

2.0 Summary of Existing Environmental Studies

An EBS was conducted by ESE to document current environmental conditions of all FTMC property (ESE, 1998). The study was to identify sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance for fast-track cleanup at closing installations. The EBS also provides a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria.

1. Areas where no storage, release, or disposal (including migration) has occurred
2. Areas where only release or disposal of petroleum products has occurred
3. Areas of contamination below action levels
4. Areas where all necessary remedial actions have been taken
5. Areas of known contamination with removal and/or remedial action underway
6. Areas of known contamination where required response actions have not been taken
7. Areas that are not evaluated or require further evaluation.

For non-Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) environmental or safety issues, the parcel label includes the following components: a unique non-CERCLA issue number, the letter "Q" designating the parcel as a Community Environmental Response Facilitation Act (CERFA) Category 1 Qualified Parcel, and the code for the specific non-CERCLA issue(s) present (ESE, 1998). The non-CERCLA issue codes used are:

- A = Asbestos (in buildings)
- L = Lead-Based Paint (in buildings)
- P = Polychlorinated biphenyls
- R = Radon (in buildings)
- RD = Radionuclides/Radiological Issues
- X = Unexploded Ordnance
- CWM = Chemical Warfare Material.

The EBS was conducted in accordance with the CERFA (CERFA-Public Law 102-426) protocols and DOD policy regarding contamination assessment. Record searches and reviews were performed on all reasonably available documents from FTMC, ADEM, EPA Region IV,

and Calhoun County, as well as a database search of CERCLA-regulated substances, petroleum products, and Resource Conservation and Recovery Act-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal and telephone interviews of past and present FTMC employees and military personnel were conducted. In addition, visual site inspections were conducted to verify conditions of specific property parcels.

Training Area T-4, Parcel 181(7), is the only site within the Ranges West of Iron Mountain Road that has been previously investigated. SAIC compiled an SI report in 1995 from limited investigations conducted by the U.S. Army and SAIC. Later, SAIC performed a limited RI of Training Area T-4, Parcel 181(7), and compiled the report in 1995. The following is a summary of the SI and RI reports prepared by SAIC.

Summary of Training Area T-4, Parcel 181(7), SI Report By SAIC, 1993. HD was not detected in surface soil samples collected by the Army in April and July 1973; however, subsurface soil samples were not collected at that time (SAIC, 1993). The use of the area was limited to surface activity in the unlikely event that some HD may have been used at the site, and because subsurface sampling had not been conducted at the site. The identified area of the former site had been extensively reworked and there was not any evidence of a former site observed at the location identified by the Base during the October 1991 site visit by USATHAMA and SAIC (SAIC, 1993). Based on the inability to locate the former site and the fact that biological simulants are not persistent in the environment, additional investigative activities were not conducted at Training Area T-4 during the SI (SAIC, 1993).

During the October 1991 visit, it was concluded that further sampling activities would not be conducted at Training Area T-4 because the site could not be adequately located (SAIC, 1993). Biological simulants reportedly used at Training Area T-4 are not environmentally persistent and were used in minimal quantities (SAIC, 1993). However, SAIC did perform a limited RI at Training Area T-4, Parcel 181(7), as discussed below.

Summary of Training Area T-4, Parcel 181(7), RI Report by SAIC, 1995. Area T-4 was investigated by miniature continuous air sampling system (MINICAMS) screening of soil samples and magnetometer surveying over a site area that was located based on historical records and site photography (SAIC, 1995). Surface evidence of the former training area was

not observed. The MINICAMS screening, soil sample, and geophysical survey area locations are shown on Figure 2-1.

Field screening for CWM (sarin [GB], VX, and HD) was conducted by the U.S. Army Technical Escort Unit on surface and subsurface soils at Area T-4 in May 1994. Field procedures for MINICAMS screening are discussed in Appendix A. Samples were analyzed for HD, VX, and GB agents. Based on the results of the MINICAMS analyses, CWM was not detected in any screened samples from the site. MINICAMS screening locations are shown on Figure 2-1 and the tabulated results of the screening analyses are provided in Table 2-1.

Based on historical photography at Area T-4 depicting a concrete monument in a disturbed area, a geophysical survey incorporating tandem magnetometers was completed over the entire documented extent of Training Area T-4 in May 1995 (SAIC, 1995). Staked location T-4-10 shown in Figure 2-1 was used as a global positioning system (GPS) reference station during the survey. Approximately 50 subsurface targets were identified at Area T-4 based on the tandem magnetometer survey. The targets ranged between 0.0 and 8.8 feet in depth (estimated) and indicate that subsurface burials are present at the site. The nature of the burials (e.g., ordnance, steel fragments, drums, building materials, old fence) is unknown (SAIC, 1995). Several areas within the site boundary were inaccessible because of tree clusters and could not be surveyed using the GPS method (SAIC, 1995). The locations of the identified targets are shown on Figure 2-1. The spatial distribution of the mapped anomalies is indicative of metallic debris scattered within and beyond the site boundaries.

Four shallow soil samples were collected across Training Area T-4 for analysis of HD and VX breakdown products (Figure 2-1) (SAIC, 1999). Table 2-2 lists the RI soil sample results from Training Area T-4. Based on the results of the MINICAMS screening and laboratory analysis, CWM (HD, VX) degradation products were not detected in the shallow soils at Area T-4 (SAIC, 1999).

Based on a SAIC site reconnaissance, August 29 through 31, 1994, the site is mostly cleared, with bare ground covered with chert and small cobbles (SAIC, 1999). In the center of the turnaround of the road, there are a few small blackjack oak, southern red, smaller pines, and black cherry trees. The site is surrounded by small blackjack oak, black oak, sourwood, Virginia pine, loblolly pine, and black cherry trees, with a very high stem count per acre. A few trees are up to 8 inches in diameter at breast height, and most trees are 30 to 40 feet tall (SAIC, 1999).

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 PROJ. NO.: 796887
 INITIATOR: J. RAGSDALE
 PROJ. MGR.: J. YACOB
 DRAFT. CHK. BY:
 ENGR. CHK. BY: J. RAGSDALE
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- LEGEND**
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - TOPOGRAPHIC CONTOURS (CONTOUR INTERVAL - 5 FOOT)
 - PARCEL BOUNDARY
 - SITE BOUNDARY, SAIC, 1995
 - SURFACE DRAINAGE / CREEK
 - HISTORICAL FEATURES, SAIC, 1995
 - SAIC MINICAMS SCREENING LOCATION
 - SAIC MINICAMS SCREENING LOCATION WITH SOIL SAMPLE
 - SAIC MAGNETOMETER ANOMALY

FIGURE 2-1
RIS SOIL SAMPLE LOCATIONS
 TRAINING AREA T-4
 PARCEL 181(7)

U. S. ARMY CORPS OF ENGINEERS
 MOBILE DISTRICT
 FORT McCLELLAN
 CALHOUN COUNTY, ALABAMA
 Contract No. DACA21-96-D-0018



SOURCE: SCIENCE APPLICATION INTERNATIONAL CORPORATION, 1995,
 "DRAFT FORT McCLELLAN REMEDIAL INVESTIGATION REPORT", AUGUST.

Table 2-1

**USATEU Results of MINICAMS Screening – Training Area T-4,
Parcel 181(7)^a
Ranges West of Iron Mountain Road
Fort McClellan, Calhoun County, Alabama**

Sample Number	Date Sampled	Sample Depth (feet)	HD(TWA)^b	VX(TWA)^b	GB(TWA)^b
T4-1	5/10/94	0.05	0.00	0.01	0.00
T4-2	5/10/94	0.05	0.00	0.11	0.01
T4-3	5/10/94	0.05	0.00	0.00	0.01
T4-4	5/10/94	0.05	0.00	0.12	0.01
T4-5	5/10/94	0.05	0.00	0.00	0.01
T4-6	5/10/94	0.05	0.00	0.10	0.01
T4-7	5/10/94	0.05	0.00	0.00	0.01
T4-8	5/10/94	0.05	0.00	0.08	0.01
T4-9	5/10/94	0.05	0.00	0.00	0.01
T4-10	5/10/94	0.05	0.00	0.00	0.01

^aScience Applications International Corporation, 1995, *Fort McClellan Remedial Investigation Report*, August.

^bReported values are below the 0.8 time-weighted average (TWA) for the Miniature Continuous Air Monitoring System and are not indicative of detected chemical warfare agent (U.S. Army Technical Escort Unit (USATEU), 6/92). See Appendix A for MINICAMS procedure and TWA definition.

HD - Distilled mustard.

VX - Nerve agent.

GB - Sarin.

Table 2-2

RI Soil Sample Results Summary^a
Training Area T-4, Parcel 181(7)
Ranges West of Iron Mountain Road
Fort McClellan, Calhoun County, Alabama

Site ID		T4-S01	T4-S02	T4-S03	T4-S04
Field Sample Number		SAIC01	SAIC01	SAIC01	SAIC01
Sample Type		Soil	Soil	Soil	Soil
Collection Date:		5/11/1994	5/11/1994	5/11/1994	5/11/1994
Depth (feet)		0	0	0	0
GB/VX Breakdown Product					
Laboratory ID Number		MCSB 107	MCSB 108	MCSB 8	MCSB 7
Parameter	units				
Chloroacetic Acid	µg/g	0.500 LT	0.500 LT	0.500 LT	0.500 LT
Fluoroacetic Acid	µg/g	0.182 LT	0.182 LT	0.182 LT	0.182 LT
Isopropyl Methylphosphonate	µg/g	0.500 LT	0.500 LT	0.500 LT	0.500 LT
Methylphosphonic Acid	µg/g	0.500 LT	0.500 LT	0.500 LT	0.500 LT
HD Breakdown Product					
Laboratory ID Number		MCSB 107	MCSB 108	MCSB 8	MCSB 7
Parameter					
Benzothiazole	µg/g	1.08 LT	1.08 LT	1.08 LT	1.08 LT
Dimethyl Disulfide	µg/g	0.692 LT	0.692 LT	0.692 LT	0.692 LT
Thiodiglycol	µg/g	3.94 LT	3.94 LT	3.94 LT	3.94 LT

^a Science Applications International Corporation, 1999, *Draft Final Fort McClellan Remedial Investigation/Baseline Risk Assessment Report*, February.

LT - Less than the certified reporting limit.

µg/g - Micrograms per gram.

HD - Distilled mustard.

GB - Sarin.

VX - Nerve agent.

Exposure Assessment. Habitat appropriate for terrestrial biota is present at Area T-4, so it is necessary to evaluate exposures to terrestrial receptors at the site. Surface soil samples taken at Area T-4 were analyzed for CWM breakdown products only. Therefore, no further risk characterization for ecological receptors was performed (SAIC, 1999).

Risk Characterization. There were no unacceptable risks to ecological receptors found at Area T-4 because site media were evaluated only for CWM breakdown products (SAIC, 1999).

The Ranges West of Iron Mountain Road, Parcels 73Q-X, 91Q-X, 114Q-X, 115Q, 116Q-X, 117Q-X, 129Q-X, 151Q, 200Q, 201Q, 228Q, 229Q-X, 231Q, 232Q-X, Washington Tank Range, and 1950 Rocket Launcher Range, were identified as Category 1 CERFA sites, and some were qualified “X” for UXO. These CERFA sites are parcels where no known or recorded storage, release, or disposal (including migration) has occurred on site property, but some are qualified for potential UXO. The Ranges West of Iron Mountain Road also require additional evaluation to determine the environmental condition of the parcels.

Parcels 181(7), 194(7), and 518(7) were identified as Category 7 CERFA sites. CERFA sites are parcels where site-specific chemicals were stored, and possibly released onto the site or to the environment, and/or were disposed of on site properly. Category 7 CERFA sites are areas that lack adequate documentation and, therefore, require additional evaluation to determine the environmental condition of the parcel.

3.0 Site-Specific Data Quality Objectives

3.1 Overview

The data quality objective (DQO) process is followed to establish data requirements. This process ensures that the proper quantity and quality of data are generated to support the decision-making process associated with the action selection for the Ranges West of Iron Mountain Road, Parcels 181(7), 194(7), 518(7), 73Q-X, 91Q-X, 114Q-X, 115Q, 116Q-X, 117Q-X, 129Q-X, 151Q, 200Q, 201Q, 228Q, 229Q-X, 231Q, 232Q-X, Washington Tank Range, and 1950 Rocket Launcher Range. This section incorporates the components of the DQO process described in the publication EPA 540-R-93-071 *Data Quality Objectives Process for Superfund* (EPA, 1993). The DQO process as applied to the Ranges West of Iron Mountain Road, Parcels 181(7), 194(7), 518(7), 73Q-X, 91Q-X, 114Q-X, 115Q, 116Q-X, 117Q-X, 129Q-X, 151Q, 200Q, 201Q, 228Q, 229Q-X, 231Q, 232Q-X, Washington Tank Range, and 1950 Rocket Launcher Range, is described in more detail in Section 4.3 of the WP. Table 3-1 provides a summary of the factors used to determine the appropriate quantity of samples, and the procedures necessary to meet the objectives of the SI and establish a basis for future action at these sites.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with Corps of Engineers South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using Contract Laboratory Program (CLP)-like forms along with electronic copies. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

3.2 Data Users and Available Data

The available data, related to the SI at the Ranges West of Iron Mountain Road are summarized in Table 3-1 and have been used to formulate a site-specific conceptual model. This conceptual model was developed to support the development of this SFSP, which is necessary to meet the objectives of these activities and to establish a basis for future action at the sites. The data users for the data and information generated during field activities are primarily EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work. The program has also

Table 3-1

**Summary of Data Quality Objectives
Ranges West of Iron Mountain Road
Fort McClellan, Calhoun County, Alabama**

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity								
EPA, ADEM USACE, DOD FTMC, IT Corporation Other contractors, and possible future land users	Limited SI for Area T-4, Parcel 181(7), data from the SAIC Fort McClellan Site Investigation Report, August 1993 Limited RI data for Parcel 181(7) from the SAIC Fort McClellan Site Investigation Report, August 1995	<u>Contaminant Source</u> Ranges West of Iron Mountain Road (munitions, UXO, biological simulants and decontamination solutions) <u>Migration Pathways</u> Infiltration and leaching to subsurface soil and groundwater, biotransfer to deer through browsing, dust emissions and volatilization to ambient air, discharge of groundwater to surface water, and runoff and erosion to surface water and sediment <u>Potential Receptors</u> Recreational site user (current and future) construction worker (future), grounds-keeper (future), and resident (future) <u>PSSC</u> (Based on the history of each individual site) munitions, lead, nitroexplosives, tear gas, flares, napalm, white phosphorus, molasses residue, field flame expedient, supertropical bleach, Decontamination Solution Number 2, and practice smoke grenades	<u>Surface soil</u>	SI to confirm the presence or absence of contamination in the site media Definitive quality data for future decision-making	<u>Surface soil</u> TAL Metals, Nitroexplosives, Perchlorate In addition, TCL VOCs and TCL SVOCs for Parcels 181(7) and 194(7)	Definitive data in CESAS Level B data packages	101 direct-push soil samples + QC								
			<u>Subsurface Soil</u>		<u>Subsurface Soil</u> TAL Metals, Nitroexplosives, Perchlorate In addition, TCL VOCs and TCL SVOCs for Parcels 181(7) and 194(7)			Definitive data in CESAS Level B data packages	101 direct-push soil samples + QC						
			<u>Groundwater</u>		<u>Groundwater</u> TCL VOCs, TAL Metals, Nitroexplosives, Perchlorate In addition, TCL SVOCs for Parcels 181(7) and 194(7)					Definitive data in CESAS Level B data packages	76 groundwater samples + QC				
			<u>Surface Water</u>		<u>Surface Water</u> TAL Metals, Nitroexplosives, Perchlorate, In addition, TCL VOCs and TCL SVOCs and TCL SVOCs for Parcels 181(7) and 194(7)							Definitive data in CESAS Level B data packages	22 surface water samples + QC		
			<u>Sediment</u>		<u>Sediment</u> TAL Metals, Nitroexplosives, Perchlorate, TOC, and Grain Size In addition, TCL VOCs and TCL SVOCs for Parcel 181(7) and 194(7)									Definitive data in CESAS Level B data packages	22 sediment samples + QC

ADEM - Alabama Department of Environmental Management.
 CESAS - Corps of Engineers South Atlantic Savannah.
 CWM - Chemical warfare material.
 DOD - U.S. Department of Defense.
 EPA - U.S. Environmental Protection Agency.
 FTMC - Fort McClellan.

PSSC - Potential site-specific chemical.
 QC - Quality control.
 RI - Remedial investigation.
 SI - Site inspection.
 SVOC - Semivolatile organic compound.
 TAL - Target analyte list.

TCL - Target compound list.
 TOC - Total organic carbon.
 USACE - U.S. Army Corps of Engineers.
 VOC - Volatile organic compound.

been designed to provide the level of defensible data and information required to confirm or rule out the existence of residual chemical contamination in site media.

3.3 Conceptual Site Exposure Model

The conceptual site exposure model (CSEM) provides the basis for identifying and evaluating potential risks and hazards to human health in the risk assessment. The CSEM includes receptors and potential exposure pathways appropriate to all plausible scenarios. The CSEM facilitates a consistent and comprehensive evaluation of risk to human health through graphically presenting possible exposure pathways, including sources, release and transport pathways, and exposure routes. In addition, the CSEM helps to ensure that potential pathways are not overlooked. The elements of a complete exposure pathway and CSEM are:

- Source (i.e., contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Receptors
- Exposure pathways.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact scenarios with a contaminated source medium.

Primary contaminant releases were probably limited to leaks and spills, UXO, and lead associated with small arms ammunition that entered surface soil and potentially buried materials. Potential contaminant transport pathways include infiltration and leaching to subsurface soil and groundwater, biotransfer to deer, dust emissions and volatilization to ambient air, discharge of groundwater to surface water, and erosion and runoff to surface water and sediment.

Currently the sites are restricted to unauthorized use and are not utilized. The sites have an overgrowth of vegetation and are not fenced. There are large number of open and wooded areas in and around the sites; therefore, people may trespass at the sites and may hunt for deer. Other potential receptors considered, but not included under current land-use scenarios, are the following:

- **Groundskeeper.** The sites are not currently maintained by a groundskeeper.
- **Construction Worker.** The sites are unused, and no development or construction is occurring or scheduled.

- **Resident.** The sites are not currently used for residential purposes.

Future land use in this area for the Ranges West of Iron Mountain Road is expected to include as five different land uses (FTMC, 1997). It includes:

- The eastern bypass will be constructed to enter the west side of the Main Base along the south side of Summerall Road and turning south will replace part of Iron Mountain Road.
- A large part of the southern and eastern area of the Ranges West of Iron Mountain Road will be remediation reserve and will likely be used for passive recreation and open space (FTMC, 1997). Third, the area just southwest of the intersection of Summerall Road and Iron Mountain Road will be developed into McClellan Commercial Center.
- Land south of Largarde Park along the western boundary of the Base will be acquired by the City of Anniston to expand the park.
- Land on the east side of Iron Mountain Road and along the base of the north slope of Sunset Hill is slated to be a part of the Retirement Development Reserve.

Until remediation has been completed because of the potential for UXO, the sites may not be deemed safe for public access (FTMC, 1997). Plausible future land use receptor scenarios addressed in the CSEM include:

- **Resident.** The residential scenario is considered because of the potential retirement development. The residential scenario is considered for all areas in order to provide information for the project manager and regulators.
- **Construction Worker.** The construction worker scenario is considered because of the large amount of construction to be scheduled for this area in building the eastern bypass and developing the McClellan Commercial Center.
- **Groundskeeper.** The sites are likely to have many areas that will need to be maintained in the future such as along the eastern bypass and the McClellan Commercial Center.
- **Recreational Site User.** The sites have areas planned for recreational use. Deer hunting is a potential exposure pathway for the recreational site user.

Exposure pathways that are excluded from the CSEM include:

- **Fish Consumption.** Fish consumption is not considered for the recreational site user receptor current or future scenarios because the intermittent streams are not large enough to support fishing.

A summary of relevant contaminant release and transport mechanisms, source and exposure media, and receptors and exposure pathways for the sites is provided in Table 3-1 and Figure 3-1.

3.4 Decision-Making Process, Data Uses, and Needs

The decision-making process consists of a seven-step process that is presented in detail in Section 4.3 of the WP and will be followed during the SI at the Ranges West of Iron Mountain Road, Parcels 181(7), 194(7), 73Q-X, 91Q-X, 114Q-X, 115Q, 116Q-X, 117Q-X, 129Q-X, 151Q, 200Q, 201Q, 228Q, 229Q-X, 231Q, 232Q-X, Washington Tank Range, and 1950 Rocket Launcher Range. Data uses and needs are summarized in Table 3-1.

3.4.1 Risk Evaluation

Confirmation of contamination at the Ranges West of Iron Mountain Road, Parcels 181(7), 194(7), 518(7), 73Q-X, 91Q-X, 114Q-X, 115Q, 116Q-X, 117Q-X, 129Q-X, 151Q, 200Q, 201Q, 228Q, 229Q-X, 231Q, 232Q-X, Washington Tank Range, and 1950 Rocket Launcher Range, will be based on comparing detected site chemicals of potential concern to site-specific screening levels developed in the *Final Human Health and Ecological Screening Values and PAH Background Summary Report* (IT, 2000b). EPA definitive data with CESAS Level B data packages will be used to determine whether or not PSSCs are detected in site media. Definitive data will be adequate for confirming the presence of site contamination and for supporting a feasibility study and risk assessment.

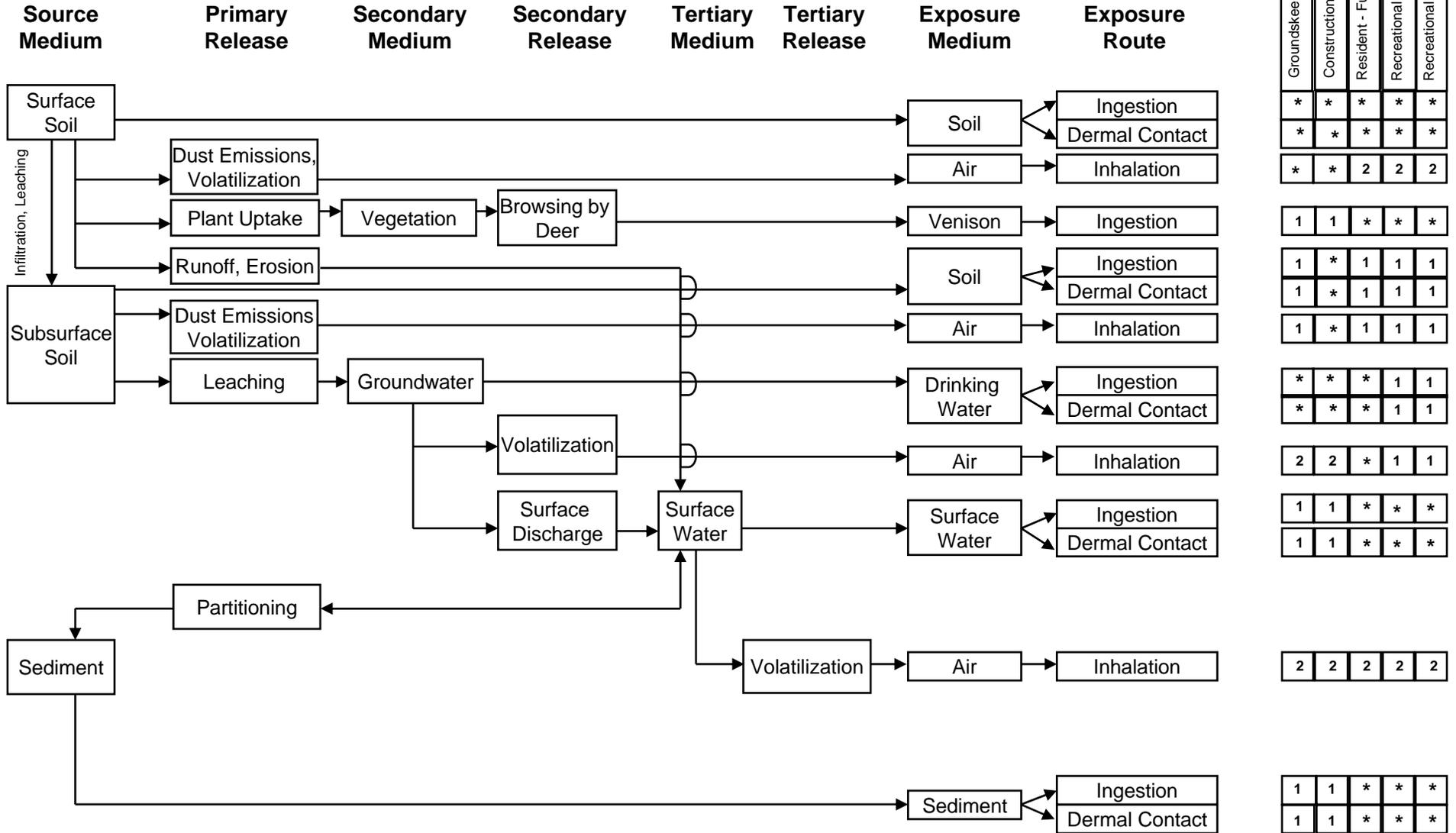
Assessment of potential ecological risk associated with sites or parcels (e.g., surface water and sediment sampling, specific ecological assessment methods, etc.) will be addressed in accordance with the procedures in the WP.

3.4.2 Data Types and Quality

Surface soil, subsurface soil, groundwater, surface water, and sediment samples will be sampled and analyzed to meet the objectives of the SI at the Ranges West of Iron Mountain Road, Parcels 181(7), 194(7), 518(7), 73Q-X, 91Q-X, 114Q-X, 115Q, 116Q-X, 117Q-X, 129Q-X, 151Q, 200Q, 201Q, 228Q, 229Q-X, 231Q, 232Q-X, Washington Tank Range, and 1950 Rocket Launcher Range. Quality assurance/quality control (QA/QC) samples will be collected for all

Figure 3-1

**Human Health Conceptual Site Exposure Model
Ranges West of Iron Mountain Road
Fort McClellan, Alabama**



* = Complete exposure pathway evaluated in the streamlined risk assessment.
 1 = Incomplete exposure pathway.
 2 = Although theoretically complete, this pathway is judged to be insignificant and is not evaluated in the streamlined risk assessment.

sample types as described in Chapter 4.0 of this SFSP. Samples will be analyzed by EPA-approved SW-846 Methods Update III, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages and electronic copies. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, RI, and risk assessment.

3.4.3 Precision, Accuracy, and Completeness

Laboratory requirements of precision, accuracy, and completeness for this SI are provided in Section 9.0 of the QAP.