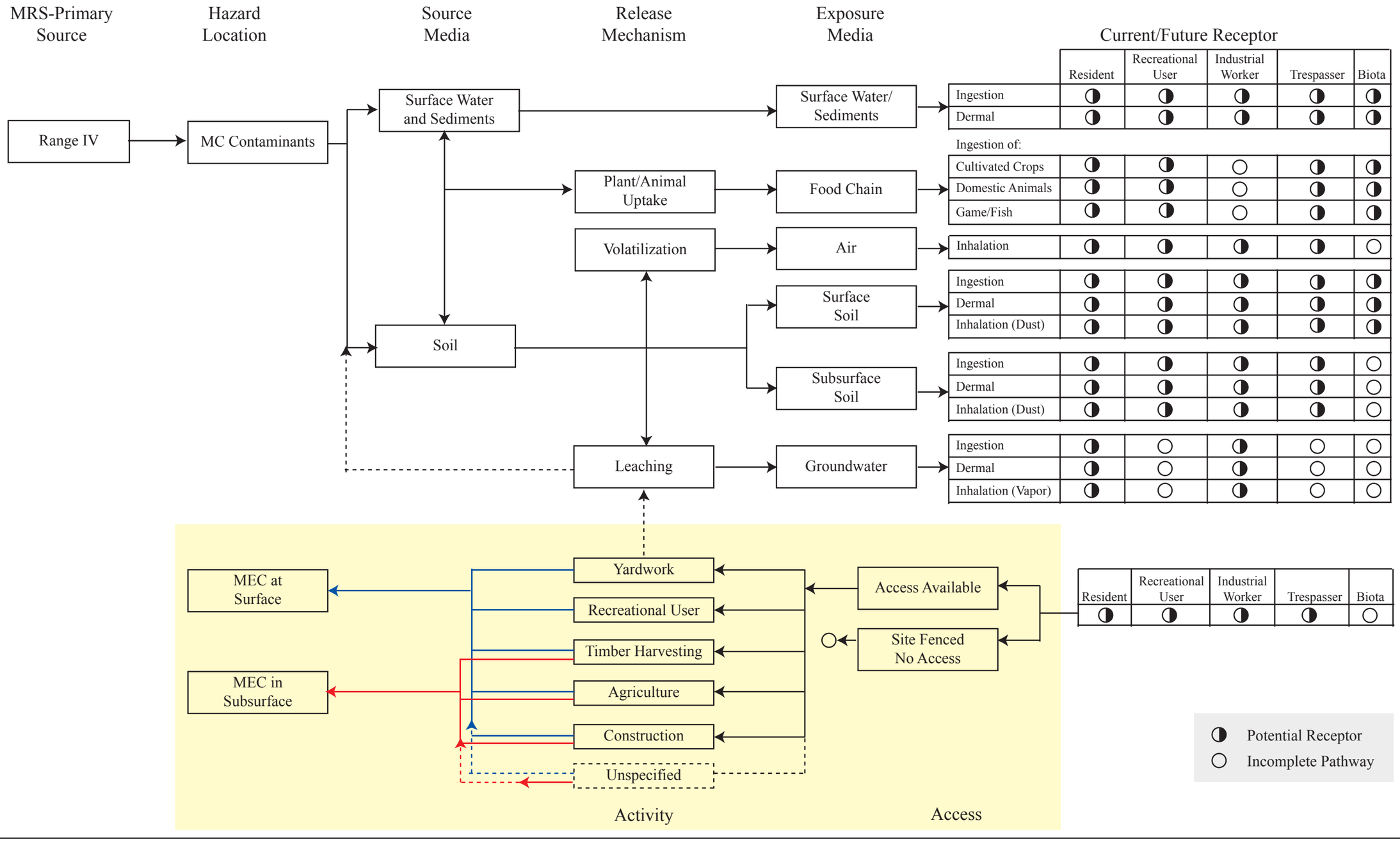
RANGE II CONCEPTUAL SITE EXPOSURE MODEL



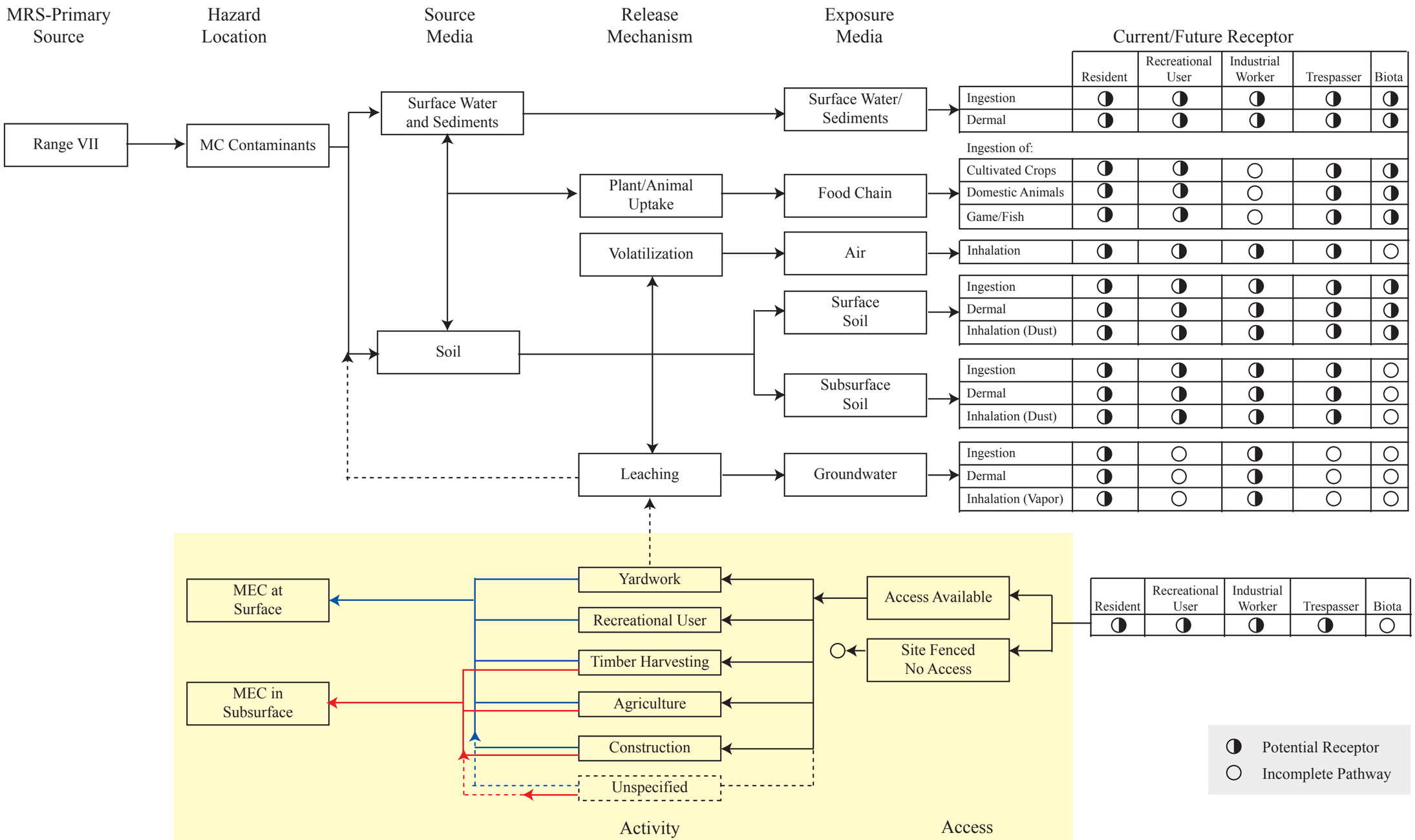
RANGE III CONCEPTUAL SITE EXPOSURE MODEL



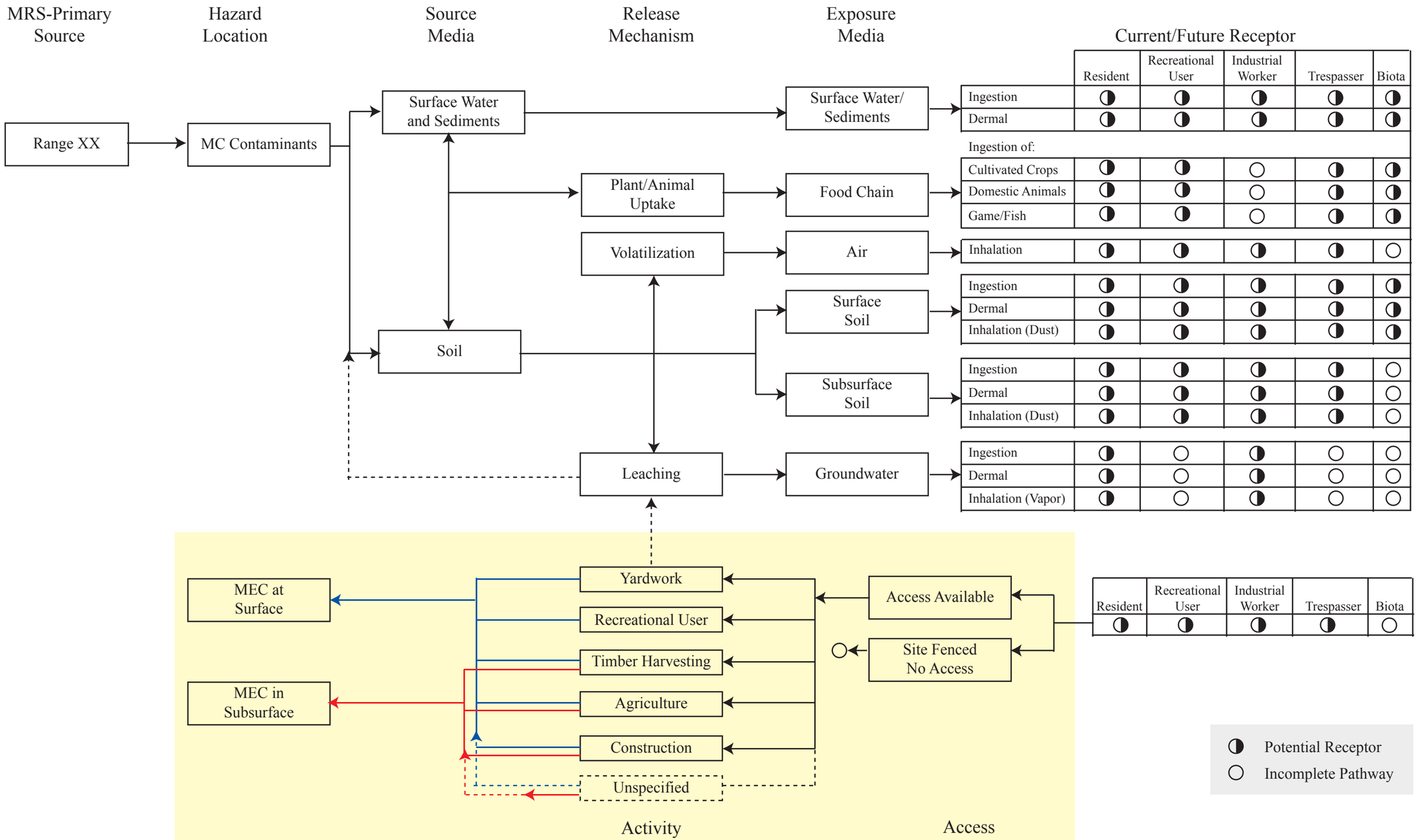
RANGE IV CONCEPTUAL SITE EXPOSURE MODEL



RANGE VII CONCEPTUAL SITE EXPOSURE MODEL



RANGE XX CONCEPTUAL SITE EXPOSURE MODEL



SECTION 8
MEMORANDUM FOR RECORD

The Phase I Memorandum for Record Worksheet (EM 200-1-2) follows this page.

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Technical Project Planning

Phase I Memorandum for Record

Author: Jack Koelsch, EODT
Last Revision Date: December 1, 2008

Reviewer:
Review Date:

Location: Conway, South Carolina
Sites: Conway Bombing and Gunnery Range
Project: Remedial Investigation/Feasibility Study (RI/FS)

TPP Team	**EM 200-1-2, Paragraph 1.1.1**	
Decision Maker	USACE	
Customer:	USACE, Charleston District	
Project Manager:	Shawn Boone	
Regulator:	SCDHEC, Chuck Williams	
Stakeholders:	USACE, Regulators, Property Owners Recreation Users, Hunters	
Data Types	**Data User**	**Data Gatherer**
Compliance / Regulatory	CEHNC, CESAC, Regulators	EODT
Status of previous MEC Removals	CEHNC, CESAC, Regulators	EODT
Demographics / Current and Future Land Use	CEHNC, CESAC	EODT
Site Conditions	CEHNC, CESAC	EODT
MEC Nature and Extent	CEHNC, CESAC	EODT
MC Nature and Extent	CEHNC, CESAC	EODT

Summary of MFR

The former Conway BGR, consisting of 55,854 acres, is located in Horry County, South Carolina, in the vicinity of Myrtle Beach. The former Conway BGR contained Ranges II, III, IV, VII, XX, a moving target range, two turret ranges, a machine gun range, and a rifle range when the site was part of the Myrtle Beach General BGR. These ranges were used for a variety of bombing and air-to-ground gunnery purposes throughout WWII. Most of the former Conway BGR is now owned by private entities and is used mainly for timber harvesting, agricultural, residential, and recreational (*e.g.*, golf courses) purposes.

A Remedial Investigation/Feasibility Study (RI/FS) is being conducted at the Conway Bombing and Gunnery Range as a part of the Defense Environmental Restoration Program (DERP) for Formerly Used Defense Sites (FUDS). The purpose of the RI/FS is to determine the nature and extent of OE contamination associated with previous DOD use of the site and to develop alternatives to reduce risks associated with the range.

The purpose of the TPP is to identify and define the current project (e.g. the RI/FS), to document the TPP Team's goals and objectives relating to the project property, and to identify project data needs and appropriate methods for gathering data to support the TPP Team's goals and objectives. On January 24, 2008 and March 20, 2008, September 24, 2008 Technical Project Planning (TPP) meetings were held in Conway, SC. The purpose of these meetings was to introduce the project to the stakeholders and TPP Team (e.g. civic leaders, landowners, site workers, area business people, and user groups), gather information to help define the project, and establish project goals and objectives. It was agreed in the 3rd TPP meeting to develop a separate decision document for each range because each range could have a different decision.

This memorandum documents the results of the Conway Phase I TPP meetings.

CUSTOMER'S GOALS		**EM 200-1-1, Paragraph 1.1.2**
Land Use(s) (P-Present, F-Future)	**Issues and Regulatory Compliance Status**	**Site Specific Closeout Goal (if applicable)**
Hunting (P,F)	MEC/MC Exposure to hunters. Awareness/Notification to transients.	Risks are Reduced to a manageable level. Hunters are aware of the risks of MEC.
Timber (Logging) (P,F)	UXO/OE Exposure to workers. Logging routinely requires roads be cut. Some crews have been non-English Speaking.	Risks are Reduced to a manageable level. Workers are aware of the risks of OE.
Residential (P,F)	UXO/OE Exposure to residents. Housing construction is currently being actively performed in the impact area. Construction includes installation of water lines, septic tanks.	Risks are Reduced to a manageable level. Residents and construction workers are aware of the risks of OE.
Hiking (F)	UXO/OE Exposure.	Risks are Reduced to a manageable level. Enthusiasts are aware of the risks of OE.
Agriculture (P,F)	UXO/OE Exposure. Farmers construct stock-ponds.	Risks are reduced to a manageable level. Farmers are aware of the risks of OE.

CUSTOMER'S GOALS (continued) **EM 200-1-1, Paragraph 1.1.2**
Site Closeout Statement
After completion of the requirements identified in the Decision Document, removal of all potential risk to human health and the environment to extent practical will be obtained. Chemical contaminants in soil and water will be reduced to acceptable levels.
Customer's Schedule Requirements
To be documented in Work Plan:
Customer's Site Budget
Current Phase – RI/FS $475,105.00

IDENTIFY SITE APPROACH		
EXISTING SITE INFORMATION & DATA		**EM 200-1-2, Paragraph 1.1.3 and 1.2.1**
Attachment(s) to Phase I MFR	**Located At Repository**	**Preliminary Conceptual Site Model**
Archive Search Report (ASR)	Yes	Yes
2002 Time Critical Removal Action	Yes	Yes
2003 Engineering Evaluation/Cost Analysis	Yes	Yes
2006, MC Evaluation on Range III	Yes	Yes
POTENTIAL POINTS OF COMPLIANCE		**EM 200-1-2, Paragraph 1.2.1.3**
Targeting and Controlling Risks of Targets (Receptors) (SCDHEC) Risks to Human Health and Ecological Receptors – MCs in soil and water (SCDHEC) Building and construction permits in MEC-impacted areas (Horry County) Hunters/Endangered Species/Wetlands/Archeology		
MEDIA OF POTENTIAL CONCERN		**EM 200-1-2, Paragraph 1.2.1.4**
Surface, Subsurface Soils, Surface water and Groundwater		
SITE OBJECTIVES		**EM 200-1-2, Paragraph 1.2.2**
Remove all potential risk to human health and environmental to extent practical		
Chemical contaminants in soil and water reduced to acceptable levels per risk		
Site Closeout		
REGULATOR AND STAKEHOLDER PERSPECTIVES		**EM 200-1-1, Paragraph 1.2.3**
Regulators	**Community Interests**	**Others**
Reduce and Control Risks to targets (receptors)	Land is safe for intended use	
Investigation should focus on land use, as driving force for risk	Public awareness material (and all other information distribution) should be such that everyone can understand it.	
South Carolina uses federal CERCLA guidance		
All groundwater in South Carolina is considered as potentially usable for human consumption.		
	Previous MEC Clearances have been performed at this site – is further investigation appropriate?	
PROBABLE REMEDIES		**EM 200-1-2, Paragraph 1.2.4**
Detonation of suspect UXO as found during the investigation		
Recommendation of TCRA as appropriate		
Determine Remedial Action and/or Remediation on a case-by-case basis		

EXECUTABLE STAGES TO SITE CLOSEOUT EM 200-1-2, Paragraph 1.2.5
Memorandum for Record
Develop RI Work Plan
Perform RI Field Activities per approved Work Plan
Create RI Report at the completion of RI Field Work
Develop Feasibility Study
Create the Proposed Plan
Submit Proposed Plan for Public Comment (30 days)
Create the Decision Document for each Range for Approval
IDENTIFY CURRENT PROJECT
SITE CONTRAINTS AND DEPENDENCIES EM 200-1-2, Paragraph 1.3.1
Administrative Constraints and Dependencies
FUDS Funding Limitations
Rights of Entry
Heavy Vegetation
Schedule
Technical Constraints and Dependencies
SCDHEC Approval of RI Work Plan
SCDHEC Approval of RI Report
Wetlands/Heavy Vegetation/Endanger Species/Topography/Archeology
Significant development in this area – many landowners will complicate the ROE process.
Legal and Regulatory Milestones and Requirements
Consistent with CERCLA and NCP
Public, stakeholder, and regulatory review of key documents
CURRENT EXECUTABLE STAGE EM 200-1-2, Paragraph 1.3.3
RI/FS

Basic (For Current Projects)	**Optimum** (For Future Projects)	**Excessive** (Objectives that do not lead to site closeout)
• Determine nature and extent of contamination, both MEC and MC • Obtain good Site Background Constituent Data • Determine the Clean-Up levels for munitions constituents • Use existing MEC clean-up data to guide the investigation • Use “Common Sense Approach” while doing the investigation	None at this time	None at this time

• Create the Decision Document		

ACRONYMS AND ABBREVIATIONS

ASR	Archives Search Report
BGR	Bombing and Gunnery Range
CEHNC	U.S. Army Engineering and Support Center, Huntsville
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESAC	U.S. Army Corps of Engineers, Charleston District
DERP	Defense Environmental Restoration Program
DoD	Department of Defense
EODT	EOD Technology, Inc.
EE/CA	Engineering Evaluation and Cost Analysis
FS	Feasibility Study
F	Future
FUDS	Formerly Used Defense Site
MC	Munitions Constituent
MEC	Munitions and explosives of Concern
MFR	Memorandum for Record
NCP	National Contingency Plan
P	Present
RI	Remedial Investigation
SCDHEC	South Carolina Department of Health and Environmental Control
TCRA	Time Critical Removal Action
TPP	Technical Project Planning
USACE	U.S. Army Corps of Engineers
UXO	Unexploded Ordnance
WWII	World War II

SECTION 9
CONCEPTUAL SITE MODEL

This information is provided on the following pages.

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Conceptual Site Model Summary
Per Technical Project Planning Meeting 24 September 2008

Facility Profile*				Release Profile			Land Use and Exposure Profile**
MRS Site IDs	Acres	Site Type	Past DoD Activities	MEC Related Items Found Since Closure	Munitions Constituents	Previous Investigation	Post-DoD Land Use and Current Land Use
Range II	649	Mutliple/Combined Bombing Area	Practice Bombing, Skip Bombing, High and Medium Altitude Bombing, Parafrag Bombing, Rocket Firing	See Attached Table 1	None Collected	EE/CA was performed for a portion of the range	Converted to private use. A portion of area has been developed as a golf course. Developed as residental housing
Range III	649	Mutliple/Combined Bombing Area	Practice Bombing, Rocket Firing, Medium Altitude Practice Bombing, Demolition Bombing, Dive Bombing, Strafing, Incendiary Bombing, High and Medium Altitude Bombing, Skip Bombing	See Attached Table 1	15 surface soils collected, no explosives detected, 6 surface water samples collected, no explosives detected, no background sample collected, potential contaminants of concern not discernable	TCRA, EE/CA and limited MC investigation was performed on a portion of the area. Also, private clean up was performed over many parcels of the range.	Converted to private use. A portion of area has been developed as a golf course. Developed as residental housing
Range IV	649	Bombing Range	Practice Bombing, Medium Altitude Practice Bombing	See Attached Table 1	None Collected	EE/CA was performed for a portion of the range	Converted to private use. A portion of area has been developed as a golf course. Developed as residental housing
Range VII	649	Bombing Range	Skip Bombing	See Attached Table 1	None Collected	EE/CA was performed for a portion of the range	Converted to private use. Used as residental and timber farming.
Range XX	649	Mutliple/Combined Bombing Area	Skip Bombing, Rocket Firing, Strafing, Position Firing Course, Air to Ground Gunnery	No Investigations and No MEC Reported	None Collected	Nothing performed to date	Converted to private use. Used as residental and timber farming.
Strafing Range	720	Small Arms	Small arms range - limited to .30 rifle and .50 caliber machine gun	No Investigations and No MEC Reported	None Collected	Nothing performed to date	SC Wildlife and Marine Resources
Turret Range 1	640	Turret Small Arms	Small arms range - limited to .30 rifle and .50 caliber machine gun	No Investigations and No MEC Reported	None Collected	Nothing performed to date	Converted to private use. Used as residental and timber farming.
Turret Range 2	640	Turret Small Arms	Small arms range - limited to .30 rifle and .50 caliber machine gun	No Investigations and No MEC Reported	None Collected	Nothing performed to date	Converted to private use. Used as residental and timber farming.
MG/Rifle Range	2500	MG/Rifle and Small Arms	Small arms range – Machine gun and rifle - limited to .30 rifle and .50 caliber machine gun, Range overlaps in northern portion of Range III (bombing	See Attached Table 1	None Collected	Area was not investigated as part of EE/CA, but part of range overlaps with Range III, so some incidental work has been done for both EE/CA and private Remediation.	Converted to private use. A portion of area has been developed as a golf course. Developed as residental housing

*Physical Profile (applies to all sites): Topography - minimal relief Geology - Coastal plains depositional environment, primarily sandy soil, Hydrogeology - depth to groundwater shallow.

**Ecological Profile (applies to all sites): Habitat Type - Wetlands, forest, disturbed areas, Receptors - to be determined

Conceptual Site Model Summary Table 1

Area	Item	Area	Item
Range III	100 lb Inc	Range III	5"HVAR ROCKET MOTOR
Range III	100 lb Inc, Scrap	Range III	5"HVAR WARHEAD
Range III	100 LBS PRACTICE BOMB	Range III	6LB INCENDIARY
Range III	100 LBS SANDFILLED BOMB	Range III	BOMB FRAG
Range III	100LB SANDFILLED PRACTICE BOMB	Range III	BOMB RACK
Range III	2.25 ROCKET	Range III	FRAG 250LB BOMB
Range III	2.25 Rocket Prac	Range III	FRAG SCRAP
Range III	2.25 Rocket Prac, 100 lb Inc	Range III	HVAR
Range III	2.75-inch rocket	Range III	M38A1 100 LB SAND BOMB
Range III	20 lb Fragment Bomb	Range III	M38A1 100LB PRACTICE BOMB
Range III	37MM PROJECTILE	Range III	M38A1 100LB PRACTICE BOMB; 2.25 SCAR
Range III	4 lb Inc	Range III	M38A1 SANDFILLED PRACTICE BOMB
Range III	4 lb Inc, 100 lb Inc	Range III	M48 20LB
Range III	4 lb Inc, 100 lb Inc, 20 lb Fragment Bomb, 3lb Practice Bomb, Scrap	Range III	M54 4LB INCENDIARY
Range III	4 lb Inc, 100 lb Inc, Scrap	Range III	OE SCRAP
Range III	4 lb Inc, 2.25 Rocket Prac	Range III	PRACTICE BOMB
Range III	4 lb Inc, Scrap	Range III	SCAR
Range III	4LB FIRE BOMB	Range III	SMALL ARMS
Range III	4LB FIRE BOMB RESIDUE	Range III	SMALL ARMS; 100LB PRACTICE
Range III	4LB FIREBOMB	Range III	STRONG BACK
Range III	5" HVAR	Range II	Scrap
Range III	5-inch ZUNI Rocket Warhead	Range II	Small Arms, 100 lb Prac
Range III	FIRE BOMB RESIDUE	Range II	Small Arms
Range III	FRAG	Range VII and Range IV	100 lb Practice Bomb
Range III	One half of 100-pound, sand-filled practice b	Range VII and Range IV	20 lb Frag Bomb
Range III	Scrap	Range VII and Range IV	4 lb Inc
Range III	SMALL ARMS	Range VII and Range IV	4 lb Inc,100 lb Practice Bomb
Range III	Small Arms, 100 lb Inc, Scrap	Range VII and Range IV	Scrap
Range III	Small Arms, 4 lb Inc, 2.25 Rocket Prac	MG/Rifle Range	100 LBS SANDFILLED BOMB
Range III	SMOKE GRENADE	MG/Rifle Range	100LB PRACTICE BOMB
Range III	STRONG BACK	MG/Rifle Range	2.25 ROCKET
Range III	UXO SCRAP	MG/Rifle Range	2.25 Rocket Prac
Range III	100 LBS SANDFILLED BOMB	MG/Rifle Range	2.25 Rocket Prac, 100 lb Inc
Range III	100LB INCENDIARY	MG/Rifle Range	2.25 SCAR
Range III	100LB PRACTICE BOMB	MG/Rifle Range	37MM PROJECTILE
Range III	100LB PRACTICE BOMB; 2.25 SCAR 2 EACH	MG/Rifle Range	4LB FIRE BOMB
Range III	10LB SCRAP 5" HVAR	MG/Rifle Range	4LB INCENDIARY
Range III	2.25 SCAR	MG/Rifle Range	5" HVAR
Range III	20LB PRACTICE BOMB	MG/Rifle Range	FIRE BOMB RESIDUE
Range III	20LB SCRAP 5" HVAR	MG/Rifle Range	FRAG
Range III	250LB BOMB	MG/Rifle Range	M38A1 100LB PRACTICE BOMB
Range III	25LB SCRAP 5" HVAR	MG/Rifle Range	M38A1 100LB PRACTICE BOMB; 2.25 SCAR
Range III	37MM PROJECTILE	MG/Rifle Range	M54 4LB INCENDIARY
Range III	37MM PROJECTILE HE	MG/Rifle Range	SCAR
Range III	4LB INCENDIARY	MG/Rifle Range	Scrap
Range III	4LB INCENDIARY ; 2.25 SCAR SCRAP	MG/Rifle Range	SMALL ARMS
Range III	4LB INCENDIARY/100 LB PRACTICE BOMB	MG/Rifle Range	Small Arms, 4 lb Inc, 2.25 Rocket Prac
Range III	5" HVAR	MG/Rifle Range	SMOKE GRENADE
Range III	5" HVAR WARHEAD	MG/Rifle Range	STRONG BACK

SECTION 10
DATA QUALITY OBJECTIVES WORKSHEETS

The Data Quality Objectives Worksheets are provided on the following pages.

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APPENDIX D

DATA QUALITY OBJECTIVE WORKSHEET FOR MEC

Page 1 of 1

SITE: Former Conway Bombing and Gunnery Range

PROJECT: Conway Bombing and Gunnery Range

Worksheet For: MEC

Intended Data Use: MEC	To determine action needed to remove all potential risk to human health and the environment to the extent practical

Data Need Requirements	Determine nature and extend of MEC Contamination, determine extent of Contamination (Range III, IV, VII, and XX by using Schonstedt and digging. Turret Range I, II, Starfing Range and MG/Rifle Range will be Whites and counting anomalies

How will this data be collected	Qualitative reconnaissance of all areas selected for MEC Investigation. Except Range II where a Table Top RI Report will be developed.

Was DQO attained	TBD

APPENDIX D

DATA QUALITY OBJECTIVE WORKSHEET FOR MC

Page 2 of 2

SITE: Former Conway Bombing and Gunnery Range

PROJECT: Conway Bombing and Gunnery Range

Worksheet For: MC

Intended Data Use: MC	To determine actions needed to reduce contaminants in soil, sub-soil, sediment and groundwater to acceptable levels.

Data Need Requirements	Perform screening of target centers and other biased areas and compare those levels to site background. If the potential for MC exists, then the nature and extent of that contamination will be determined, based on risk-based values.

How will this data be collected	Conduct surface and subsurface samples for MC. If warranted, surface water, sediment and groundwater samples may be taken, Samples will be taken both in target areas and background areas.

Was DQO attained	TBD

SECTION 11
PROJECT OBJECTIVES WORKSHEETS

The Project Objectives Worksheet is provided on the following page.

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APPENDIX C

PROJECT OBJECTIVES WORKSHEET

Site: Conway Bombing and Gunnery Range (all sites)

Project: Conway Bombing and Gunnery Range

Site Objective				Data Collection Method	Project Objective Classification
Number	Executable Stage		Description		
	Current	Future			
1	Yes		Establish Site background for Munitions Constituents	Soil and Water Samples	Basic
2	Yes		Determine Nature and Extent of Contamination - MC	Soil and Water Samples	Basic
3	Yes		Determine Nature and Extent of Contamination - MEC	Schonstedt and dig - Ranges III, IV, VII and XX; Anomaly Investigation - MG/Rifle, Turret Range I & II, and Strafing Range: Qualitative Sampling - All Ranges	Basic
4	Yes		Determine the Density of MEC Contamination	Geophysics, GPS, Data from previous MEC Removals	Basic
5	Yes		Determine the Clean-Up levels for Munitions Constituents	SC DHEC	Basic
6	Yes		Create a Decision Document for each Range	Soil and Water Samples	Basic
7	Yes		Determine Current and Future Land Use	Horry County, other demographic sources	Basic

SECTION 12
MINUTES TO TPP MEETINGS

The TPP meetings minutes are provided on the following pages.

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Technical Project Planning
Meeting
January 24, 2008
Action Items

- Data is needed to determine clearance activities previously performed DONE
- Must establish contact with DHEC, County commissioners, bomb squad to obtain information on previous activities DONE
- Identify areas where private MEC Removals have taken place. DONE
- Map/plan must be developed to indicate the priority of areas to be cleared
- Must determine who will be entering the property and who owns the property
- Must obtain information to establish landowners who have granted right-of-entry and identify those who have not granted access DONE
- Determine and communicate the risks involved with the clean up, both inside and outside of the safety and impact zones
- Identify the contaminants present on the site and their location
- Determine the impact contaminates will have on the ecology, groundwater, animals.

1. To identify landowners present at PRP (Scheduled for 13 February) meeting and from research of county records **(collective effort)** DONE
2. To produce a map showing locations where private cleanups of the former Conway BGR have taken place **(EODT)** DONE
   a. Data sources include: Horry County Records, DHEC Records, and USACE-Charleston Records
3. Produce contact list for future TPP meetings **(EODT and USACE)** DONE
4. Develop Public Involvement Plan **(USACE)**

Former Conway Bombing and Gunnery Range (BGR)
Remedial Investigation/Feasibility Report
Technical Project Planning (TPP) Meeting
March 20, 2008

1. Meeting Details
   1.1. Purpose of Meeting: To discuss the TPP process associated with the RI/FS that is currently being performed at the Conway BGR
   1.2. Location: Holiday Inn at Myrtle Beach (20 Mar 08)

2. Attendees: EOD Technology, Inc., USACE (Both Charleston District and the Huntsville Center), Landowners and Stakeholders. (see Attachment A for an attendance roster)

3. TPP Meeting Discussion Items:
   3.1. Meeting was opened by Mr. Shawn Boone from the USACE Charleston District who asked for an introduction of all personnel at the meeting.
   3.2. After introduction, meeting was turned over to Mr. Buddy Murray of EOD Technologies, Inc.
   3.3. Mr. Murray's opening statements included the TPP meeting goals, a brief site history of Conway BGR, the History of the FUDS program and an overview of the US Army Corps of Engineers TPP process. A copy of the presentation overheads is included in Attachment B.
   3.4. After the presentation, Mr. Murray opened the meeting for discussion. The stakeholders generated a number of potential concerns and needs associated with the clean-up efforts of the site. The following items were identified and answered:
      - Which agency will issue the procedures for the investigation?

      Answer: RI/FS Procedures are set up in ER 200-1-3. The USACE contractor (EODT) will develop a work plan and submit it to the PM. After USACE reviews the draft comments will be sent to the contractor. After all comments are resolved, the draft final plan will be sent for regulators and selected stakeholders to review. Those comments will be resolved and incorporated into the document. The final document will be approved by the contracting officer and the contractor will be ready to implement the plan.

- What is the timeline for getting this process completed?

Answer: After the Work Plan is approved, the field activity could take as long as six (6) months, then the Feasibility Study followed by Proposed Plan and Decision Document for each Range will be developed. The whole process could take as long as 1 to 2 years.

- Are prior owners considered stakeholders?

Answer: Yes, owners are considered stakeholders. Really anyone who wants to show up at a meeting and participate in the process is a stakeholder. This is not the USACE's call, it is "The Public".

- Why were munitions constituents not mentioned to the landowners?

Answer: There is no known requirement to disclose information regarding contamination on property. Government disclosed the presence of potential munitions when the property was conveyed from the Government. It is part of the Public Records.

- Why were samples not taken during previous inspections?

Answer: The EE/CA is a process to address the immediate hazard which is the MEC. Samples were taken during the TCRA and Munitions Constituents Sampling and no explosive constituents were found at the site. That is why it was not mentioned.

- Does the Government accept the responsibility for this clean-up?

Answer: Under the Defense Environmental Restoration Program, found at 10 U.S. C. 2701 et seq, Congress mandated that DoD investigate the potential for contamination at former defense sites. If DoD related contamination is found, and if that contamination poses a risk, then working under the CERCLA process, a site specific remedy will be proposed. The remedy will be published for public comment. A final Remedy will consider all comments received from the public and the regulatory community. This is the Government's responsibility under the law.

- Are the landowners having to take the burden of this investigation

Answer: If the landowners wants the land cleaned up at the Government's expense, they would have to give the Government the Right of Entry. However, if the land owner does not give the Government the Right of Entry, then the land owner will assume all the liability (risk) which would cause them to take on the full burden.

- How many years do the landowners have to wait for this investigation to be completed?

Answer: The process for addressing environmental contamination has to be performed in phases. After the study is completed, a remedy is proposed. Once a remedy is chosen, a decision is made. Congress allots certain funding to this program each year. Sites are prioritized based on risk. We do not know at this time how many years it may take to complete this action. The investigation that is currently funded is expected to take 6-12 months to complete. The investigation phase is expected to start in early 2009.

- Does the USACE make the determination if the land is clean

Answer: Because technology does not allow us to say 100% that there are no munitions items left behind, there is no determination that land is "clean". The USACE will be able to say that based on the technology and what was found, that there is either an extremely low probability of munitions items remaining on the property if a remedy has been implemented. This determination requires the concurrence of the SCDHEC.

- Are the owners going to pay for the RI/FS or is the government going to pay for the RI/FS

Answer: Congress funds the Government to perform the RI/FS. It is paid for with Taxpayer dollars.

- There are children playing on the property, do they have to shut down their services so the children are no longer at risk

Answer: At this time, there does not appear to be surface risk to children playing. If during the investigation we identify an area of potential risk, we would take immediate action to notify the public and minimize the risk. If anyone is aware of a potential munitions problem that is visible on the site, they should contact the sheriff and the USACE immediately.

- When will we know the risk and who will determine the risk

Answer: Once the RI/FS is complete, a report will be published and available to the public to read and provide comments. The report will discuss what was found, where it was located., and determine the risk associated with this site. The proposed remedy will also factor in risk. The public will be involved in this process.

4. Project Goals and Project Objectives:

4.1. Project Goals:

4.1.1. For Conway BGR to be successful what are some of the things that need to occur:

- MEC and MD to be removed to the greatest extent practical
- To minimize the risk of contamination in soil, water, sediment, and groundwater to the greatest extent practical

4.2 Project Objectives

- Get good Site Background Constituent Data
- Determine what the Clean-up levels for Munitions Constituents are
- Use the "Common Sense Approach" while doing the investigation
- Use the existing MEC clean-up data to guide the investigation
- Use the density of impact for MEC determination
- Develop Decision Documents for each range included in this project

5. Points of Interest:

5.1. Will chemical goals be based on residential or industrial clean-up levels?

- It was determined that the majority of the Conway BGR would be residential therefore the range should be clean-up to residential standards.

5.2. How do we define the success with respect to the MEC?

- Is there any work done within the wetlands. MEC on the surface of the wetlands should be removed since receptors can be exposed to the risk.

5.3. Investigate what Background Data exist from the previous EPA studies with in the area.

5.4. Per DHEC all water in South Carolina is considered a resource and therefore groundwater will be investigated.

5.5. SCDHEC will review prior clean-up data by private individuals/companies and make a determination if it needs addition investigation

5.6. At conclusion of meeting, stakeholders requested that the Work Plan be developed and submitted to the regulators for their review.

Meeting Minutes
Conway Bombing and Gunnery Range
September 24, 2008

Meeting Details

Objective: To finalize the technical approach for each Range, discuss sampling requirements, obtain agreement on schedule up to field work start, and address any concerns from the TPP team in order to move on to the RI Work Plan and ultimately achieve a Decision Document. It was decided that separate Decision Documents would be required for each Range.

Location: Staybridge Suites Conference Room, Hard Rock Parkway, Conway, SC

Key Points for Discussion: Current CSM, Technical Approach for Transects and Sampling Requirements

Attendees:

Maureen Lawrence	USAESCH Project Manager
Audrey Nore	USAESCH Technical Support
William Veith	USAESCH UXO Technical Expert
Mike D'Auben	USAESCH Chemist
Shawn Boone	USACE (Charleston)
Stacey French	SCDHEC
Chuck Williams	SCDHEC
David Scaturo	SCDHEC
Jack Koelsch	EODT Project Manager
Donna Sharp	EODT Geologist
Tanya Morse	EODT GIS/Community Relation

9:35 Introductions

- Chuck Williams – He will not be working on the Conway project after this meeting. Stacey French and David Scaturo will be the contacts for the South Carolina Department of Health and the Environment.

9:45 TPP Presentation (Jack Koelsch)

- Jack Koelsch presents goal of meeting- gain a decision document and address everyone's concerns today to reach this goal. Also, to obtain all parties concurrence on a path forward schedule.

- Bill Veith – wants to make sure everyone understands MEC and MD terms.

- Stacey French – She and David Scaturo have been working on MMRP sites on active installations and are familiar with terms.

- Jack Koelsch – Presented the presentation material which is attached up to the discussion of each range, which was presented by Mr. Bill Veith.

- Bill Veith – States we should remove the word "all" from the site close-out statement

- Chuck Williams– agreed that even with a removal action, potential risks still exist.
- Audrey Nore – thinks we should reword the environmental risk to only include site related risk.

- Bill Veith – is there a state requirement for a land parcel to have a clearance letter?
- Chuck Williams – says there is no requirement, and added that he sent out a letter of liability to all property owners prior to the first meeting with the Corps. What is the current ROE status?
- Maureen Lawrence – answered that out of the 700 acres that we need ROEs, approximately 100 acres have been given.
- Tanya Morse – asks Shawn if he still wants her to create ROE map/list.
- Shawn Boone –USACE personnel will work on it, but if she has that information readily available, send it to him.

- Donna Sharp covers the CSMs as presented in the presentation package. This document will continue to be modified through the whole RI/FS process as new data becomes available.

- Jack Koelsch – Presents the TPP Phases II, III, and IV, munitions found at Conway, and their construction which leads to the constituents list.

- Bill Veith talks about nomenclature and how important it is in reporting. He believes the previous reports have overestimated the hazards. 5 in HVAR was reported as practice, however, it listed TNT fill. He says they would never be HE filled if they were practice. They were all listed as UXO, but should have been listed as munitions debris.

- Bill Veith stated - During the time when the EE/CA was investigated, the Corps was addressing the entire site. The range areas were identified based on the data available at the time. Since the time of the EE/CA, the Corps has developed standards range designs from the refernce documents for the time period of the WWII ranges. The historical data also identified the ranges used at the old Conway Bombing and Gunnery Range. The new maps indicate these new ranges and the acreage from the standard range designs.

- The Remedial Investigation will characterize these ranges and bound the MEC from those ranges. Then the acreage will be determined and inserted into the applicable data bases.

10:45 Range Discussions

Range Histories and Technical Approaches are discussed for each Range. Technical Approaches covers the locations and distances of the transects, what instrument will be used, number of grids, and number of samples (surface soil (MIS), surface water and sediment) to be collected and what they will be analyzed for. Posters depicting the information are presented for each discussion and are part of the presentation package.

Range II

Q: Stacey French – Can she get a copy of the old EE/CA boundaries (whole range) and the new ones?
Tanya Morse will send her a copy.

Q: Maureen Lawrence – Are you (the regulators) okay with doing a desktop RI//FS at Range II?
David Scaturo and Chuck Williams said yes.
Stacey French – When was the golf course built and were there any reports of finding MEC?
Bill Veith – He doesn't know, but Bill Veith knows it was there in 1993.
Jack Koelsch – Stated that the MC samples would be collected in an area where MD was previously discovered and where the area has not been disturbed in order to get the most biased (undiluted) sample.

Turret Range I

Jack Koelsch – Approach – If we don't find anything in the mag and dig, we will not collect the three instrument grids or the MIS, surface water and sediment sampling. Everyone is okay with that.

Turret Range II

Q: Stacey French – Do we know where the targets are? What is the rationale for the spurs transects off the center line?
Jack Koelsch - We don't know where the targets are. The rationale is if we don't find anything on the center line, we won't complete the spurs.

Q: Stacey French– Do we have any information on the dirt that has been disturbed?
Shawn Boone – No, but if there were any wetlands, the developer would have to report it.

Q: Stacey French – Can she get the parcel information?
Tanya Morse – will send SCDHEC GIS parcel information.

Strafing Range

Bill Veith - Same approach as the Turret Ranges
Vegetation discussed (heavy here at Strafing range).
Jack Koelsch- that is why it is imperative we get out to start this fieldwork in February.

Range XX

Step out strategy- we will go out 200 ft beyond last identified MEC item in an effort to verify the extent of the site boundary.
We will do the center line first then decide if the spurs are needed.

Q: Stacey French – Why is the acreage of Range XX different than the Strafing Range?
Bill Veith and Donna Sharp –Range XX is considered a multiple/combined range and the strafing range is a small arms range.

Bill Veith – Nature and extent discussion. Nature is determined from what is found in the grids, Extent is usually determined by transects.

Range VII

We plan to perform the three middle transects. If MEC is found, we will move out to perform the outside transects. Bill Veith feels that this range was used very little, if any.

Range IV

ROEs for all of the transects here will not be obtained, it looks like golf courses are being developed. The southernmost transect will be removed from the approach, due to unlikely ROE and the disturbance of soil in the construction of the golf courses.

Range III

Bill Veith - Majority of MEC is M48, 5 in HVAR practice, 4 lb incendiary bomb clusters.
Approach is going to target extent of MEC, since nature has been determined for Range III. The proposed transects are placed in areas to gain extent information and in places ROEs may be given, and where soil is undisturbed.
It was noticed among the TPP team that major amounts of earthmoving activities are occurring at Range III.
Chuck Williams – stated he has not received any information from the developers on their earthmoving activities or if they are encountering MEC/MD. His concern is where they have taken the soil. South Carolina Coastal Development Inc. is the landowner in that area discussed.

MG/Rifle Range

Overlap with Range III – we anticipate we will find more MEC/MD associated with Range III than MG/Rifle Range. We don't anticipate more than small arms in southern portion of range.

Discussion of what would happen if we need to blow in place (BIP) a 250 lb HE bomb. One was found previously. Bill Veith stated that an area 2500 feet from the center would need to be evacuated. USAESCH will work with SCDHEC if evacuation is required and the news media will be notified. A joint press release may be required especially if roads are to be closed and personnel living in adjacent homes have to be evacuated.

SC states that they will turn around the WP as soon as possible. They will not hold up the process. Concurrence from the SCDHEC is desired, however, approval will not be required to complete the RIFS process at Conway BGR.

2:15 Sampling and Screening Values Discussion

- Donna Sharp presented the list of screening values to SCDHEC. Asked if they concur with the human health and ecological screening values presented as part of the presentation package.
- Stacey French – states she will pass them on to a South Carolina risk assessor to review. She will let Donna Sharp know ASAP.

2:30 Project Schedule

Work Plan to USAESCH	10/31/2008
USAESCH Work Plan Review Complete	11/14/2008
Draft Final Work Plan	12/05/2008
SCDHEC Review Complete	01/05/2009
Final Work Plan	01/25/2009
Fieldwork Begins	02/03/2009

EODT Action items:

- ✓ Provide the revised transect figures and mileage for Turret Range II, and Ranges XX, IV and VII
- ✓ Provide current parcel data to Shawn Boone and Stacey French
- ✓ Revise the Memorandum for Record to remove the word "all" from the site closeout statement and clarify that "site related" chemical contaminants will be reduced to acceptable levels.
- ✓ Proceed with Work Plan

USACE Action items:

- ✓ Obtain ROEs

SCDHEC Action items:

- ✓ Provide concurrence on provided Human Health and Ecological Screening Values or guidance on what values to be included in the Work Plan.

At the end of the meeting, a discussion was mentioned of doing a Joint Press Release when field work starts. Progress would be put on a web site and in the Administrative Record.

SECTION 13
PRESENTATIONS

This information is provided on a CD-ROM disk following this page.

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