Statement of Basis/Proposed Plan for the Early Construction and Operational Disposal Site L-3 (NBN), L-Area Rubble Pit (131-1L), and L-Area Rubble Pit (131-4L) Operable Unit (U)

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DISCLAIMER

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U.S. Department of Energy
and
Savannah River Nuclear Solutions, LLC
Aiken, South Carolina

CERTIFICATION

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SRNS-RP-2025-00724, Revision ~~0~~1 Redline, October~~June~~ 2025

[REF: 40CFR270.11 (d)(1)]

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Duane F. McLane, Senior Vice President
Environment, Safety, Health and Quality (ESH&Q)
for Savannah River Nuclear Solutions, LLC
as the Co-Operator with the U. S. Department of Energy
Savannah River Operations Office

Date Signed

Karen D. Morrow
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U.S. Department of Energy
Owner and Co-Operator

Date Signed

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LIST OF ABBREVIATIONS AND ACRONYMS

~	approximately
§	section
ACM	asbestos containing material
ARF	Administrative Record File
ARAR	Applicable or Relevant and Appropriate Requirement
BRA	Baseline Risk Assessment
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CM	contaminant migration
~~CMIP~~	~~Corrective Measures Implementation Plan~~
CMS	Corrective Measures Study
COC	constituent of concern
ECODS	Early Construction and Operational Disposal Site
EPC	exposure point concentration
FFA	Federal Facility Agreement
FS	Feasibility Study
ft	feet, foot
HH	human health
HQ	hazard quotient
IOU	Integrator Operable Unit
km	kilometer
km^2	square kilometer
LLC	limited liability company
LRP 131-1L	L-Area Rubble Pit (131-1L)
LRP 131-4L	L-Area Rubble Pit (131-4L)
LUC	land use control
LUCAP	Land Use Control Assurance Plan
LUCIP	Land Use Control Implementation Plan
m	meter
m^3	cubic meter
mg/kg	milligram per kilogram
mi	mile
mi^2	square mile
NA	not applicable or not available
NBN	no building number
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
O&M	operations and maintenance
OU	Operable Unit
PCB	polychlorinated biphenyl
PRG	Preliminary Remedial Goal, Preliminary Remediation Goal
PTSM	principal threat source material
~~RAIP~~	~~Remedial Action Implementation Plan~~
RAO	Remedial Action Objective
RCOC	refined constituents of concern
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RI	Remedial Investigation
ROD	Record of Decision
SB/PP	Statement of Basis/Proposed Plan
SC	South Carolina

LIST OF ABBREVIATIONS AND ACRONYMS *(CONTINUED)*

SCDES[1]	South Carolina Department of Environmental Services
SCHWMR	South Carolina Hazardous Waste Management Regulations
SE	site evaluation
SEMS	Superfund Enterprise Management System
SER	Site Evaluation Report
SRNS	Savannah River Nuclear Solutions, LLC
SRS	Savannah River Site
TAL	target analyte list
TCL	target compound list
TSCA	Toxic Substances Control Act
USDOE	United States Department of Energy
U.S.C	United States Code
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound
WSRC	Washington Savannah River Company
WSRC	Westinghouse Savannah River Company
yd^3	cubic yard

[1] SCDES was known as the South Carolina Department of Health and Environmental Control prior to July 1, 2024.

I. INFORMATION AND BACKGROUND

Introduction

This Statement of Basis/Proposed Plan (SB/PP) is being issued by the United States Department of Energy (USDOE), which functions as the lead agency for Savannah River Site (SRS) remedial activities, with concurrence by the United States Environmental Protection Agency (USEPA) and the South Carolina Department of Environmental Services (SCDES). ~~and~~ The SB/PP is a document that the lead agency is required to issue to fulfills the requirements of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 117 (a) and ~~the~~ National Oil and Hazardous Substances Pollution Contingency Plan (NCP) Section 300.430 (f)(2). The purpose of this SB/PP is to describe the preferred remedial alternative(s) for the Early Construction and Operational Disposal Site (ECODS) L-3 (no building number [NBN]), L-Area Rubble Pit (131-1L) (LRP 131-1L), and L-Area Rubble Pit (131-4L) (LRP 131-4L) Operable Unit (OU) and to provide for public involvement in the decision-making process. The SB/PP provides basic background information, describes the other remedial options considered, and solicits public input on all remedial alternatives and the rationale for the preferred remedial alternative.

The SB/PP highlights key information from the RFI/RI/BRA/Corrective Measures Study (CMS)/ Feasibility Study (FS) for the ECODS L-3, LRP 131-1L, and LRP 131-4L OU (SRNS 2025). Refer to the RFI/RI/BRA/CMS/FS report and the SRS Administrative Record File (ARF) for more information regarding the remedial action.

SRS occupies approximately 800 square kilometers (km^2) (310 square miles [mi^2]) of land adjacent to the Savannah River, principally in Aiken and Barnwell counties, South Carolina (Figure 1). SRS is approximately 40 kilometers (km) (25 miles [mi]) southeast of Augusta, Georgia, and 32 km (20 mi) south of Aiken, South Carolina.

SRS is owned by the USDOE. Savannah River Nuclear Solutions, LLC (SRNS) provides management and operating services. SRS has historically produced tritium, plutonium, and other special nuclear materials for national defense. Chemical and radioactive wastes are byproducts of nuclear material production processes. Hazardous substances, as defined by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), are currently present in the environment at SRS.

The ECODS L-3, LRP 131-1L, and LRP 131-4L OU is located at the SRS in Barnwell County, South Carolina (Figure ~~1~~2). No remedial action is needed for the LRP 131-1L subunit because there is no contamination present that poses a threat to human health (HH) or the environment. The preferred remedial alternative for the LRP 131-1L subunit is No Action, and the future land use for the LRP 131-1L subunit will be unrestricted.

A remedial action is needed at the ECODS L-3 and LRP 131-4L subunits because contaminants are present that may pose a threat to HH and the environment. More specifically, polychlorinated biphenyls (PCBs) are present in surface soil at the ECODS L-3 subunit and asbestos containing material (ACM) may be present in soils that may pose a risk to human receptors. For the LRP 131-4L subunit,

benzo(a)pyrene is present is the surface soil that may pose a risk to human receptors. In addition, potential ACM was identified in soil at the LRP 131-4L subunit. There are no problems warranting action identified for ecological receptors, principal threat source material (PTSM), or contaminant migration (CM) for the ECODS L-3, LRP 131-1L and LRP 131-4L OU.

The preferred remedial alternative for the ECODS L-3 and LRP 131-4L subunits is land use controls (LUCs). LUCs were selected at these subunits because they are easily implemented and provide adequate protection from human exposure to contaminated media. As part of the selected remedy, the future land use for the ECODS L-3 and LRP 131-4L subunits will be industrial.

SRS Compliance History

SRS manages certain waste materials that are regulated under the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6901-6992k, a comprehensive law requiring responsible management of hazardous waste. The ECODS L-3, LRP 131-1L, and LRP 131-4L OU is a solid waste management unit under RCRA Section 3004(u). SRS received a RCRA hazardous waste permit from the SCDES, which was most recently renewed on October 27, 2025 (SC1 890 008 989). Module VIII of the Hazardous and Solid Waste Amendments portion of the RCRA permit mandates corrective action requirements for nonregulated solid waste management units subject to RCRA 3004(u).

On December 21, 1989, SRS was included on the National Priorities List (NPL). The inclusion created a need to integrate the established RCRA Facility Investigation (RFI) program with CERCLA requirements to provide for a focused environmental program. In accordance with Section 120 of CERCLA, 42 U.S.C. § 9620(e)(2), USDOE has negotiated a Federal Facility Agreement (FFA) (FFA 1993) with the USEPA and SCDES to coordinate remedial activities at SRS into one comprehensive strategy, which fulfills these dual regulatory requirements. The FFA lists the ECODS L-3, LRP 131-1L, and LRP 131-4L OU as a RCRA/CERCLA unit requiring further evaluation using an investigation/assessment process that integrates and combines the RFI process with the CERCLA Remedial Investigation (RI) process to determine the actual or potential impact to HH and the environment.

Both RCRA and CERCLA require the public to be given an opportunity to review and comment on the draft RCRA permit modification and proposed remedial alternatives. Public participation requirements are listed in South Carolina Hazardous Waste Management Regulations (SCHWMR) R.61-79.124 and Sections 113 and 117 of CERCLA, 42 U.S.C. § 9613(k) and 9617(a). These requirements include establishment of an ARF that documents the investigation and selection of remedial alternatives and allows for review and comment by the public regarding those alternatives (See Section II). The ARF must be established at or near the facility at issue. The SRS FFA Community Involvement Plan (WSRC 2011) is designed to facilitate public involvement in the decision-making process for permitting, closure, and the selection of remedial alternatives. SCHWMR R.61-79.124 and Section 117(a) of CERCLA, as amended, require the advertisement of the draft permit modification and notice of any proposed remedial action, and provide the public an opportunity to participate in the selection of the remedial action.

SCHWMR R.61-79.124 requires that a brief description and response to all significant comments be made available to the public as part of the RCRA Administrative Record. Community involvement in consideration of this evaluation of alternatives for the ECODS L-3, LRP 131-1L, and LRP 131-4L OU is strongly encouraged. All submitted comments will be reviewed and considered. Following the public comment period, a Responsiveness Summary will be prepared to address issues raised during the public comment period. The Responsiveness Summary will be made available with the final RCRA permit modification and the Record of Decision (ROD).

The final remedial decision will be made only after the public comment period has ended and all the comments have been received and considered. The final remedial decision under RCRA will be in the form of a final permit modification, which is made by SCDES. Selection of the remedial alternative that will satisfy the FFA requirements will be made by USDOE, in consultation with USEPA and SCDES. It is important to note that the final action(s) may be different from the preferred alternative discussed in this plan depending on new information or public comments. The alternative chosen will be protective of HH and the environment and comply with all federal and state laws.

II. COMMUNITY PARTICIPATION

The FFA ARF, which contains the information pertaining to the selection of the response action, is available at the following locations:

US Department of Energy
Public Reading Room
Gregg-Graniteville Library
University of South Carolina – Aiken
471 University Parkway
Aiken, South Carolina 29801
(803) 641-3456

Thomas Cooper Library
Government Information and Maps Department
University of South Carolina
1322 Greene Street
Columbia, South Carolina 29208
(803) 777-4841

The FFA ARF is available electronically at the following address: http://www.srs.gov/general/programs/soil/arf/arfirf.html.

Hard copies of the SB/PP are available at the following locations:

Reese Library
Government Information Department
Augusta University
2500 Walton Way
Augusta, Georgia 30904
(706) 737-1744

Asa H. Gordon Library
Savannah State University
2200 Tompkins Road
Savannah, Georgia 31404
(912) 358-4324

The RCRA ARF for SCDES is available for review by the public at the following locations:

The South Carolina Department of
Environmental Services
Bureau of Land and Waste Management
2600 Bull Street
Columbia, South Carolina 29201
(803) 898-2000

The South Carolina Department of
Environmental Services
Aiken Environmental Affairs Office
206 Beaufort Street, Northeast
Aiken, South Carolina 29801
(803) 642-1637

The public will be notified of the public comment period through mailings of the *SRS Environmental Bulletin*, a newsletter sent to citizens in South Carolina and Georgia, and through notices in the *Aiken Standard*, *The Augusta Chronicle*, *The People-Sentinel*, and *The State* newspapers. The public comment period will also be announced on local radio stations.

USDOE will provide an opportunity for a public meeting during the public comment period if significant interest is expressed. The public will be notified of the date, time, and location. At the meetings, the proposed action will be discussed, and questions about the action will be answered.

To request a public meeting during the public comment period, to obtain more information concerning this document, or to submit written comments, contact one of the following:

Barbara Smoak
Savannah River Nuclear Solutions, LLC
Savannah River Site
Building 703-43A
Aiken, South Carolina 29808
(803) 952-8060
barbara.smoak@srs.gov

The South Carolina Department of
Environmental Services
Attn: Mr. Kent Krieg, Director
Division of Waste Management
Bureau of Land and Waste Management
2600 Bull Street
Columbia, South Carolina 29201
(803) 898-0255

Following the public comment period, a ROD will be signed, and a final decision for the SRS RCRA permit will be issued. The ROD and RCRA permit will detail the remedial alternatives chosen for the ECODS L-3, LRP 131-1L, and LRP 131-4L OU and include responses to oral and written comments received during the public comment period in the Responsiveness Summary.

III. OPERABLE UNIT BACKGROUND

This OU consists of three subunits: ECODS L-3, LRP 131-1L, and LRP 131-4L. Groundwater is not part of the OU and is being addressed by the L-Area Southern Groundwater OU.

ECODS L-3 Subunit

The ECODS L-3 subunit is one of twenty-five ECODS at SRS which were identified during a review of early 1950s aerial photographs. These sites were used during the construction and early operation of SRS for disposal of construction debris and other non-radioactive waste materials, such as rubble and concrete.

The ECODS L-3 subunit is located in the southern portion of the SRS, east of L Area (Figure 2). The subunit is approximately 9.7 km (6.0 mi) north of the nearest SRS boundary and is within the Steel Creek Watershed. The ECODS L-3 subunit is located approximately 518 meters (m) (1,700 feet [ft]) east of the eastern corner of the L Area perimeter fence.

Based on historical photographs and a ground-penetrating radar survey completed in 2002 during a site evaluation (SE) of the subunit, it was estimated that waste disposed of in the ECODS L-3 subunit was buried in two trenches located end-to-end (Figure 3).

The original trenches were estimated to be 18 m (60 ft) wide by 30 m (100 ft) long. The 2002 SE effort determined the trench dimensions were actually ~15 m (50 ft) wide by 27 m (90 ft) long and 4.6 m (15 ft) wide by 27 m (90 ft) long (WSRC 2003).

The ECODS L-3 subunit was used to dispose of trash and construction debris, such as rubble and concrete, and is estimated to have been in use from November 1953 to June 1954. Prior to use as a disposal site, the area was used as farmland. Sections of the trenches may have been used as a burn pit for disposal of combustible waste.

Soil samples were collected and analyzed during the 2002 SE of the ECODS L-3 subunit and results were reported in the *Site Evaluation Report for the Early Construction and Operational Disposal Site (ECODS) L-3 (NBN) (U)* (WSRC 2003). All samples were analyzed for the complete list of Target Analyte List (TAL) and Target Compound List (TCL) constituents and the data were~~was~~ validated to definitive level. Based on the site evaluation report (SER) and in accordance with Section 300.420(b)(1)(~~I~~i) of the NCP, the ECODS L-3 subunit was removed from FFA Appendix G.1, Areas to Be Investigated, and placed in Appendix C, RCRA/CERCLA Units, for further assessment (FFA 1993).

An asbestos survey was not completed for the ECODS L-3 subunit during the 2002 SE. Based on the disposal history of similar SRS ECODS and the dates of operation of the ECODS L-3 subunit, ACM may be present in soils at the ECODS L-3 subunit.

LRP 131-1L Subunit

The LRP 131-1L subunit is a former waste disposal area reportedly used for various construction debris and operated from 1973 to 1982 (DuPont 1983a). The LRP 131-1L subunit is located to the east of L Area, approximately 46 m (150 ft) outside of the facility perimeter fence (Figure 2). The subunit is a rectangular area approximately 12 m (40 ft) by 46 m (150 ft) with the four corners marked by orange ball markers (Figure 4). SRS records indicate that metal, lumber, poles, concrete, brick, tile, asphalt, tires, rubber, scrap metal, fence posts, hard plastics, wallboard, asbestos, glass, batteries, paint cans, drums and transite were typically disposed of at SRS construction debris sites such as the LRP 131-1L subunit (DuPont 1983a and DuPont 1983b). However, the term “pit” may be a misnomer as the 2022 characterization activities did not indicate that a pit was constructed or that waste was placed below ground surface. Recently discovered photographs of the subunit show land disposal of material on the surface of the subunit during operation between 1973 and 1982 (Figure 5). There is no record of hazardous or radioactive material disposed of at the subunit.

A preliminary screening was performed at the LRP 131-1L subunit in 1991, which included a soil-gas survey to determine if hazardous waste may be present in the subsurface soils and to identify potential areas of contamination within the subunit. A total of ten soil-gas samples were collected along the centerline of the subunit. Samples were analyzed for volatile organic compounds (VOCs) and chlorinated VOCs. The survey results determined that VOCs from methane through hexane are likely to be present in the subunit soils. These compounds are expected in relation to breakdown of typical disposal debris in SRS disposal sites, however contamination within the subunit could not be ruled out and further investigation was warranted. No other characterization was performed at

the LRP 131-1L subunit prior to the RFI/RI characterization in 2022 (SRNS 2025). The LRP 131-1L subunit is in Appendix C of the FFA, RCRA/CERCLA Units, for further assessment (FFA 1993).

The LRP 131-1L subunit was characterized in 2022 to support RFI/RI/Baseline Risk Assessment (BRA) of the subunit and for remedial decision making. Based on observation of soil cores during sampling activities, it was determined no waste material was placed below ground surface at the LRP 131-1L subunit. Construction debris was encountered at only one (1) soil boring in the 0.3 to 1.2 m (1 to 4 ft) interval and appeared to be a railroad tie or other creosote wooden material. No potential asbestos containing material was observed in any soil borings. All samples collected in the 2022 characterization were analyzed for the complete list of TAL and TCL constituents, as well as radiological screening for gross alpha and nonvolatile beta. All data ~~was~~were validated to definitive level.

LRP 131-4L Subunit

The LRP 131-4L subunit is located north of the L-Area fence and east of Road 7 (Figure 2). Orange ball markers are present to designate the subunit boundaries, an area ~30.5 m by 30.5 m (100 ft by 100 ft) (Figure 6). However, during site walkdowns to support a 1994 SE effort, the subunit size was questioned due to land disturbance on the northwestern side of the subunit, outside of the orange ball markers. Additionally, during site walkdowns in 2021, in preparation of the RFI/RI Work Plan for the LRP 131-4L subunit, surface disturbance and debris (e.g., rebar, concrete, asphalt) were observed on the northeastern side of the subunit outside of the orange ball markers. Therefore, the LRP 131-4L subunit area to be investigated was expanded to approximately 36.6 m by 36.6 m (120 ft by 120 ft) to include the disturbed land and observed debris (Figure 6).

Records indicate the LRP 131-4L subunit received inert rubble from the L-Area Powerhouse Stack and Silo demolition (Dupont 1983a and DuPont 1983b). The rubble consisted primarily of concrete and asphalt material with some metal. The unlined pit was reported to have operated from 1973 to 1983 before it was filled and seeded in 1983. Operating procedures indicate it was to receive inert, non-hazardous materials, and there are no records indicating any disposal of hazardous or radioactive materials.

A SE of the LRP 131-4L subunit was conducted from 1992 to 1994, and results were reported in the *Site Evaluation Report for the L-Area Rubble Pit (131-4L) (U)* (WSRC 1994). Based on the SER, in accordance with 300.420(b)(1)(~~H~~i) of the NCP, the LRP 131-4L subunit was removed from FFA Appendix G.1, Areas to Be Investigated, and placed in Appendix C, RCRA/CERCLA Units, for further assessment (FFA 1993).

The LRP 131-4L subunit was characterized in 2022 to support RFI/RI/BRA of the subunit and for remedial decision making. Characterization activities included soil boring, observation of core for waste material, and soil sampling. Estimation of the pit boundary and depth was determined through sampling activities. Based on observation of waste material at sample locations within the orange ball markers, within the expanded unit boundary to the northwest, and in step-out locations to the north, the RFI/RI investigation of the subunit did not define the extent of the buried waste to the northwest (Figures 6 and 7). Material

encountered at step-out locations, including LAP-4L-040, was consistent with material encountered at other sampling locations at the LRP 131-4L subunit through visual observation and supported by analytical results. Therefore, the nature of contamination was defined through the RFI/RI investigation. All samples collected in the 2022 characterization were analyzed for the complete list of TAL and TCL constituents, as well as radiological screening for gross alpha and nonvolatile beta. All data were~~was~~ validated to definitive level. The extent of contamination was conservatively estimated by extending the waste unit boundary to a ditch feature northwest of the subunit (Figure 6). This feature incises the ground surface ~0.9-1.2 m (3-4 ft) below ground surface and shows no evidence of buried waste present. This feature acts as a maximum subunit boundary in lieu of confirmatory borings to define the extent of buried waste.

Potential ACM was identified by technical oversight at one location (LAP-4L-018) at the LRP 131-4L subunit. In accordance with the RFI/RI Work Plan, SRS subject matter experts confirmed the material was presumed ACM and is consistent with expected building materials and the time period that the LRP 131-4L subunit was in operation.

IV. SCOPE AND ROLE OF OPERABLE UNIT OR RESPONSE ACTION

To manage a comprehensive cleanup strategy, the site is divided into watersheds because of the complexity and size of multiple waste units located in different areas of the SRS. The SRS is segregated into six watersheds: Upper Three Runs, Lower Three Runs, Fourmile Branch, Steel Creek, Pen Branch, and the Savannah River and Floodplain Swamp (Figure 1). In addition, the SRS also identifies six Integrator Operable Units (IOUs), which are the surface water bodies and associated wetlands that correspond to the six respective watersheds. Waste units within a watershed may be evaluated and remediated individually or grouped with other waste units and evaluated as part of a larger Area OU. Upon disposition of all the waste units within a watershed, a final comprehensive ROD for the corresponding IOU (i.e., surface water and associated wetlands) will be pursued with additional public involvement. The ECODS L-3, LRP 131-1L, and LRP 131-4L OU is located within the Steel Creek watershed (Figure 1).

In 2003, a new strategy for environmental restoration at SRS was developed to accelerate cleanup completion. A key component of the plan is to implement an area-by-area remediation strategy. Through the sequencing of environmental restoration and decommissioning activities, environmental cleanup can be completed for entire areas of the SRS. In the FFA Revision 0 Appendix E for Fiscal Year 2014 submittal, based on a request from the USEPA and SCDES, the following subunits were separated from the L-Area OU to become the ECODS L-3, LRP 131-1L, and LRP 131-4L (USDOE 2013).

~~ECODS L-3 Subunit~~

~~Refined constituents of concern (RCOCs) are identified as those constituents that warrant a response action. No ecological, or CM RCOCs were identified at the ECODS L-3 subunit. PCBs in surface soil were determined to be a potential threat to HH (hypothetical resident). Additionally, ACM is potentially present in unit soil and, therefore, presents a potential risk to human receptors should exposure occur. No PTSM is associated with the ECODS L-3 subunit.~~

~~The most likely future land use scenario at the ECODS L-3 subunit is industrial. LUCs would be needed to prevent unrestricted use and protect HH from the buried waste that contains ACM.~~

~~***LRP 131-1L Subunit***~~

~~No RCOCs were identified at the LRP 131-1L subunit. No Action is recommended due to no problems warranting action for this subunit.~~

~~***LRP 131-4L Subunit***~~

~~No ecological or CM RCOCs were identified at the LRP 131-4L subunit. However, benzo(a)pyrene was determined to be a potential threat to HH (hypothetical resident) within surface soil. Additionally, presumed ACM was identified in unit soil and therefore, presents a potential risk to human receptors should exposure occur. No PTSM is associated with the LRP 131-4L subunit.~~

~~The most likely future land use scenario at the LRP 131-4L subunit is industrial. LUCs would be needed to prevent unrestricted use and protect HH from the buried waste that contains ACM.~~

V. SUMMARY OF SITE RISKS

This section identifies the basis for taking action and identifies the contaminants that were retained following a weight-of-evidence evaluation (i.e., refined constituents of concern [RCOCs]) and exposure pathways that the remedial actions need to address. RCOCs are identified as those constituents that warrant a response action. Additional information pertaining to the risk assessment is in the RFI/RI/ BRA/Corrective Measures Study (CMS)/ Feasibility Study (FS) (SRNS 2025).

Summary of Human Health Risk Assessment

The HH risk assessment evaluates the potential for adverse effects associated with exposure to constituents present at the ECODS L-3, LRP 131-1L, and LRP 131-4L OU. The assessment for each subunit estimates the risk potential in the absence of any remedial action and provides a basis for determining whether a remedial action is necessary.

Each subunit in the OU is in an area currently designated for industrial use. No current or projected future development of the OU is planned, nor is the current land use expected to change. Nevertheless, to support the risk management decision making, both the residential (unrestricted) and industrial land use scenarios are evaluated.

The hypothetical receptors evaluated include the future resident and the future industrial worker. A description of each is presented below.

The future resident receptor scenario evaluates long term risks to individuals assumed to have unrestricted use of the area. This scenario considers residents (adults and children) who hypothetically live on the subunits and are exposed chronically, both indoors and outdoors, to subunit contaminants. The standard exposure assumptions are 26 years, 350 days per year, and 24 hours per day. Exposure routes associated with soil include inhalation of particulates and vapors, external exposure to radiation, dermal absorption, and incidental ingestion.

The future industrial worker scenario is a standard USEPA exposure scenario that addresses long-term risks to workers who are exposed to subunit contaminants within an industrial setting. The standard exposure assumptions are 25 years, 250 days per year,

and 8 hours per day. The USEPA refers to this receptor as "composite worker," and it is analogous to the term "industrial worker" used herein. The future industrial worker scenario considers an adult who hypothetically works on-unit in an outdoor setting most of the time. Exposure routes include inhalation, external exposure to radiation, dermal absorption, and incidental ingestion of soil.

HH RCOCs were identified for the future resident scenario at the ECODS L-3 subunit and the LRP 131-4L subunit. PCBs in surface soil at the ECODS L-3 subunit were determined to be a potential threat to HH (hypothetical resident). Additionally, ACM is potentially present in the ECODS L-3 subunit soil and, therefore, presents a potential risk to human receptors should exposure occur. Benzo(a)pyrene was determined to be a potential threat to HH (hypothetical resident) within surface soil at the LRP 131-4L subunit. Additionally, presumed ACM was identified in the LRP 131-4L subunit soil and therefore, presents a potential risk to human receptors should exposure occur. No HH RCOCs were identified for the future resident scenario at the LRP 131-1L subunit, and no HH RCOCs were identified for the future industrial worker scenario at any of the three subunits.

Summary of Ecological Risk Assessment

The ecological risk assessment consists of steps that provide a scientifically based and defensible evaluation of exposure and hazard to ecological resources that will support a risk management decision regarding site remediation.

Ecological risk is associated with the potential for harmful effects to ecological systems resulting from exposure to an environmental stressor. A stressor is any physical, chemical, or biological entity that induces an environmental response. Stressors may adversely affect specific natural resources or entire ecosystems, including plants and animals, as well as the environment with which they interact. There were no ecological RCOCs identified for the ECODS L-3, LRP 131-1L, and LRP 131-4L OU.

Summary of Contaminant Fate and Transport Analysis

A CM analysis determined the potential for groundwater contamination and assessed the migration potential of residual vadose zone contaminants. The analysis did not identify any CM RCOCs and concluded that contaminants are not present in any soil or sediment that would leach to groundwater at concentrations greater than drinking water standards within 1,000 years.

Principal Threat Source Material (PTSM) Evaluations

An evaluation for source materials that are highly toxic was conducted as part of the PTSM assessment in the RFI/RI/BRA/CMS/FS document (SRNS 2025). The quantitative evaluation concluded that there are no contaminants that constitute PTSM at the ECODS L-3, LRP 131-1L, and LRP 131-4L OU.

Problems Warranting Action

As determined in the RFI/RI/BRA/CMS/FS (SRNS 2025), problems warranting action are identified for the ECODS L-3 subunit and the LRP 131-4L subunit under the potential future resident scenario, as discussed below. No problems warranting action were determined for the LRP 131-1L subunit. There are no HH (industrial worker), ecological, contaminant migration, or PTSM RCOCs for the three subunits. The HH RCOCs and problems warranting action for

the ECODS L-3 and LRP 131-4L subunits are summarized below.

ECODS L-3 Subunit

- ACM is likely present in unit soils that may pose a risk to human receptors if exposed.
- PCBs are present in the surface soil (0 to 0.3 m, [0 to 1 ft]) that pose a risk greater than 1.0E-06 and a hazard quotient (HQ) greater than 1 to the hypothetical resident receptor scenario, More specifically, Aroclor 1254 (exposure point concentration [EPC] – 1.28 mg/kg) has a residential risk of ~~risk of~~ 5.4E-06 [Figure 8] and Aroclor 1260 (EPC = 0.354 mg/kg) has a residential risk of 1.5E-06 [Figure 9]). PCB total cumulative risk = 6.9E-06. Aroclor 1254 also has a HQ = 1.1 for the hypothetical residential scenario.
- PCBs are present in surface soil (0 to 0.3 m [0 to 1 ft]) that exceed the Toxic Substance Control Act (TSCA) Applicable or Relevant and Appropriate Requirements (ARAR) threshold of 1 mg/kg for high occupancy (i.e., unrestricted land use) *(40 CFR § 761.61(a)(4)(i)(A))*. Aroclor 1254 maximum detected concentration = 5.63 mg/kg and Aroclor 1260 maximum detected concentrations = 2.17 mg/kg.

LRP 131-4L Subunit

- ACM is present in unit soils that may pose a risk to human receptors if exposed.
- Benzo(a)pyrene (EPC = 0.164 mg/kg) is present in the surface soil (0.3 m [0 to 1 ft]) that poses a risk greater than 1.0E-06 for the hypothetical resident receptor scenario (risk = 1.4E-06) (Figure 10).

Conclusion

It is the lead agency's current judgement that the preferred alternative identified in this SB/PP, or one of the other active measures considered in the SB/PP, is necessary to protect public health or welfare or the environment from ~~A~~actual or threatened releases of hazardous substances ~~from the ECODS L-3 and LRP 131-4L subunits, if not addressed by the Preferred Alternative or one of the other active measures considered, may present a current or potential threat to public health, welfare, or~~into the environment.

VI. REMEDIAL ACTION OBJECTIVES

Remedial action objectives (RAOs) are media- or OU-specific objectives to protect HH and the environment. RAOs usually specify potential receptors and exposure pathways and are identified during project scoping once the conceptual site model is understood. RAOs describe what the remediation must accomplish and are used as a framework for developing alternatives. The RAOs are based on the nature and extent of contamination, threatened resources, and the potential for human and environmental exposure.

The future land use of the ECODS L-3, LRP 131-1L, and LRP 131-4L OU is assumed to be industrial land use with USDOE maintaining control of the land. The following RAOs have been identified for the ECODS L-3 and LRP 131-4L subunits to support the future land use. No RAOs have been developed for LRP 131-1L subunit since there were no problems warranting action identified.

ECODS L-3 Subunit

- Prevent exposure of human receptors to presumed ACM that is likely present in soils.
- Prevent exposure of a future resident to Aroclor 1254 and Aroclor 1260 in surface soils at levels exceeding 1E-06 risk and HQ of 1.
- Prevent exposure of human receptors to Aroclor 1254 and Aroclor 1260 in surface soils at levels exceeding ARAR threshold of 1 mg/kg.

LRP 131-4L Subunit

- Prevent exposure of human receptors to presumed ACM that is likely present in soils.
- Prevent exposure of a future resident to benzo(a)pyrene in surface soils (0 to 0.3 m [0 to 1 ft]) at levels exceeding 1E-06 risk.

Preliminary Remedial Goals

Preliminary Remedial Goals (PRGs) serve to provide a range of cleanup goals for each RCOC and are typically identified along with the RAOs. These cleanup goals are either concentration levels that correspond to a specific risk or hazard or are based on ARARs. Following public comment and approval of the SB/PP, the PRGs for the selected remedy are documented as final cleanup goals in the ROD.

The RFI/RI/BRA/CMS/FS presents a range of HH PRGs for identified RCOCs corresponding to target cancer risks of 1E-06 (SRNS 2025). PRGs were calculated for the future resident scenario and are presented in Table 1.

Applicable or Relevant and Appropriate Requirements

ARARs are Federal and more stringent, promulgated State environmental or facility siting requirements in a law or regulation that a selected remedy must attain, which vary from site to site. ~~cleanup standards, standards of control, and other substantive requirements, criteria or limitations promulgated under federal, state, or local environmental laws.~~ They specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site. Section 121(d) of CERCLA, as amended by the Superfund Amendments Reauthorization Act, requires that remedial actions comply with requirements and standards set forth under federal and state environmental laws.

Three categories of ARARs are identified to clarify how to identify and comply with environmental requirements. They include action-specific, location-specific, and chemical-specific requirements:

- Action-specific ARARs control or restrict the design, performance, and other aspects of implementing specific remedial activities;
- Location-specific ARARs reflect the physiographic and environmental characteristics of the unit or the immediate area, and may restrict or preclude remedial actions depending on the location or the characteristics of the unit;
- Chemical-specific ARARs are media-specific concentration limits promulgated under federal or state law.

A summary of the ARARs for the preferred alternative for the ECODS L-3 and LRP 131-4L subunits are presented in Table 2.

VII. SUMMARY OF REMEDIAL ALTERNATIVES

The range of alternatives includes options that 1) restrict exposure to contaminated media; 2) reduce exposure to contaminated media; and 3) eliminate exposure to contaminated media. Remedial alternatives were developed for each subunit as described below. A detailed description of each alternative is provided in the RFI/RI/BRA/CMS/FS (SRNS 2025). A detailed cost analysis for the proposed alternatives is provided in Appendix A of this document.

ECODS L-3 Subunit

Alternative A-1: No Action

The No Action alternative is required by the NCP to serve as a baseline for comparison with other remedial alternatives. Under this alternative, no effort would be made to control access, limit exposure, or reduce toxicity, mobility, or volume of contaminants of concerns (COCs) at the ECODS L-3 subunit. This alternative would leave the ECODS L-3 subunit in its current condition with no additional controls. This alternative does not include five-year remedy reviews.

Summary of Costs

Capital Cost $0
Operation and Maintenance (O&M)..... $0
Total Present-Worth Cost $0

Alternative A-2: Land Use Controls

This alternative involves the use of administrative and engineering controls to limit access to the entire ECODS L-3 subunit. LUCs have been implemented successfully within SRS and are fully employed in all areas of the site to limit access at the site boundary and on-site facilities. LUCs would be implemented at the ECODS L-3 subunit through the use of warning and no trespassing signs; excavation permit restrictions; a Land Use Control Implementation Plan (LUCIP); and for the long term, deed restrictions would be put in place to preclude activities that could cause exposure to contaminated media exceeding acceptable risk levels in the event that the property were to be transferred out of federal ownership. Five-year remedy reviews would be required under this alternative.

Summary of Costs

Capital Cost $32,030
O&M $350,528
Total Present-Worth Cost $382,558

Alternative A-3: Soil Cover with LUCs

Alternative A-3 consists of placing a 0.6 m (2 ft) soil cover over the ECODS L-3 subunit to prevent exposure to human receptors. A soil cover would be constructed using standard earth-moving equipment. This alternative would also require LUCs through the use of warning and no trespassing signs, excavation permit restrictions, a LUCIP, and deed restrictions would be put into place to preclude activities that could cause exposure to contaminated media exceeding acceptable risk levels in the even the property were to be transferred out of federal ownership. Maintenance of the soil cover and five-year remedy reviews are required.

Summary of Costs

Capital Cost $1,006,950
O&M $221,762
Total Present-Worth Cost $1,228,712

Alternative A-4: Excavation and Disposal

This alternative consists of excavating all contaminated media within the ECODS L-3 subunit and disposing off-site. Specifically, this remedial alternative includes clearing ~0.2 hectares (0.5 acres); constructing stormwater management system, the removal and offsite disposal of ~6,728 m^3 (8,800 yd^3) of contaminated media to a depth of 3.7 m (12 ft) below ground surface (the bottom depth of the disposal pits); contouring the site after removal of the contaminated media; backfilling with clean fill to grade; and constructing a vegetated cover over the footprint. This alternative would not require LUCs or five-year remedy reviews.

Summary of Costs

Capital Cost $1,654,216
O&M $0
Total Present-Worth Cost $1,654,216

LRP 131-4L Subunit

Alternative B-1: No Action

The No Action alternative is required by the NCP to serve as a baseline for comparison with other remedial alternatives. Under this alternative, no effort would be made to control access, limit exposure, or reduce toxicity, mobility, or volume of COCs at the LRP 131-4L subunit. This alternative would leave the LRP 131-4L subunit in its current condition with no additional controls. This alternative does not include five-year remedy reviews.

Summary of Costs

Capital Cost $0
O&M $0
Total Present-Worth Cost $0

Alternative B-2: Land Use Controls

This alternative involves the use of administrative and engineering controls to limit access to the entire LRP 131-4L Subunit. LUCs have been implemented successfully within SRS and are fully employed in all areas of the site to limit access at the site boundary and on-site facilities. LUCs would be implemented at the LRP 131-4L Subunit through the use of warning and no trespassing signs; excavation permit restrictions; a LUCIP, and for the long term, deed restrictions would be put in place to preclude activities that could cause exposure to contaminated media exceeding acceptable risk levels in the event that the property were to be transferred out of federal ownership. This alternative would require five-year remedy reviews.

Summary of Costs

Capital Cost $32,030
O&M $386,406
Total Present-Worth Cost $418,436

Alternative B-3: Soil Cover with LUCs

Alternative B-3 consists of placing a 0.6 m (2 ft) soil cover over the entire area of the LRP 131-4L subunit. Specifically, this remedial alternative includes to prevent exposure to human receptors. A soil cover would be constructed using standard earth-moving equipment. This alternative would also require LUCs through the use of warning and no trespassing signs, excavation permit restrictions, a LUCIP, and deed restrictions would be put into place to preclude activities that could cause exposure to contaminated media exceeding acceptable risk levels in the even the property were to be transferred out of federal ownership. Maintenance of the soil cover and five-year remedy reviews are required.

Summary of Costs

Capital Cost $1,294,659
O&M $248,679
Total Present-Worth Cost $1,543,338

Alternative B-4: Excavation and Disposal

Alternative B-4 consists of consists of excavating all contaminated media within the LRP 131-4L subunit and disposing off-site. Specifically, this remedial alternative includes clearing ~0.5 hectares (1.2 acres); the removal and offsite disposal of ~21,592 m^3 (23,613 yd^3) of contaminated media to a depth of 4.3 m (14 ft) below ground surface (the bottom depth of the disposal pits), contouring the site after removal of the contaminated media, backfilling with clean fill to grade, and constructing a vegetated cover over the footprint. The estimated volume is based on the maximum extent of contamination, extending the boundary to the northwest to a nearby ditch feature. The ditch shows no evidence of buried waste present and acts as a maximum subunit boundary. This alternative would not require LUCs or five-year remedy reviews.

Summary of Costs

Capital Cost $7,671,286
O&M $0
Total Present-Worth Cost $7,671,286

VIII. EVALUATION OF ALTERNATIVES

This section summarizes the results of the evaluation of the remedial alternatives presented in the RFI/RI/BRA/CMS/FS (SRNS 2025).

The NCP [40 Code of Federal Regulations {CFR} 300.430(e)(9)] requires that potential remedial alternatives undergo detailed analysis using relevant evaluation criteria that will be used to select a final remedy. USEPA has established nine evaluation criteria to address the statutory requirements under CERCLA. The criteria fall into categories of threshold criteria, primary balancing criteria, and modifying criteria. The nine evaluation criteria are detailed in Table 3.

Comparative Analysis of Alternatives

The potential remedial alternatives have been evaluated against the threshold and primary balancing criteria. Modifying criteria (i.e., state or support agency acceptance and community acceptance) will be evaluated after the public comment period on the SB/PP. Provided below is a summary of the comparison of the alternatives against the CERCLA evaluation criteria. Key advantages and disadvantages for each alternative relative to one another and in relation to the two threshold criteria and five primary balancing criteria are discussed below and summarized in Table 4 (ECODS L-3 subunit) and Table 5 (LRP 131-4L subunit).

ECODS L-3 Subunit

Overall Protection of HH and the Environment

Alternative A-1 creates a potential for human exposure to asbestos and is not protective of human health because there are no controls or remediation.. Alternative A-2 limits exposure to the contaminated media through the implementation of engineering and administrative controls. Alternative A-3 protects HH by the placement of a soil cover to eliminate the direct exposure pathways in addition to the use of administrative and engineering controls. Alternative A-4 protects HH by the excavation of the contaminated media to eliminate the direct exposure pathway. Protection to ecological receptors is not

applicable for Alternatives A-1, A-2, A-3, and A-4 since contaminant are not at levels that pose a threat to the environment.

Compliance with ARARs

The specific ARARs applicable to each alternative are listed below:

- **Chemical-Specific ARARs:** 40 CFR 761.61 provides cleanup and disposal options for PCB remediation waste for Alternatives A-1, A-2, A-3, and A-4.
- **Location-Specific ARARs:** No location-specific ARAR are associated are associated with Alternatives A-1, A-2, A-3, and A-4.
- **Action-Specific ARARs:** No location-specific ARAR are associated are associated with Alternatives A-1 and A-2. For Alternatives A-3 and A-4, the storm management of the ECODS L-3 would trigger South Carolina (SC) Regulation 61-9.122.41 and SC Regulation 72-307 I and must comply with the substantive requirements for stormwater management and sediment control. To minimize erosion of sediment and manage stormwater runoff that may occur during the remedial actions, best management practices would be employed. For Alternative A-4, disposal and transportation of solid waste generated from this alternative would be handled in accordance with federal and state regulation (40 CFR 262.11(b) and SC Regulation 61-107.5 (D)(3)). Disposal of the solid waste would also trigger SC Regulation 61-107 requirements, which requires disposal in a properly constructed and permitted disposal facility. This requirement can be achieved through use of an existing and approved on-site SRS facility or transporting the contaminated media to an approved facility such as Three Rivers Landfill which has an USEPA determination of off-site acceptability for disposal of CERCLA waste.

Short-Term Effectiveness

Alternative A-1 is not effective in the short-term since exposure is not prevented and therefore, ranked lowest of all the alternatives. Alternatives A-3 and A-4 were ranked equally due to the injury risk to the industrial worker during implementation, although this is typically mitigated by health and safety measures. Implementation of Alternatives A-3 and A-4 would also require a longer time frame to implement. Alternative A-2 was ranked the highest due to posing no risk to the industrial worker or surrounding community during implementation and the short time frame to implement the alternative.

Long-Term Effectiveness and Permanence

Alternative A-1 is not effective in the long-term since exposure is not prevented and therefore, ranked the lowest. Alternatives A-2 and A-3 are ranked equally due to remaining effective as long as LUCs are in place. Alternative A-4 is the most effective in the long-term due to the elimination of all contaminated media within the subunit.

Reduction of Toxicity, Mobility, or Volume through Treatment

None of the alternatives employ any treatment to reduce the toxicity, mobility, or volume of the contaminated media. As such, all alternatives are given an equally low ranking.

Implementability

No implementation is required of Alternative A-1; therefore, this alternative was ranked highest. Alternative A-2 was ranked the same as Alternative A-

1 even though this alternative requires administrative and engineering controls that are easy to implement. Alternatives A-3 and A-4 were ranked below Alternative 2 and equally ranked due to the extended time frame to implement.

Cost

The total present-worth cost for each of the alternatives is provided below:

Alternative A-1 No Action: $0

Alternative A-2 Land Use Controls: $382,558

Alternative A-3 Soil Cover with LUCs: ...$1,228,712

Alternative A-4 Excavation and Disposal: $1,654,216

LRP 131-4L Subunit

Overall Protection of HH and the Environment

Only Alternative B-1 is not protective of human health and the environment. Alternative B-2 limits exposure to the contaminated media through the implementation of administrative and engineering controls. Alternative B-3 breaks the exposure pathway to contaminated media through the use of a protective cover system in addition to the use of administrative and engineering controls. Alternative B-4 eliminates exposure to human health and the environment by removing all contaminated media at the site

Compliance with ARARs

The specific ARARs applicable to each alternative are listed below:

- **Chemical-Specific ARARs:** No chemical-specific ARARs are associated with Alternatives B-1, B-2, B-3, and B-4.
- **Location-Specific ARARs:** No location-specific ARARs are associated with Alternatives B-1, B-2, B-3, and B-4.
- **Action-Specific ARARs:** No location-specific ARAR are associated are associated with Alternatives B-1 and B-2. For Alternatives B-3 and B-4, the stormwater management of LRP 131-4L would trigger SC Regulation 61-9.122.41 and SC Regulation 72-307 I and must comply with the substantive requirements for stormwater management and sediment control. To minimize erosion of sediment and manage stormwater runoff that may occur during the remedial actions, best management practices would be employed. For Alternative B-4, disposal and transportation of solid waste generated from this alternative would be handled in accordance with federal and state regulation (40 CFR 262.11(b) and SC Regulation 61-107.5 (D)(3)). Disposal of the solid waste would also trigger SC Regulation 61-107 requirements, which requires disposal in a properly constructed and permitted disposal facility. This requirement can be achieved through use of an existing and approved on-site SRS facility or transporting the contaminated media to an approved facility such as Three Rivers Landfill which has an USEPA determination of off-site acceptability for disposal of CERCLA waste.

There are no ARARs associated with Alternatives B-1 or B-2. Alternatives B-3 and B-4 achieve the action-specific ARARs for minimizing erosion of sediment and the management of storm water runoff by employing best management practices. Alternative B-4, which includes disposal and transportation of solid waste, would meet SCDES requirements through the

use of an existing approved disposal facility such as Three Rivers Landfill.

Short-Term Effectiveness

Alternative B-1 is not effective in the short-term since exposure is not prevented and therefore, ranked lowest of all alternatives. Alternative B-2 was ranked the same as Alternative B-1 even though this alternative required administrative and engineering controls that are easy to implement. Alternatives B-3 and B-4 were ranked below Alternative B-2 and equally ranked due to the extended time frame to implement.

Long-Term Effectiveness and Permanence

Alternative B-1 is not effective in the long-term since exposure is not prevented and therefore, it ranked lowest. Alternatives B-2 and B-3 are ranked equally due to remaining effective as long as LUCs are in place. Alternative B-4 is the most effective in the long-term due to the elimination of all contaminated media within the subunit.

Reduction of Toxicity, Mobility, or Volume through Treatment

None of the alternatives employs any treatment to reduce the toxicity, mobility, or volume of the contaminated media. As such, both alternatives were given an equally low ranking.

Implementability

No implementation is required of Alternative B-1; therefore, this alternative was ranked the highest. Alternative B-2 was ranked the same as Alternative B-1 even though this alternative requires administrative and engineering controls that are easy to implement. Alternatives B-3 and B-4 were ranked below Alternative B-2 and equally ranked due to the extended time frame to implement.

Cost

The total present-worth cost for each of the alternatives is provided below:

Alternative B-1 No Action: $0

Alternative B-2 Land Use Controls: $418,436

Alternative B-3 Soil Cover with LUCs: ...$1,543,338

Alternative B-4 Excavation and Disposal: $7,671,286

IX. PREFERRED ALTERNATIVE

A comparative alternative analysis, provided in Tables 6 and 7, for the ECODS L-3 and LRP 131-4L subunits, respectively, was developed to quantitatively evaluate the alternatives as they relate to the CERCLA criteria. This analysis does not necessarily select the preferred alternative, although it does attempt to rank the remedies in order of superiority when compared to the CERCLA criteria. The preferred alternative for each subunit is identified below:

- ECODS L-3 Subunit: Alternative A-2, LUCs to prevent human exposure to ACM that is likely present in unit soils and to PCBs (Aroclor 1254 and Aroclor 1260) that are present in surface soils that present an unacceptable risk to a hypothetical future resident. Alternative A-2 was chosen as the preferred remedy at the ECODS L-3 subunit due to the overall protection and effectiveness of the remedy when compared to Alternatives A-1, A-3, and A-4. Implementation of this preferred alternative requires five-year remedy reviews.
- LRP 131-4L Subunit: Alternative B-2, LUCs to prevent human exposure to ACM that is likely present in unit soils and to benzo(a)pyrene that is present in surface soils that present an unacceptable risk to a hypothetical future

resident. Alternative B-2 was chosen as the preferred remedy at the LRP 131-4L subunit due to the overall protection and effectiveness of the remedy when compared to Alternatives B-1, B-3, and B-4. Implementation of this preferred alternative requires five-year remedy reviews.

LUCs for the ECODS L-3 subunit and LRP 131-4L subunit include the following:

- Warning signs posted at each subunit around the waste unit boundaries/areas. Operations and maintenance of the signage.
- Administrative/Worker Access Controls: Includes SRS administrative controls and land use restrictions for onsite workers as implemented under the Site Use/Site Clearance Program and other controls that are in place to ensure worker safety, including work controls/work packages that include worker training, and health and safety requirements and pre-work briefings.
- Engineering controls: SRS access controls that limit and inform SRS workers and inadvertent trespassers as described in the 2023 RCRA Permit Renewal Application, Volume I, Section F.1, which describes the security procedures and equipment, 24-hour surveillance system, artificial or natural barriers, control entry systems, and warning signs in place at the SRS boundary.

The preferred remedy for the ECODS L-3 and LRP 131-4L subunits leaves hazardous substances in place that pose a potential future risk to HH and will require land use restrictions for an indefinite period of time. As negotiated with USEPA, and in accordance with USEPA – Region 4 Policy (*Assuring Land Use Controls at Federal Facilities*, April 21, 1998), SRS has developed a Land Use Control Assurance Plan (LUCAP) (WSRC 1999) to ensure that land use restrictions are maintained and periodically verified. The unit-specific LUCIP that will be referenced in the ROD for the ECODS L-3, LRP 131-1L, and LRP 131-4L OU will provide details and specific measures required for the LUCs selected as part of this preferred remedy. The USDOE is responsible for implementing, maintaining, monitoring, reporting upon, and enforcing the LUCs described in this SB/PP. The LUCIP, developed as part of this action, will be submitted~~ concurrently with the Corrective Measure Implementation Plan (CMIP)/Remedial Action Implementation Plan (RAIP),~~ as required in the FFA for review and approval by USEPA and SCDES. Upon final approval, the LUCIP will be appended to the LUCAP and is considered incorporated by reference into the ECODS L-3, LRP 131-1L, and LRP 131-4L OU ROD, establishing LUC implementation and maintenance requirements enforceable under CERCLA. The approved LUCIP will establish implementation, monitoring, maintenance, reporting, and enforcement requirements for the unit. The LUCIP will remain in effect until modified as needed to be protective of HH and the environment. LUCIP modification will occur only through another CERCLA document. Approval by USEPA and SCDES is required for any modification or termination of the LUCs.

The Preferred Alternative can change in response to public comment or new information obtained before the remedial action is implemented at the individual subunits.

The preferred remedy at the ECODS L-3, LRP 131-1L, and LRP 131-4L OU was selected based on the following:

- ECODS L-3 Subunit: Alternative A-2, LUCs was selected as the preferred alternative over Alternative A-1, No Action, because it does not achieve the RAOs identified at the subunit. Individuals would not be provided protection from potentially being exposed to ACM under Alternative A-1. While Alternatives A-3 and A-4 would achieve the RAOs identified for this subunit and address the risk to human receptors, the cost to implement is significantly higher for these two alternatives that Alternative A-2. Alternative A-2 addresses the risk to the human receptors by limiting access and restricting excavation at the waste unit, eliminating the potential exposure to ACM in soils. Alternative A-2 does achieve the RAO identified at this subunit. LUCs have also been the selected remedy for many other ECODS sites across SRS and have proven to be effective.
- LRP 131-1L Subunit: No action is recommended due to no problems warranting action for this subunit.
- LRP 131-4L Subunit: Alternative B-2, LUCs was selected as the preferred alternative over Alternative B-1, No Action, because it does not achieve the RAOs identified at the subunit. Individuals would not be provided protection from potentially being exposed to asbestos under While Alternatives B-3 and B-4 would achieve the RAOs identified for this subunit and address the risk to human receptors, the cost to implement is significantly higher for these two alternatives that Alternative B-2. Alternative B-1. Alternative B-2 addresses the risk to the human receptors by limiting access and restricting excavation at the waste unit, eliminating the potential exposure to asbestos in subsurface soils. Alternative B-2 does achieve the RAO identified at this subunit. LUCs have also been the selected remedy for many other sites across SRS and have proven to be effective.

Based on information currently available, the lead agency believes that Alternatives A-2 and B-2 provide the best balance of trade-offs among the other alternatives with respect to the evaluation criteria. The USDOE expects the Preferred Alternative to satisfy the statutory requirements in CERCLA Section 121(b) to: 1) be protective of HH and the environment, 2) comply with ARARs, and 3) be cost-effective~~, 4) utilize permanent solutions and alternative treatment technologies to maximum extent practicable, and 5) satisfy the preference for treatment as a principal element~~.

X. POST-ROD SCHEDULE

Deliverable	Submittal Date
Submit Rev. 0, ROD	January 05, 2026
~~Submit Rev. 0, CMIP/RAIP~~	~~July 22, 2026~~
Submit Rev. 0, LUCIP	July 22, 2026
ROD Issuance	September 24, 2026
Remedial Action Start	December 28, 2027

XI. REFERENCES

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XII. GLOSSARY

Administrative Record File (ARF): A file that is maintained and contains all information used to make a decision on the selection of a response action under the Comprehensive Environmental Response, Compensation and Liability Act. This file is to be available for public review, and a copy is to be established at or near the Site, usually at one of the information repositories. Also a duplicate file is held in a central location, such as a regional or state office.

Applicable or Relevant and Appropriate Requirement (ARARs): ~~Applicable, or Relevant and Appropriate Requirements. Refers to the f~~Federal and <u>more stringent, promulgated S</u>~~s~~state <u>environmental or facility siting</u> requirements <u>in a law or regulation</u> that a selected remedy ~~will~~ <u>must</u> attain<u>,</u> ~~. These requirements may~~<u>which</u> vary from site to site.

Baseline Risk Assessment (BRA): Analysis of the potential adverse health effects (current or future) caused by hazardous substance release from a site in the absence of any actions to control or mitigate these releases.

Characterization: The compilation of all available data about the waste units to determine the rate and extent of CM resulting from the waste site, and the concentration of any contaminants that may be present.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 1980: A federal law passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act.

Corrective Action: A USEPA requirement to conduct remedial procedures under RCRA 3004(u) at a facility when there has been a release of hazardous waste or constituents into the environment. Corrective action may be required beyond the facility boundary and can be required regardless of when the waste was placed at the facility.

Definitive Level Data: Analytical data of known quality, concentration, and level of uncertainty. The levels of quality and uncertainty of the analytical data are consistent with the requirements for the decision to be made. Required for final decision-making.

Exposure: Contact of an organism with a chemical or physical agent. Exposure is quantified as the amount of the agent available at the exchange boundaries of the organism (e.g., skin, lungs, digestive tract, etc.) and available for absorption.

Exposure Point Concentration (EPC): The concentration of a contaminant that an individual would be exposed to in the exposure medium of concern and is used in the formal risk calculation. Specifically, the EPC is the lower of the 95% upper confidence limit on the mean concentration and the maximum detected concentration.

Federal Facility Agreement (FFA): The legally binding agreement between regulatory agencies (USEPA and SCDES) and regulated entities (USDOE) that sets the standards and schedules for the comprehensive remediation of the SRS.

Land Use Controls (LUC): Legal and/or administrative mechanisms as well as physical installations that modify or guide human behavior at operable units where residual contamination remains in place. Institutional controls and engineering controls are types of land use controls.

Media: Pathways through which contaminants are transferred. Five media to which a release of contaminants may occur are groundwater, soil, surface water, sediments, and air.

National Priorities List (NPL): USEPA's formal list of the nation's most serious uncontrolled or abandoned waste sites, identified for possible long-term remedial response, as established by CERCLA.

Operable Unit (OU): A discrete action taken as one part of an overall site cleanup. The term is also used in USEPA guidance documents to refer to distinct geographic areas or media-specific units within a site. A number of operable units can be used in the course of a cleanup.

Operation and Maintenance (O&M): Activities conducted at a site after a response action occurs to ensure that the cleanup and/or systems are functioning properly.

Overall Protection of Human Health and the Environment: The assessment against this criterion describes how the alternative, as a whole, achieves and maintains protection of human health and the environment.

Proposed Plan (PP): A legal document that provides a brief analysis of remedial alternatives under consideration for the site/operable unit and proposes the preferred alternative. It actively solicits public

review and comment on all alternatives under consideration.

Record of Decision (ROD): A legal document that explains to the public which alternative will be used at a site/operable unit. The record of decision is based on information and technical analysis generated during the remedial investigation/feasibility study and consideration of public comments and community concerns.

Resource Conservation and Recovery Act (RCRA), 1976: A Federal law that established a regulatory system to track hazardous substances from their generation to disposal. The law requires safe and secure procedures to be used in treating, transporting, storing, and disposing of hazardous substances. RCRA is designed to prevent the creation of new, uncontrolled hazardous waste sites.

Responsiveness Summary: A summary of oral and/or written comments received during the proposed plan comment period and includes responses to those comments. The responsiveness summary is a key part of the ROD, highlighting community concerns.

Risk Level: 1E-06 risk level indicates a probability of 1 out of 1,000,000 individuals developing cancer under the exposure scenarios evaluated.

SRS Background Concentration: The Background Soils Statistical Summary Report for the Savannah River Site (WSRC 2006) is a very robust dataset that has been approved by the regulators for risk screening and provides statistical summaries for many naturally-occurring constituents at SRS. The SRS background concentration can be used to establish cleanup levels.

Statement of Basis (SB): A report describing the corrective measures/remedial actions being conducted pursuant to South Carolina Hazardous Waste Management Regulations, as amended.

Superfund: The common name used for CERCLA; also referred to as the Trust Fund. The Superfund program was established to help fund cleanup of hazardous waste sites. It also allows for legal action to force those responsible for the sites to clean them up.

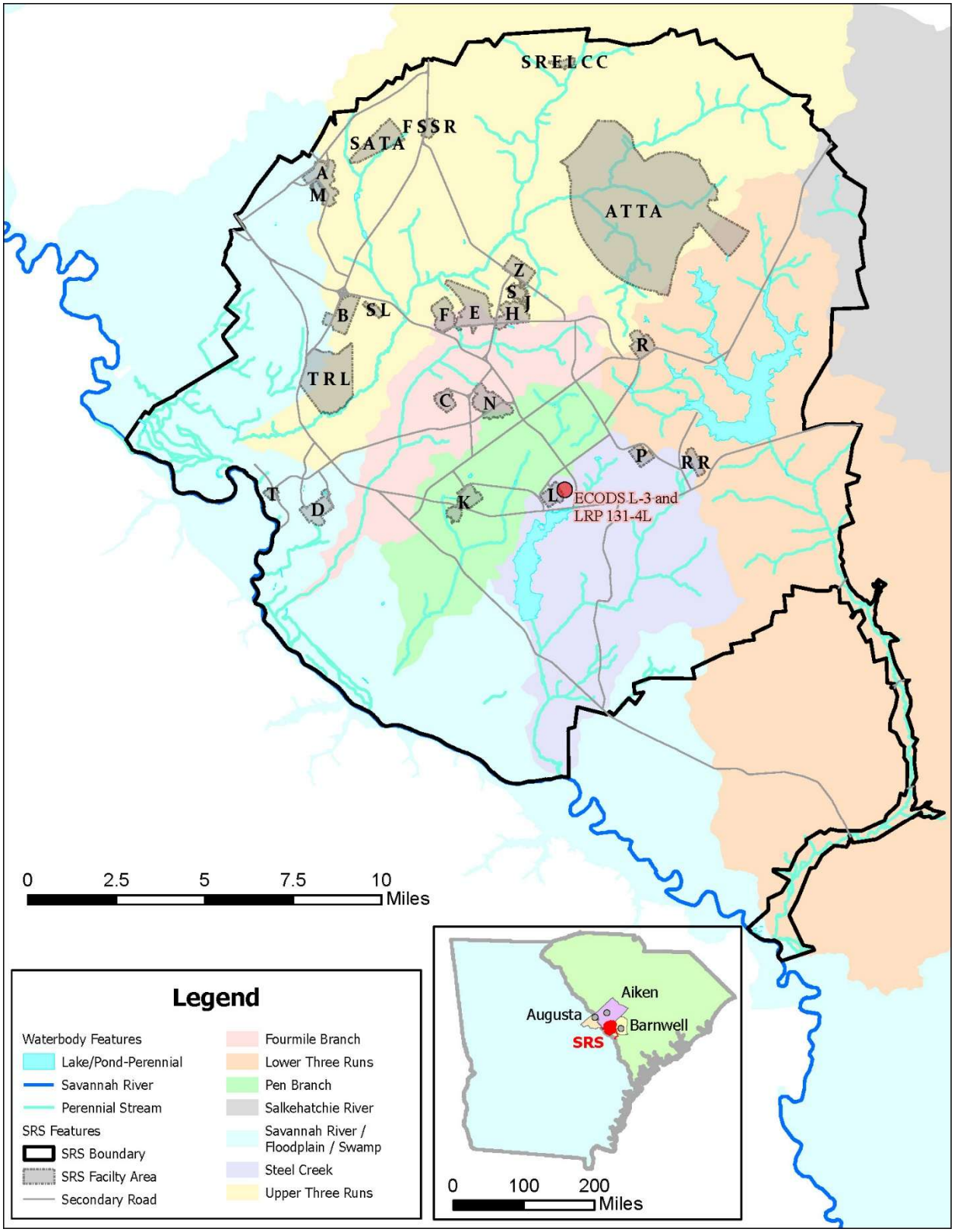

Figure 1. Location of the ECODS L-3, LRP-131-1L, and LRP-131-4L OU within the SRS

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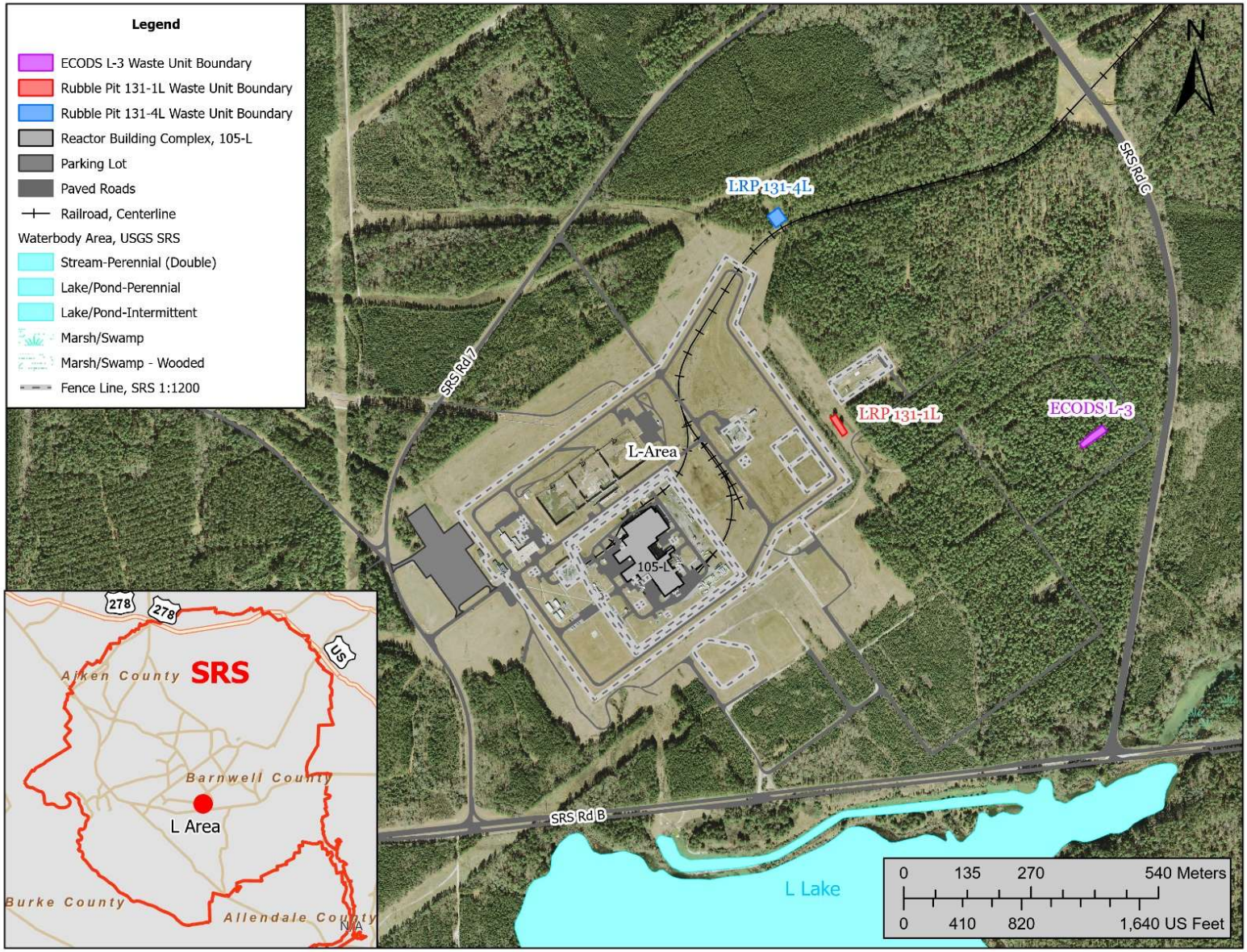

Figure 2. Location of the ECODS L-3, LRP 131-1L, and 131-4L OU within the Savannah River Site

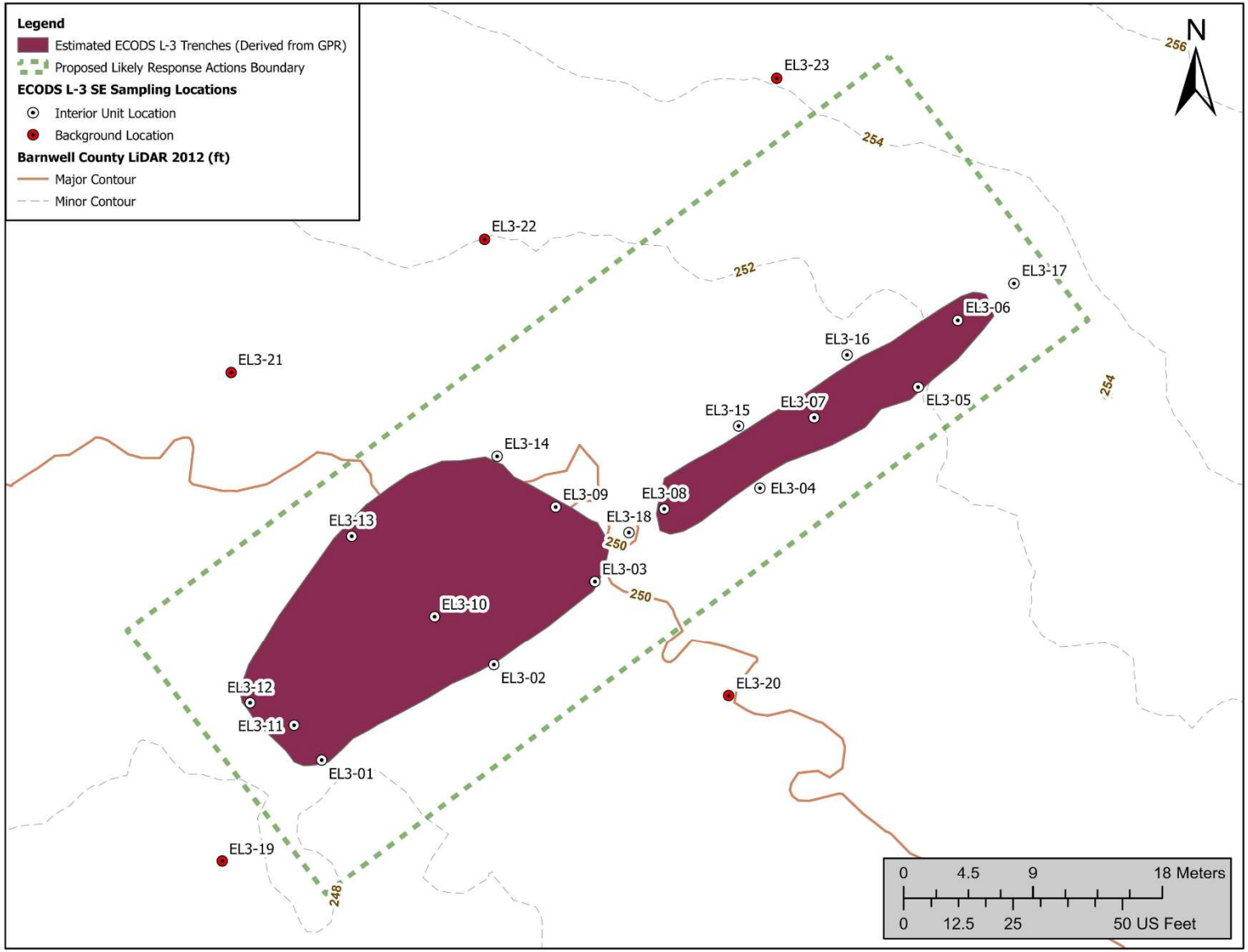

Figure 3. ECODS L-3 Subunit and Site Evaluation Sampling Locations

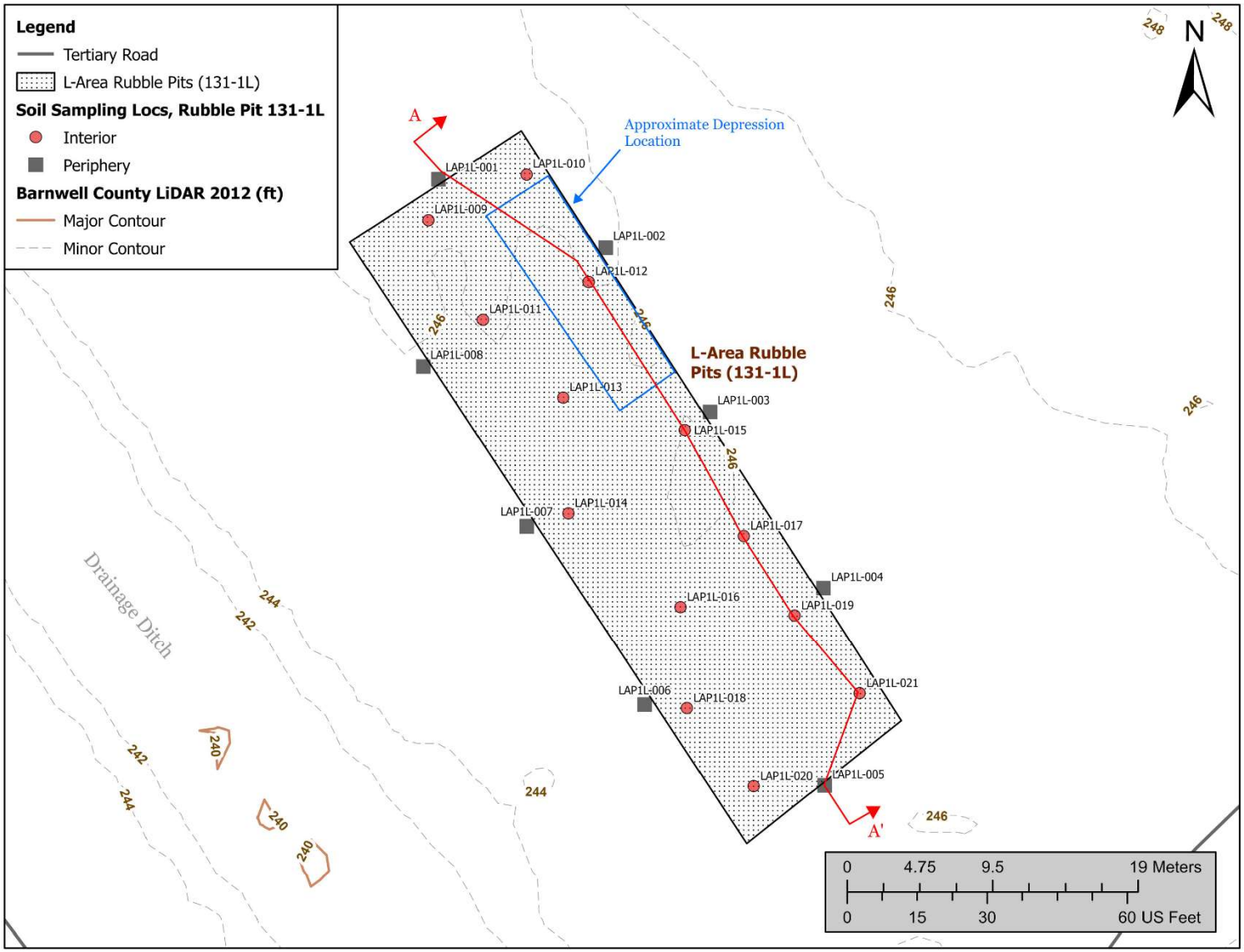

Figure 4. L-Area Rubble Pit 131-1L Subunit and RFI/RI Work Plan Sampling Locations

Figure 5. Photos of Rubble on the Surface of LRP 131-1L Subunit

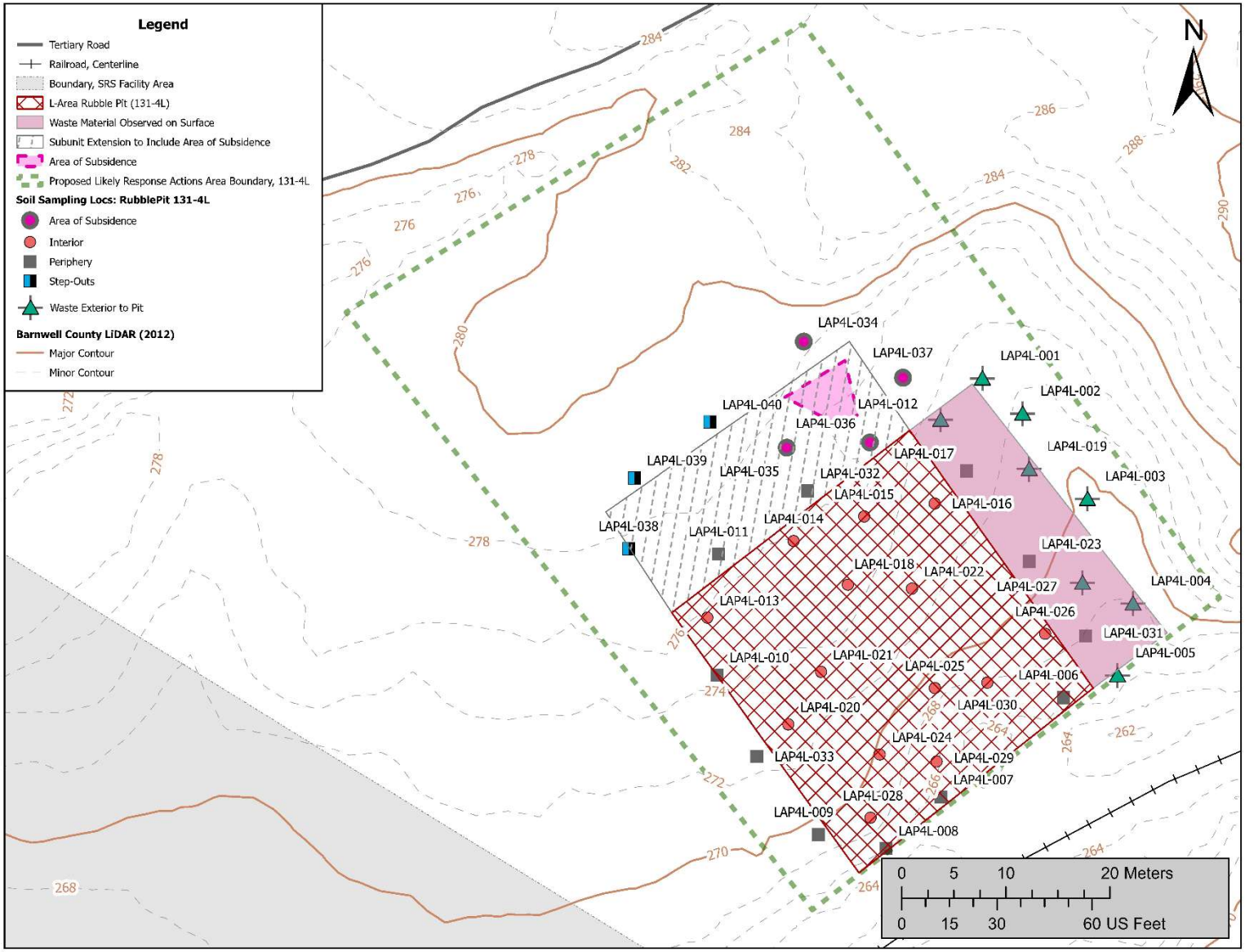

Figure 6. L-Area Rubble Pit 131-4L Subunit and RFI/RI Work Plan Sampling Locations

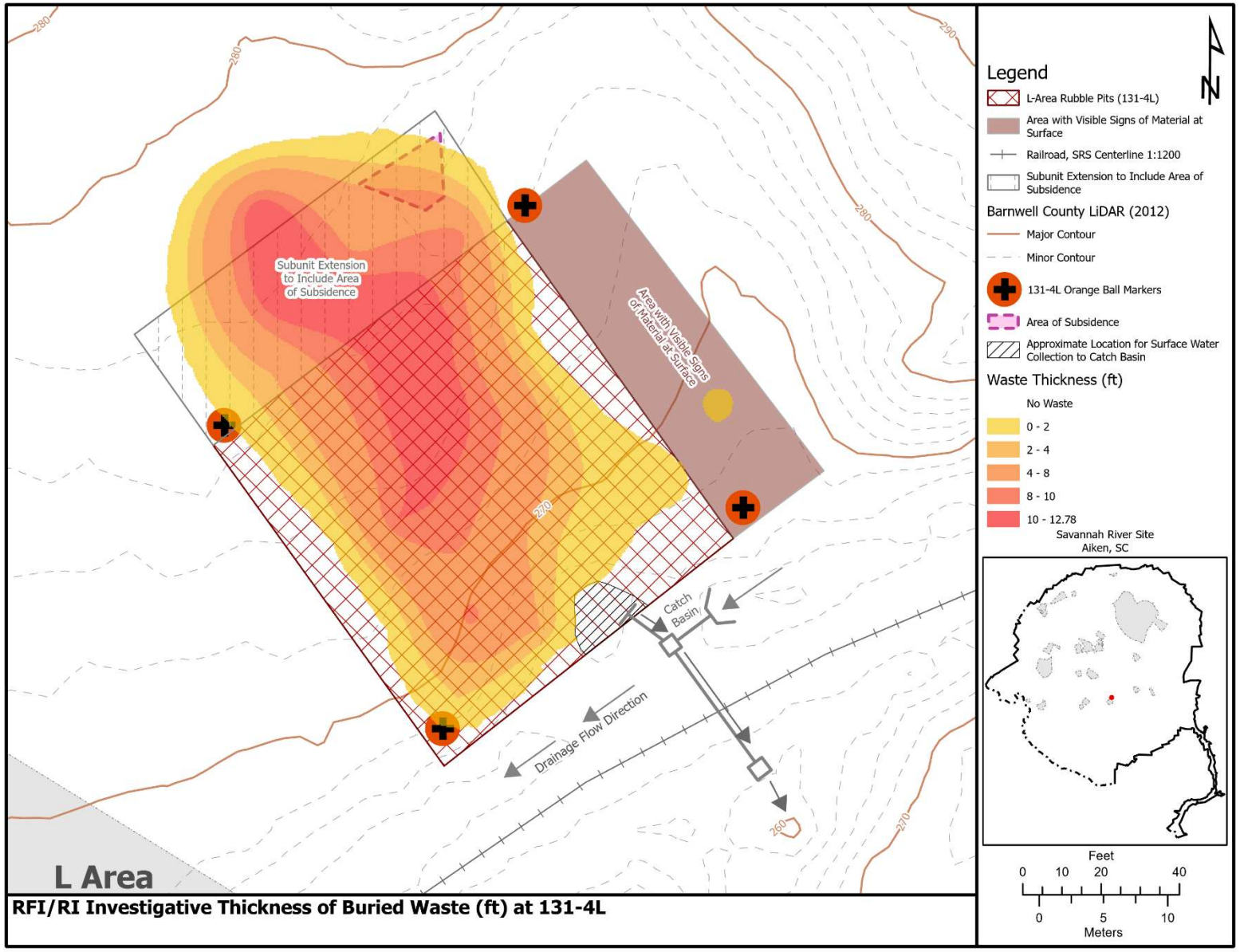

Figure 7. Waste Thickness Observed at L-Area Rubble Pit 131-4L Subunit as Outcome of RFI/RI Characterization

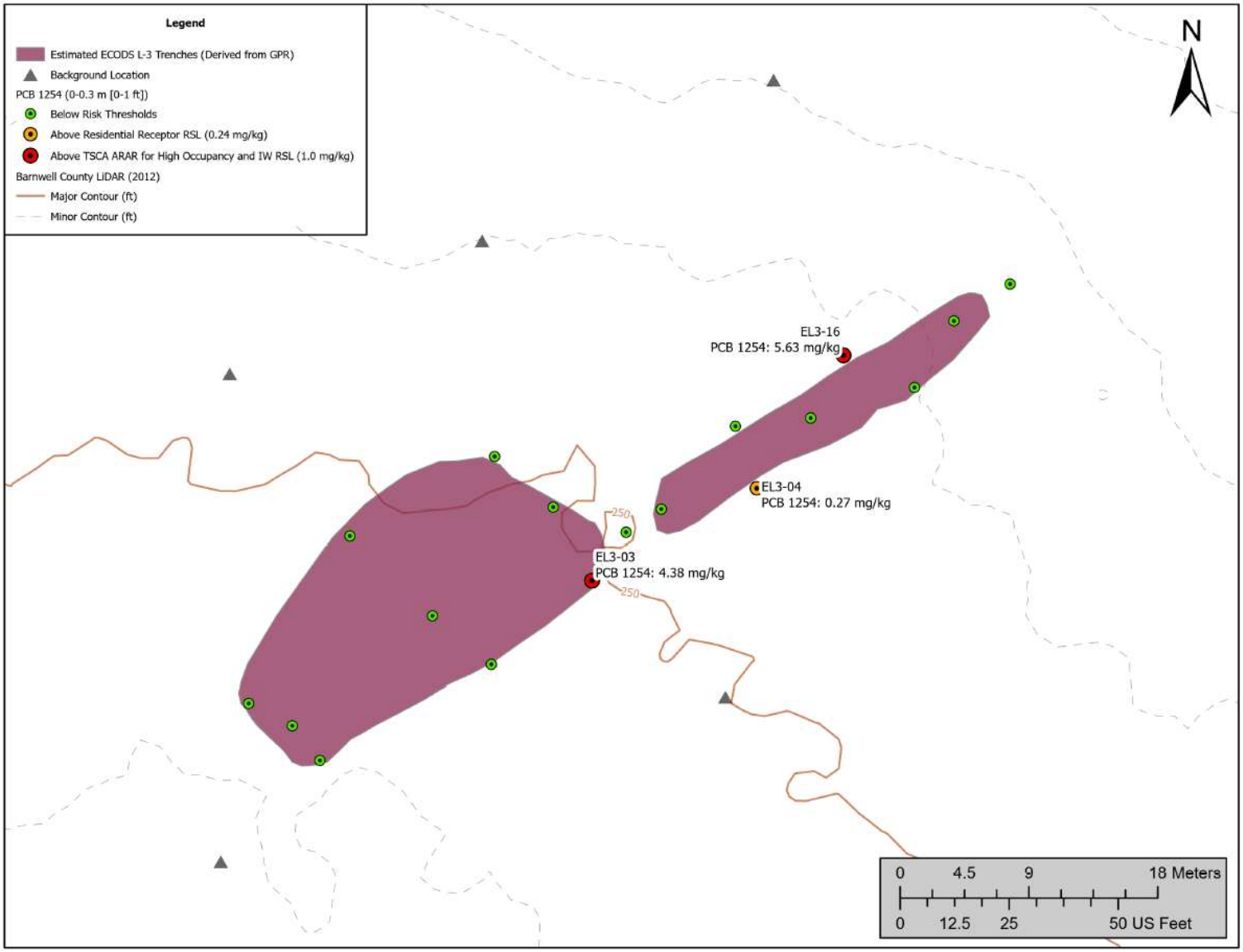

Figure 8. Aroclor 1254 Data for Surface Soil Media (0 to 0.3 m [0 to 1 ft]) at the ECODS L-3 Subunit

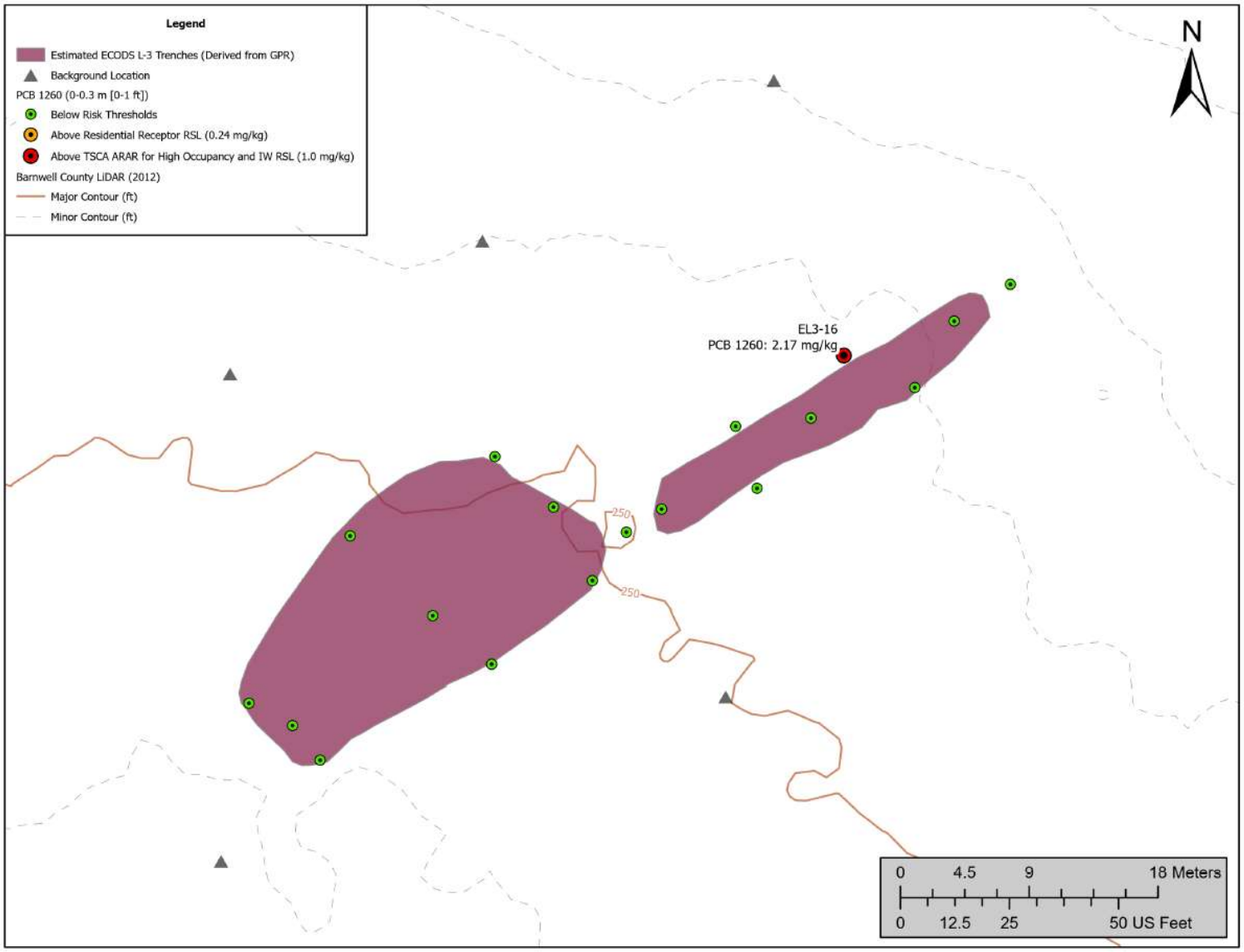

Figure 9. Aroclor 1260 Data for Surface Soil Media (0 to 0.3 m [0 to 1 ft]) at the ECODS L-3 Subunit

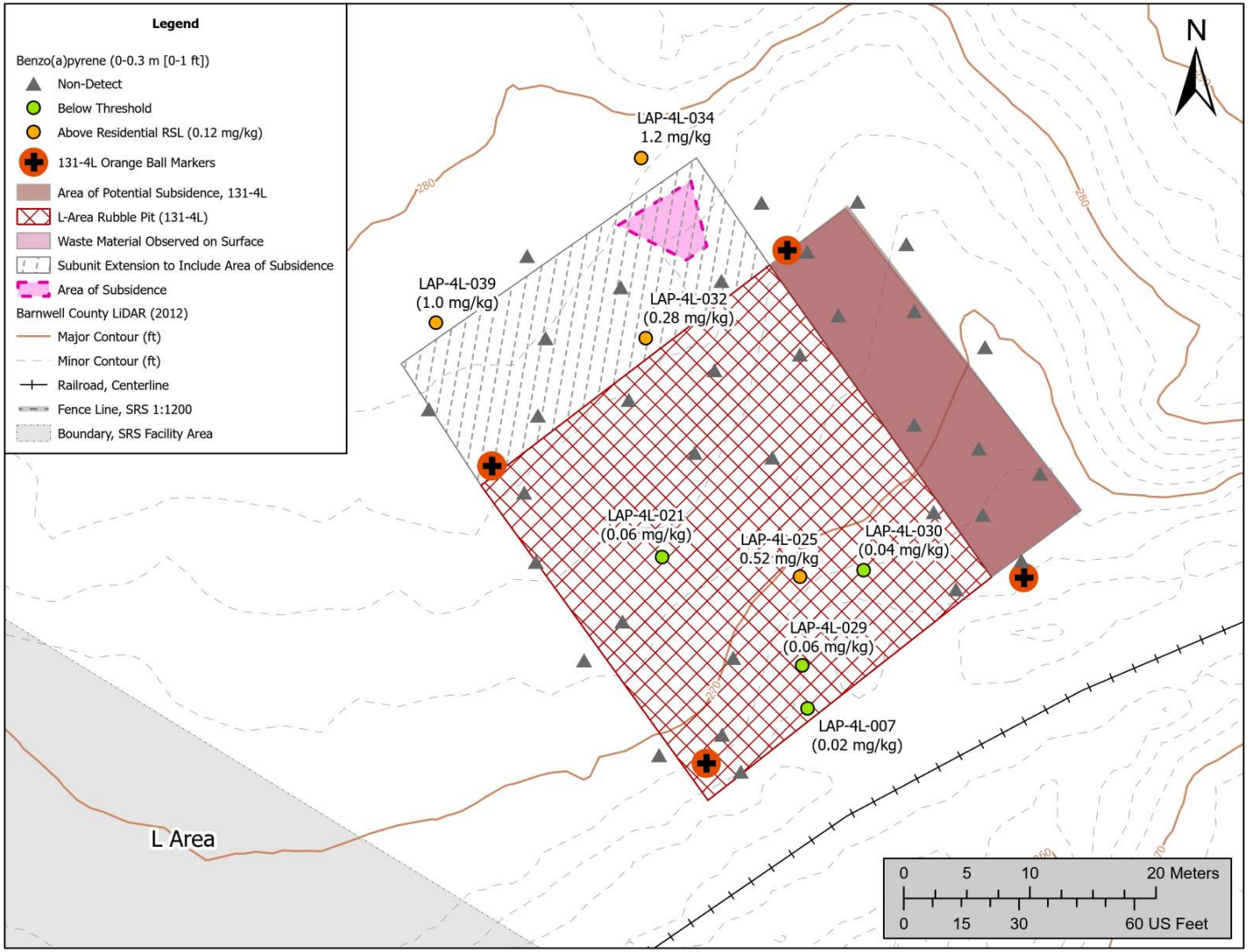

Figure 10. Benzo(a)pyrene Data for Surface Soil Media (0 to 0.3 m [0 to 1 ft]) at the LRP 131-4L

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Table 1. Cleanup Levels (PRGs) for the ECODS L-3, LRP 131-1L, and LRP 131-4L OU

Media	HH RCOC	Units	Resident PRG[1]	ARAR PRG[2]	SRS Background 2X Average Concentration	SRS Background 95th Percentile[3]	SRS Background Maximum[3]	Most Likely PRG[4]
ECODS L-3 Subunit								
Soil	Aroclor 1254	mg/kg	*0.24*	1.0	NA[5]	NA[5]	NA[5]	0.24
Soil	Aroclor 1260	mg/kg	*0.24*	1.0	NA[5]	NA[5]	NA[5]	0.24
LRP 131-4L Subunit								
Soil	Benzo(a)pyrene	mg/kg	*0.12*	N/A[6]	0.025	0.036	0.008	0.12

1 – Resident PRGs are identified at risk = 1E-06 or HQ = 1 from Appendix F (SRNS 2025). For Aroclor 1254, the more conservative carcinogenic PRG is shown.
2 – For comparison purposes, the PCB TSCA ARAR threshold for high-occupancy is presented for Aroclor 1254 and Aroclor 1260 (SRNS 2025).
3 – SRS background concentrations from Background Soils Statistical Summary Report for the Savannah River Site (WSRC 2006), Appendix B-2 (all depths interval).
4 – Most Likely PRG is the most restrictive (i.e., residential) risk-based concentration. If the risk-based PRG is less than SRS background, then the SRS 95th percentile is identified as the Most Likely PRG. Source of the Most Likely PRG is identified in *italics*.
5 – Not available; SRS background concentrations not available for PCBs.
6 – Not applicable; not identified as an ARAR RCOC.

Table 2. Potential ARARs for the Preferred Remedial Alternative for the ECODS L-3 and LRP 131-4L Subunits

CHEMICAL-SPECIFIC ARARs/TBC			
Chemical	**Requirements**	**Prerequisite**	**Citation(s)**
Asbestos Waste in Place			
Standards for inactive asbestos waste disposal sites	Must comply with one of the following: • Either discharge no visible emissions to the outside air from an inactive disposal site subject to this paragraph; or • Cover the asbestos-containing waste material with at least 15 centimeters (6 inches) of compacted nonasbestos-containing material, and grow and maintain a cover of vegetation on the area to prevent exposure of the asbestos-containing waste material; or Cover the asbestos-containing waste material with at least 60 centimeters (2 feet) of compacted nonasbestos-containing material, and maintain it to prevent exposure of the asbestos-containing waste	Closure of an area that received asbestos-containing waste materials – **relevant and appropriate**	40 CFR § 61.151(a) (1)-(3)
Warning signs for disposal site	Display warning signs at all entrances and at intervals of 100m (328 feet) or less along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material was deposited.	Closure of an area that received asbestos-containing waste materials that does not include a natural barrier to adequately deter access by the general public **– relevant and appropriate**	40 CFR § 61.151(b)(1)
	The warning signs must: (i) Be posted in such a manner and location that a person can easily read the legend; and (ii) Conform to the requirements for (20”x14”) upright format signs specified in 29 CFR 1910.145(d)(4) and this paragraph; and (iii) Display the legend as prescribed in § 61.151(b)(1)(iii) located in the lower panel with letter sizes and styles of visibility at least equal to those specified in § 61.151(b)(1)(iii).	Closure of an area that received asbestos-containing waste materials that does not include a natural barrier to adequately deter access by the general public – **relevant and appropriate**	40 CFR § 61.151(b)(1)(i)-(iii)

Table 2. Potential ARARs for the Preferred Remedial Alternative for the ECODS L-3 and LRP 131-4L Subunits *(continued)*

Chemical	Requirements	Prerequisite	Citation(s)
Fence for disposal site	Fence the perimeter of the site in a manner adequate to deter access by the general public. NOTE: Access control at SRS boundary meets this requirement to deter the general public		40 CFR § 61.151(b)(2)
Deed notice for asbestos waste disposal site	Record, in accordance with State law, a notation on the deed to the facility property and on any other instrument that would normally be examined during a title search; this notation will in perpetuity notify any potential purchaser of the property that: • The land has been used for disposal of asbestos-containing waste material; and • The survey plat and record of the location and quantity of asbestos containing waste disposed of within the disposal site required in § 61.154(f) have been filed with the Administrator; and • The site is subject to 40 CFR part 61, Subpart M. NOTE: Recordation of deed notice that informs potential purchaser on the waste disposal site is considered a substantive requirement for post-closure. NOTE: SRS complies with the Land Use Control Assurance Plan (WSRC 1999) to ensure these land use restrictions are maintained, including deed restrictions.	Closure of an inactive disposal area that received asbestos containing waste materials – **relevant and appropriate**	40 CFR § 61.151(e)(1)-(3)
Bulk PCB Waste in Place			
Bulk PCB remediation waste (self-implementing)	Unit meets the low occupancy thresholds and the residual PCB concentrations in the soil will be less than 25 mg/kg. May remain onsite without further conditions (e.g., no fencing or cap requirements).	Bulk PCB remediation waste remaining in a *low occupancy area* (as defined in 40 C.F.R. § 761.3) at concentrations ≤ 25 mg/kg. – **relevant and appropriate**	40 C.F.R. § 761.61(a)(4)(i)(B)(1)

Table 2. Potential ARARs for the Preferred Remedial Alternative for the ECODS L-3 and LRP 131-4L Subunits *(continued/end)*

Chemical	Requirements	Prerequisite	Citation(s)
Deed restrictions for caps, fences and low occupancy areas	Deed Restrictions	Use of procedures and requirements for a low occupancy area— **relevant and appropriate**	40 C.F.R. § 761.61(a)(8)
	Within 60 days of completion of cleanup activity shall record, in accordance with State law, a notation on the deed to the property, or on some other instrument which is normally examined during a title search, which will in perpetuity notify any potential purchaser of the property: NOTE: Any deed restriction ARARs will be met though the implementation of the final Land Use Control Implementation Plan at the time of future property transfers.		40 C.F.R. § 761.61(a)(8)(i)(A)
	That land has been used for PCB remediation waste disposal and is restricted to use as a low occupancy area as defined in 40 C.F.R. § 761.3.		40 C.F.R. § 761.61(a)(8)(i)(A)(1)
	The applicable cleanup levels left at the site, inside the fence, and/or under the cap.		40 C.F.R. § 761.61(a)(8)(i)(A)(3)
LOCATION-SPECIFIC ARARs/TBC			
Location	**Requirements**	**Prerequisite**	**Citation**
NONE IDENTIFIED			
ACTION-SPECIFIC ARARs/TBC			
Action	**Requirements**	**Prerequisite**	**Citation**
NONE IDENTIFIED			

Table 3. Description of CERCLA Evaluation Criteria

Threshold Criteria:
• Overall Protectiveness of HH and the Environment determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.
• Compliance with ARARs evaluates whether the alternative meets Federal and State environmental statutes, regulations, and other requirements that pertain to the site. ARARs may be waived under certain circumstances. ARARs are divided into chemical-specific, location-specific, and action-specific criteria.
Primary Balancing Criteria:
• Long-Term Effectiveness and Permanence considers the ability of an alternative to maintain protection of HH and the environment over time. It evaluates magnitude of residual risk and adequacy of reliability of controls.
• Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.
• Short-Term Effectiveness considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation.
• Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.
• Cost includes estimated capital and annual operations and maintenance costs, as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.
Modifying Criteria:
• State Support/Agency Acceptance considers whether USEPA and SCDHEC agree with the analyses and recommendations by the USDOE. Approval of the Record of Decision constitutes approval of the selected alternative by the regulatory agencies.
• Community Acceptance considers whether the local community agrees with the Preferred Alternative. Comments received on the Statement of Basis/Proposed Plan during the public comment period are an important indicator of community acceptance. Comments from the public are considered in the final remedy selection in the Record of Decision.

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Table 4. Comparison of the ECODS L-3 Subunit Alternatives to the CERCLA Criteria

Criterion	A-1 No Action	A-2 Land Use Controls	A-3 Soil Cover with LUCs	A-4 Excavation and Disposal
Overall Protection of Human Health and the Environment				
Human Health	Not protective of the future resident or on-site worker because there are no controls or remediation.	Meets the requirement by limiting exposure to the contaminated media through the use of administrative and engineering controls.	Meets the requirement by placement of a soil cover to eliminate the direct exposure pathways	Meets the requirement by excavation of the contaminated media to eliminate the direct exposure pathways.
Environment	Not applicable as contaminants are not at levels that pose a threat to the environment.	Not applicable as contaminants are not at levels that pose a threat to the environment.	Not applicable as contaminants are not at levels that pose a threat to the environment.	Not applicable as contaminants are not at levels that pose a threat to the environment.
Compliance with ARARs				
Chemical-Specific	Not compliant.	Meets the requirement by limiting exposure to the contaminated media through the use of administrative and engineering controls.	Meets the requirement by placement of a soil cover to eliminate the direct exposure pathways.	Meets the requirement by excavation of the contaminated media to eliminate the direct exposure pathways.
Location-Specific	No ARARs exist	No ARARs exist	No ARARs exist	No ARARs exist
Action-Specific	No ARARs exist	No ARARs exist	ARARs for control of the minimization of sediment erosion and management of storm water can be achieved.	ARARs for control of the minimization of sediment erosion, management of storm water and transportation of solid and PCB waste can be achieved.
Long Term Effectiveness				
Adequacy of Controls	None	Controls are adequate as long as they are maintained	Controls are adequate as long as they are maintained	No controls are required because contaminated media removed
Permanence	No	LUCs are permanent as long as controls are maintained	Cover system is permanent as long as it is maintained	Excavation of media will be permanent
Reduction of Mobility, Toxicity, or Volume				
Type of Reduction	No reduction	No reduction	No reduction	No reduction

Table 4. Comparison of the ECODS L-3 Subunit Alternatives to the CERCLA Criteria (*continued/end)*

Criterion	A-1 No Action	A-2 Land Use Controls	A-3 Soil Cover with LUCs	A-4 Excavation and Disposal
Short-Term Effectiveness				
Amount of Hazardous Material Destroyed or Treated	No reduction	No reduction	No reduction	No reduction
Risk to Remedial Worker	No risk	No risk	Minimal; Health and Safety Plan will be implemented to minimize potential for injury to remedial workers	Minimal; Health and Safety Plan will be implemented to minimize potential for injury to remedial workers
Risk to Community	None	None	None	None
Risk to Environment	None	None	None	None
Time to Implement and achieve RAO	Never	6 Months	12 Months	12 Months
Implementability				
Availability of Materials, Equipment, Contractors	N/A	Readily available	Readily available	Readily available
Ability to Construct and Operate the Technology	N/A	Proven technology at SRS	Proven technology at SRS	Proven technology at SRS
Ability to Obtain Permits/Approvals from Other Agencies	N/A	Prior history with similar permits/ approvals at SRS	Prior history with similar/ permits/ approvals at SRS	Prior history with similar permits/ approvals at SRS
Cost				
Total Capital Cost	$0	$32,030	$1,006,950	$1,654,216
Present Worth O&M Cost	$0	$350,528	$221,762	$0
Total Cost	$0	$382,558	$1,228,712	$1,654,216

Table 5. Comparison of the LRP 131-4L Subunit Alternatives to the CERCLA Criteria

Criterion	B-1 No Action	B-2 Land Use Controls	B-3 Soil Cover with LUCs	B-4 Excavation and Disposal
Overall Protection of Human Health and the Environment				
Human Health	Not protective of the future resident or on-site worker because there are no controls or remediation.	Meets the requirement by limiting exposure to the contaminated media through the use of administrative and engineering controls.	Meets the requirement by placement of a soil cover to eliminate the direct exposure pathways	Meets the requirement by excavation of the contaminated media to eliminate the direct exposure pathways.
Environment	Not applicable as contaminants are not at levels that pose a threat to the environment.	Not applicable as contaminants are not at levels that pose a threat to the environment.	Not applicable as contaminants are not at levels that pose a threat to the environment.	Not applicable as contaminants are not at levels that pose a threat to the environment.
Compliance with ARARs				
Chemical-Specific	No ARARs exist	~~No ARARs exist~~Meets the requirement by limiting exposure to the contaminated media through the use of administrative and engineering controls.	No ARARs exist	No ARARs exist
Location-Specific	No ARARs exist	No ARARs exist	No ARARs exist	No ARARs exist
Action-Specific	No ARARs exist	No ARARs exist	ARARs for control of the minimization of sediment erosion and management of storm water can be achieved.	ARARs for control of the minimization of sediment erosion, management of storm water and transportation of solid waste can be achieved.
Long Term Effectiveness				
Adequacy of Controls	None	Controls are adequate as long as they are maintained	Controls are adequate as long as they are maintained	No controls are required because contaminated media removed
Permanence	No	LUCs are permanent as long as controls are maintained	Cover system is permanent as long as it is maintained	Excavation of media will be permanent
Reduction of Mobility, Toxicity, or Volume				
Type of Reduction	No reduction	No reduction	No reduction	No Reduction

Table 5. Comparison of the LRP 131-4L Subunit Alternatives to the CERCLA Criteria (*continued/end)*

Criterion	B-1 No Action	B-2 Land Use Controls	B-3 Soil Cover with LUCs	B-4 Excavation and Disposal
Short-Term Effectiveness				
Amount of Hazardous Material Destroyed or Treated	No reduction	No reduction	No reduction	No reduction
Risk to Remedial Worker	No risk	No risk	Minimal; Health and Safety Plan will be implemented to minimize potential for injury to remedial workers	Minimal; Health and Safety Plan will be implemented to minimize potential for injury to remedial workers
Risk to Community	None	None	None	None
Risk to Environment	None	None	None	None
Time to Implement and achieve RAO	Never	6 Months	12 Months	12 Months
Implementability				
Availability of Materials, Equipment, Contractors	N/A	Readily available	Readily available	Readily available
Ability to Construct and Operate the Technology	N/A	Proven technology at SRS	Proven technology at SRS	Proven technology at SRS
Ability to Obtain Permits/Approvals from Other Agencies	N/A	Prior history with similar permits/ approvals at SRS	Prior history with similar permits/ approvals at SRS	Prior history with similar permits/ approvals at SRS
Cost				
Total Capital Cost	$0	$32,030	$1,294,659	$7,671,286
Present Worth O&M Cost	$0	$386,406	$248,679	$0
Total Cost	$0	$418,436	$1,543,338	7,671,286

Table 6. Comparative Alternative Analysis for ECODS L-3 Subunit

Response Action	Overall Protection of Human Health	Compliance with RAOs	Compliance with ARARs	Long-Term Effectiveness and Permanence	Reduction of Toxicity, Mobility, or Volume	Short-Term Effectiveness	Implementability	Cost	Overall Ranking (1-20)
A-1) No Action	No	No	No	1	1	1	5	$0	8
A-2) Land Use Controls	Yes	Yes	Yes	4	1	5	5	$382,558	15
A-3) Soil Cover with LUCs	Yes	Yes	Yes	4	1	4	3	$1,228,712	12
A-4) Excavation and Disposal	Yes	Yes	Yes	5	1	4	3	$1,654,216	13

Note: Numeric range 1 through 5, where 1= worst and 5 = best

Table 7. Comparative Alternative Analysis for LRP 131-4L Subunit

Response Action	Overall Protection of Human Health	Compliance with RAOs	Compliance with ARARs	Long-Term Effectiveness and Permanence	Reduction of Toxicity, Mobility, or Volume Through Treatment	Short-Term Effectiveness	Implementability	Cost	Overall Ranking (1-20)
B-1) No Action	No	No	N/A	1	1	1	5	$0	8
B-2) Land Use Controls	Yes	Yes	N/A	4	1	5	5	$418,436	15
B-3) Soil Cover with LUCs	Yes	Yes	Yes	4	1	4	3	$1,543,338	12
B-4) Excavation and Disposal	Yes	Yes	Yes	5	1	4	3	$7,671,286	13

Note: Numeric range 1 through 5, where 1= worst and 5 = best

APPENDIX A

DETAILED COST ESTIMATES FOR THE PREFERRED ALTERNATIVES

LIST OF TABLES

(Appendix A)

Table A-1. ECODS L-3 – Alternative A-2: Land Use Controls

Institutional Controls Estimate
Alternative A-2
Land Use Controls Only - ECODS L-3

Item	Quantity	Units	Unit Cost	Total Cost
Direct Capital Costs				
ECODS L-3				
Institutional Controls				
Posting of Warning Signs	4	ea	$500	$2,000
Land Use Control Implementation Plan	1	ea	$5,000	$5,000
Deed Restrictions	1	ea	$5,000	$5,000
Subtotal - Direct Capital Cost				$12,000
Mobilization/Demobilization	9%	of subtotal direct capital		$1,080
Site Preparation/Site Restoration	9%	of subtotal direct capital		$1,080
Total Direct Capital Cost				**$14,160**
Indirect Capital Costs				
Engineering & Design	14%	of direct capital		$1,982
Project/Construction Management	25%	of direct capital		$3,540
Health & Safety	6%	of direct capital		$850
Overhead	30%	of direct capital + indirect capital		$6,160
Contingency	26%	of direct capital + indirect capital		$5,338
Total Indirect Capital Cost				**$17,870**
Total Estimated Capital Cost				**$32,030**
Direct O&M Costs	1.2%	3 Year Discount Rate [1]		
Annual Costs (Existing System during Post-ROD Design & Const)	2	years O&M		*Years 2027-2028*
Access Controls	1	ea	$500	$500
Maintenance	1	ea	$1,425	$1,425
Subtotal - Annual Costs				$1,925
Present Value Cost				**$3,782**
	2.0%	30 Year Discount Rate [1]		
Annual Costs	30	years O&M		*Years 2028-2057*
Access Controls	1	ea	$500	$500
Annual Inspection/Maintenance	1	ea	$1,425	$1,425
Subtotal - 30 Year Annual Costs				$1,925
Present Value Cost				**$43,118**
Five Year Costs	6			
Remedy Review	1	ea	$15,000	$15,000
Subtotal - Five Year O&M Costs				$15,000
Present Value Cost				**$64,555**
Total Present Value Direct O&M Cost				**$111,456**

Table A-1. ECODS L-3 – Alternative A-2: Land Use Controls (continued/end)

Institutional Controls Estimate
Alternative L-1
Land Use Controls Only ECODS L-3

Indirect O&M Costs		
Project/Admin Management	146% of direct O&M	$162,725
Health & Safety	19% of direct O&M	$21,177
Overhead	30% of direct O&M + indirect O&M	$33,437
Contingency	20% of direct O&M + indirect O&M	$21,734
Total Present Worth Indirect O&M Cost		$239,072
Total Estimated Present Worth O&M Cost		**$350,528**
TOTAL ESTIMATED COST		**$382,558**

[1] Interest rates for costs with 3-year and 30-year durations are based on SRNS Technical Memorandum ERTEC-2017-00002.
Real Interest Rates for OMB Circular No. A-94
Treasury Notes and Bonds of Specified Maturities

Table A-2. LRP 131-4L – Alternative B-2: Land Use Controls

Institutional Controls Estimate
Alternative B-2
Land Use Controls Only 131-4L

Item	Quantity	Units	Unit Cost	Total Cost
Direct Capital Costs				
131-4L				
Institutional Controls				
Posting of Warning Signs	4	ea	$500	$2,000
Land Use Control Implementation Plan	1	ea	$5,000	$5,000
Deed Restrictions	1	ea	$5,000	$5,000
Subtotal - Direct Capital Cost				$12,000
Mobilization/Demobilization	9%	of subtotal direct capital		$1,080
Site Preparation/Site Restoration	9%	of subtotal direct capital		$1,080
Total Direct Capital Cost				**$14,160**
Indirect Capital Costs				
Engineering & Design	14%	of direct capital		$1,982
Project/Construction Management	25%	of direct capital		$3,540
Health & Safety	6%	of direct capital		$850
Overhead	30%	of direct capital + indirect capital		$6,160
Contingency	26%	of direct capital + indirect capital		$5,338
Total Indirect Capital Cost				**$17,870**
Total Estimated Capital Cost				**$32,030**
Direct O&M Costs	1.2%	3 Year Discount Rate [1]		
Annual Costs (Existing System during Post-ROD Design & Const)	2	years O&M		*Years 2027-2028*
Access Controls	1	ea	$500	$500
Maintenance	1	ea	$1,894	$1,894
Subtotal - Annual Costs				$2,394
Present Value Cost				**$4,702**
	2.0%	30 Year Discount Rate [1]		
Annual Costs	30	years O&M		*Years 2028-2057*
Access Controls	1	ea	$500	$500
Annual Inspection/Maintenance	1	ea	$1,894	$1,894
Subtotal - 30 Year Annual Costs				$2,394
Present Value Cost				**$53,606**
Five Year Costs	6			
Remedy Review	1	ea	$15,000	$15,000
Subtotal - Five Year O&M Costs				$15,000
Present Value Cost				**$64,555**
Total Present Value Direct O&M Cost				**$122,864**

Table A-2. LRP 131-4L – Alternative B-2: Land Use Controls (continued/end)

Institutional Controls Estimate
Alternative B-2
Land Use Controls Only 131-4L

Indirect O&M Costs		
Project/Admin Management	146% of direct O&M	$179,381
Health & Safety	19% of direct O&M	$23,344
Overhead	30% of direct O&M + indirect O&M	$36,859
Contingency	20% of direct O&M + indirect O&M	$23,958
Total Present Worth Indirect O&M Cost		$263,543
Total Estimated Present Worth O&M Cost		**$386,406**
TOTAL ESTIMATED COST		**$418,436**

[1] Interest rates for costs with 3-year and 30-year durations are based on SRNS Technical Memorandum ERTEC-2017-00002.
Real Interest Rates for OMB Circular No. A-94
Treasury Notes and Bonds of Specified Maturities