LUCIP for the
C-, K-, and L-Reactor Complexes Early Action
Land Use Control Implementation Plan for the
C-, K-, and L-Reactor Complexes Early Action
(SRNS- RP-2009-01470, Rev.1, May 2010)

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United States Department of Energy

Savannah River Site

Early Action Land Use Control Implementation Plan (EALUCIP) for the C-, K-, and L-Reactor Complexes (U)

CERCLIS Numbers: 79, 90, and 91

SRNS–RP–2009-01470

Revision 1

May 2010

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DISCLAIMER

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Aiken, South Carolina

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LIST OF ACRONYMS AND ABBREVIATIONS

ACP	Area Completion Projects
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	constituent of concern
EALUCIP	Early Action Land Use Control Implementation Plan
EAROD	Early Action Record of Decision
ECA	Environmental Compliance Authority
FFA	Federal Facility Agreement
HAZWOPER	Hazardous Waste Operations and Emergency Response
ICs	Institutional Controls
ISD	In Situ Decommissioning
LUC	Land Use Control
LUCIP	Land Use Control Implementation Plan
LUCAP	Land Use Control Assurance Plan
OU	Operable Unit
PCM	Post-Closure Manager
PPA	Property Protection Area
PTSM	Principal Threat Source Material
QA	Quality Assurance
RA	Remedial Action
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
SCDHEC	South Carolina Department of Health and Environmental Control
SRNS	Savannah River Nuclear Solutions, LLC
SRS	Savannah River Site
USDOE	United States Department of Energy
USEPA	United States Environmental Protection Agency
WSRC	Washington Savannah River Company, LLC

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1.0 INTRODUCTION

This Early Action Land Use Control Implementation Plan (EALUCIP) has been prepared for the C-, K-, and L-Reactor Complexes at the Savannah River Site (SRS). The purpose of the EALUCIP is to describe how the land use controls (LUCs) selected in the C-, K-, L- and R-Reactor Complexes Early Action Record of Decision (EAROD) (SRNS 2009) will be implemented and maintained.[1] The following LUC objectives were defined in the EAROD for these reactor complexes:

- Restrict unauthorized worker access and prevent unauthorized contact, removal, or excavation of contaminated media;
- Prohibit the development and use of property for residential housing, elementary and secondary schools, child care facilities and playgrounds;
- Maintain the integrity of any current or future remedial or monitoring systems;
- Prevent access or use of contaminated groundwater until cleanup levels are met; and
- Prevent construction of inhabitable buildings without an evaluation of indoor air quality to address vapor intrusion.

As documented in the EAROD, the *in situ* decommissioning (ISD) end state remedy leaves hazardous substances in place that pose a potential future risk and will require land use restrictions until the concentrations of hazardous substances in the soil and groundwater are at levels that allow for unrestricted use. As agreed on March 30, 2000, among the United States Department of Energy (USDOE), the United States Environmental Protection Agency (USEPA), and the South Carolina Department of Health and Environmental Control (SCDHEC), SRS is implementing a Land Use Control Assurance Plan (LUCAP) to ensure that the LUCs required by numerous remedial decisions at SRS are properly maintained and periodically verified (WSRC 1999). The requirements of that LUCAP also apply to the LUCs that were selected as part of the

[1] Although included in the Record of Decision with the C-, K-, and L-Reactor Complexes, the R-Reactor Complex is being addressed in a separate LUCIP to facilitate accelerated implementation under the American Recovery and Reinvestment Act.

ISD remedial action (RA) for the C-, K-, and L-Reactor Complexes. This additional document, the C-, K-, and L-Reactor Complexes EALUCIP, contains the detailed and specific measures required to implement and maintain the LUCs selected as part of this particular remedial decision. It is important to recognize that operational activities in support of ongoing USDOE missions will continue to occur at the C-, K-, and L-Area facilities. The LUCs shall be maintained until the reactor complexes are suitable for unlimited exposure and unrestricted use. However, since LUCs and institutional controls are already in place for the reactor complexes, no additional LUCs other than those currently used are proposed. Approval by USEPA and SCDHEC is required for any modification or termination of the LUCs. Upon future physical implementation of the ISD remedy, a final LUCIP will be prepared for each reactor area specifying final LUCs.

USDOE is responsible for implementing, maintaining, monitoring, reporting, and enforcing the LUCs in accordance with the approved EALUCIP. Upon final approval, the EALUCIP will be appended to the LUCAP and should be considered incorporated by reference into the C-, K-, L-, and R-Reactor Complexes EAROD, establishing implementation and maintenance requirements for the LUCs under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the SRS Federal Facility Agreement (FFA) (FFA 1993). The EALUCIP will remain in effect unless and until modifications are approved by USEPA and SCDHEC as necessary for protection of human health and the environment. This EALUCIP will be evaluated for accuracy and protectiveness during the five-year remedy review and any approved EALUCIP modification will be appropriately documented for incorporation by reference into the C-, K-, L-, and R-Reactor Complexes EAROD.

1.1 Format of EALUCIP

The format of this EALUCIP is consistent with the FFA protocol format for LUCIP documents approved by the USEPA and SCDHEC in March 2004.

2.0 OVERVIEW OF C-, K-, and L-REACTOR COMPLEX REMEDIAL ACTION

2.1 General Description and History of the C-, K-, and L-Reactor Complexes

The Reactor Complexes are located in the central portion of SRS. Each Reactor Complex lies within its own Area Operable Unit (OU) (for example, the C-Reactor Complex is located within the C Area OU).

The C-, K-, and L-Reactor Complexes operated in support of SRS's primary mission to produce tritium, plutonium, and other special nuclear materials for our nation's defense programs. C-Reactor began operating in 1955 and was shut down in 1986. K-Reactor began operating in 1954 and was placed in standby in 1988; it was restarted in 1992 for power ascension tests before being shut down in 1993. L-Reactor operated from 1954 to 1968 and again from 1985 to 1988. Operations in the C-, K-, and L-Reactor Complexes resulted in the generation of chemical and radioactive waste that remains primarily within the reactor vessel, Disassembly Basin, and building and attached structures subunits of each Reactor Complex.

Nuclear material is no longer being produced at the reactor facilities. Although the Reactor Complexes are no longer producing nuclear material, the C-, K-, and L-Reactor Complexes have continuing USDOE missions. The C-Reactor Complex is used for cask car refurbishment; the K-Reactor Complex is used for nuclear materials disposition activities; and the L-Reactor Complex is used for nuclear materials storage. These missions will cease prior to implementation of the ISD end state remedy.

2.2 Nature and Extent of Contamination in the C-, K-, and L-Reactor Complexes

Since characterization data for C-, K-, and L-Reactor Complexes will be collected to support the specific Area Completions and does not presently exist, the nature and extent of contamination for these Reactor Complexes is inferred based on similarities between the P- and R-Reactor Complexes and the C-, K-, and L-Reactor Complexes. As such, specific residual risk levels and constituents of concern (COCs) for the C-, K-, and L-Reactor Complexes have not been

quantified. However, based on the data for the P- and R-Reactor Complexes it is assumed that the reactor vessel subunit, the disassembly basin subunit, and parts of the building and attached structures subunit can all be considered principal threat source material (PTSM) (SRNS 2009). Additionally, existing evaluations of contaminants in the P- and R-Reactor Complexes resulted in the identification of the following cumulative human health risks and similar risk levels are expected in the C-, K-, and L-Reactor Complexes:

- Reactor Vessel Subunit:
  - P-Area: 1.3E+03
  - R-Area: 5.5E+01
- Disassembly Basin Subunit:
  - P-Area: 6.3E+00
- Building and Attached Structures Subunit:
  - P-Area: 1.4E-02

The primary risk drivers are cobalt-60, cesium-137 plus daughter products, and tritium. The reactor-specific characterization activities will fully evaluate any potential sources of contamination related to the RBC and associated facilities, considering missions conducted at the reactors after their shutdown. Because waste management activities associated with ongoing missions must comply with existing regulations, the release of contaminants to the environment from these missions is unlikely.

The selected remedy for the C-, K-, and L-Reactor Complexes leaves hazardous substances in place, including PTSM, which poses a potential risk of unacceptable exposure to both current and future industrial workers. To manage this potential risk, LUCs are an integral part of the RA selected in the EAROD necessary to control unauthorized access or unacceptable exposure to residual contaminants.

2.3 Remedial Action Selected

As documented in the EAROD for the C-, K-, L-, and R-Reactor Complexes, the selected remedy for the Reactor Complexes is ISD with LUCs. ISD consists of 1) maintaining the structural integrity of the above-ground portions of each facility for at least a period of 200 years, preventing exposure to receptors from residual short-lived radioisotopes in building structure and preventing tritium migration due to infiltration; 2) stabilizing contaminants in place as necessary to prevent unacceptable release to the environment; and 3) sealing the building to eliminate routes of human and animal intruder access thereby eliminating unacceptable exposure to radiological or hazardous contamination. The ISD end state will not be implemented until all missions have ceased at these Reactor Complexes.

The LUCs (i.e., engineering controls and institutional controls [ICs]) included as part of the selected remedy are in place as part of ongoing operations and include:

- Access controls to prevent exposure to on-site workers via the Site Use Program, work control, worker training, worker briefing of health and safety requirements.
- Access controls to prevent exposure to trespassers, as described in the 2000 Resource Conservation and Recovery Act (RCRA) Part B 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 ISD remedy will achieve the remedial action objectives established for the Reactor Complexes and documented in the EAROD as follows:

- Preventing industrial worker exposure to radioactive or hazardous contamination exceeding 1E-06 industrial worker risk and 1E-03 PTSM risk thresholds from the Reactor Complexes by controlling access to the building and associated structures through LUCs (i.e., engineering controls and ICs)

- Preventing migration of radiological and hazardous contaminants from the Reactor Complexes to groundwater to the extent practicable through infiltration control, stabilization, and isolation of contamination remaining within the Reactor Complex
- Preventing animal intruder exposure to radioactive and hazardous contamination within the Reactor Complexes by controlling access to the building and associated structures through engineering controls.

The post-RA conceptual site model (see Appendix A to this LUCIP) shows the exposure pathways being managed.

According to the *Savannah River Site Future Use Project Report* (USDOE 1996), residential use of SRS land is prohibited.

3.0 LAND-USE CONTROL OBJECTIVES

The following C-, K-, and L-Reactor Complexes early action LUC objectives have been developed to ensure the protectiveness of the remedy described above:

- Restrict unauthorized worker access and prevent unauthorized contact, removal, or excavation of contaminated media;
- Prohibit the development and use of property for residential housing, elementary and secondary schools, child care facilities and playgrounds;
- Maintain the integrity of any current or future remedial or monitoring systems;
- Prevent unauthorized access to or use of contaminated groundwater until cleanup levels are met; and
- Prevent construction of inhabitable buildings without an evaluation of indoor air quality to address vapor intrusion.

Current access controls and deed notification needed to maintain the future land use are described in the following sections of this EALUCIP.

4.0 IMPLEMENTATION OF LAND-USE CONTROLS

This section describes the LUCs selected in the EAROD to achieve the objectives stated in Section 3.0. A summary of the types of controls is provided in Table 1. USDOE is responsible for implementing, maintaining, reporting on and enforcing the LUCs required for the C-, K-, and L-Reactor Complexes. The EALUCIP will become enforceable when approved by USEPA and SCDHEC and approval will constitute RA start since no additional LUCs beyond what are already in place will be instituted. USDOE shall notify USEPA and SCDHEC 60 days in advance of any proposed land use changes that are inconsistent with LUC objectives or the selected remedy.

The C-, K-, and L-Reactor Complexes will be maintained as an industrial use area by implementation of the property record notices (Section 4.1) and restrictions (Section 4.2), and the use of a certified LUC survey plat (Section 4.3).

The Site Use Program (Section 4.4) will be implemented to prevent onsite worker exposure to contamination left in place at the C-, K-, and L-Reactor Complexes. Other existing measures (i.e., worker training, health and safety requirements, work controls) will also be used to ensure worker safety at the C-, K-, and L-Reactor Complexes.

Physical access controls (Section 4.5) are implemented at the SRS boundary to control and restrict public and trespasser access to the C-, K-, and L-Reactor Complexes.

Signs that alert onsite workers to the presence of radioactive materials and/or hazardous substances at the C-, K-, and L-Reactor Complexes will be maintained. Access control warning signs will be maintained around the C-, K-, and L-Reactor Complexes to prevent unauthorized entry and unrestricted use.

4.1 Property Record Notices

In the long term, if the property is ever transferred to non-federal ownership, the U.S. Government will take those actions necessary pursuant to Section 120(h) of CERCLA. Those

actions will include a deed notification disclosing former waste management and disposal activities as well as RAs taken on the site. The contract for sale and the deed will contain the notification required by CERCLA Section 120(h).

The deed notification shall notify any potential purchaser that the property has been used for the management and disposal of waste. These requirements are also consistent with the intent of RCRA deed notification requirements at final closure of a RCRA facility if contamination will remain at the unit.

4.2 Property Record Restrictions

The deed shall also include deed restrictions precluding residential use of the property and/or any other property record restrictions necessary to achieve the LUC objectives. The deed shall expressly prohibit activities inconsistent with the remedial goals and objectives in the EAROD upon any and all transfers. USDOE shall provide a copy of the executed deeds to the regulatory agencies as soon as practicable after the transfer of fee title, but no later than 30 days. However, the need for these deed restrictions may be re-evaluated at the time of transfer in the event that exposure assumptions differ and/or the residual contamination no longer poses an unacceptable risk under residential use. Any re-evaluation of the need for the deed restrictions will be done though an amended EAROD.

USDOE shall provide USEPA and SCDHEC at least six months' notice prior to any transfer or sale to ensure that USEPA and SCDHEC can be involved in discussions to ensure that appropriate provisions are included in the transfer terms or conveyance documents to maintain effective ICs. If it is not possible for the facility to notify USEPA and SCDHEC at least six months prior to any transfer or sale, then the facility will notify USEPA and SCDHEC as soon as possible but no later than 60 days prior to the transfer or sale of any property subject to ICs. In addition to the land transfer notice and discussion provisions above, USDOE further agrees to provide USEPA and SCDHEC with similar notice within the same time frames as to federal to federal transfer of property.

Table 1. Land Use Controls for the C-, K-, and L-Reactor Complexes

Type of Control	Purpose of Control	Duration	Implementation	Affected Areas
1. Property Record Notices[a]	Provide notice to anyone searching records about the existence and location of contaminated areas.	Until the concentration of hazardous substances associated with the unit have been reduced to levels that allow for unlimited exposure and unrestricted use.	Notice recorded by USDOE in accordance with state laws at County Register of Deeds office if the property or any portion thereof is ever transferred to non-federal ownership.	C-, K-, and L-Reactor Complexes where hazardous substances are left in place at levels requiring land use restrictions.
2. Property record restrictions:[b] A. Land Use B. Groundwater	Restrict use of property by imposing limitations. Prohibit the use of groundwater.	Until the concentration of hazardous substances associated with the unit have been reduced to levels that allow for unlimited exposure and unrestricted use.	Drafted and implemented by USDOE upon any transfer of affected areas. Recorded by USDOE in accordance with state law at County Register of Deeds office.	C-, K-, and L-Reactor Complexes where hazardous substances are left in place at levels requiring land use restrictions.
3. Other Notices[c]	Provide notice to city &/or county about the existence and location of waste disposal and residual contamination areas for zoning/planning purposes.	Until the concentration of hazardous substances associated with the unit have been reduced to levels that allow for unlimited exposure and unrestricted use.	Notice recorded by USDOE in accordance with state laws at County Register of Deeds office if the property or any portion thereof is ever transferred to non-federal ownership.	C-, K-, and L-Reactor Complexes where hazardous substances are left in place at levels requiring land use restrictions.
4. Site Use Program[d]	Provide notice to worker/developer (i.e., permit requestor) on extent of contamination and prohibit or limit excavation/penetration activity.	As long as property remains under USDOE control	Implemented by USDOE and site contractors Initiated by permit request	C-, K-, and L-Reactor Complexes where hazardous substances are left in place at levels requiring land use restrictions.
5. Physical Access Controls[e] (e.g., fences, gates, portals)	Control and restrict access to workers and the public to prevent unauthorized access.	Until the concentration of hazardous substances associated with the unit have been reduced to levels that allow for unlimited exposure and unrestricted use.	Controls maintained by USDOE.	Each Reactor Complex is a fenced area, as shown in Figures B-1 through B-3. Security is provided in accordance with SRS procedures.

Table 1. Land Use Controls for the C-, K-, and L-Reactor Complexes *(Continued/End)*

Type of Control	Purpose of Control	Duration	Implementation	Affected Areas
6. Warning Signs[f]	Provide notice or warning to prevent unauthorized uses.	Until the concentration of hazardous substances associated with the unit have been reduced to levels that allow for unlimited exposure and unrestricted use.	Signage maintained by USDOE.	Warning signs posted in accordance with applicable site procedures and are placed in appropriate areas at each Reactor Complex.
7. Security Surveillance Measures	Control and monitor access by workers/public.	Until the concentration of hazardous substances associated with the unit have been reduced to levels that allow for unlimited exposure and unrestricted use.	Established and maintained by USDOE Necessity of patrols evaluated upon completion of RAs or property transfer.	Security and surveillance measure are in place at the SRS boundary in accordance with RCRA-permit requirements.

[a]Property Record Notices – Refers to any non-enforceable, purely informational document recorded along with the original property acquisition records of USDOE and its predecessor agencies that alerts anyone searching property records to important information about residual contamination; waste disposal areas in the property.

[b]Property Record Restrictions – Includes conditions and/or covenants that restrict or prohibit certain uses of real property and are recorded along with original property acquisition records of USDOE and its predecessor agencies.

[c]Other Notices – Includes information on the location of waste disposal areas and residual contamination depicted on as survey plat, which is provided to a zoning authority (i.e., city planning commission) for consideration in appropriate zoning decisions for non-USDOE property.

[d]Site Use Program – Refers to the internal USDOE/USDOE contractor administrative program(s) that requires the permit requestor to obtain authorization, usually in the form of a permit, before beginning any excavation/penetration activity (e.g., well drilling) for the purpose of ensuring that the proposed activity will not affect underground utilities/structures, or in the case contaminated soil or groundwater, will not disturb the affected areas without the appropriate precautions and safeguards.

[e]Physical Access Controls – Physical barriers or restrictions to entry.

[f]Signs – Posted command, warning or direction.

4.3 Other Public Notices

This EALUCIP identifies the proposed area under land use restriction via Figures B-1 through B-3 of Appendix B for the C-, K-, and L-Reactor Complexes. If the site is ever transferred to non-federal ownership, a professional land surveyor certified survey plat of each Area OU will be prepared at or near the time of conveyance to support the LUCIP required restrictive covenants on land use and will be recorded with the appropriate county recording agency.

4.4 Site Use Program

Under DOE Order 430.1A, *Life Cycle Management* (USDOE 1998), SRS is required to implement an asset management program for the use, maintenance, and disposal of physical assets, including real estate. SRS complies with this order through its Site Use Program, which is conducted in accordance with manual 1D, *Site Infrastructure and Services Manual*, Procedure 3.02, "Site Real Property Configuration Control" (WSRC 2006). All employees, contractors, and visitors at SRS are required to adhere to the Site Use Program. No use of land (i.e., excavation or any other land use) shall be undertaken without prior approval documented by a Site Use Permit. Also, in accordance with manual 1D, Procedure 3.02, all work at SRS that adds to or modifies features or facilities portrayed on SRS development maps (i.e., plot plans of facilities/utilities at SRS) will be authorized by a Site Clearance Permit before any activities are conducted. All Site Clearance Requests will be reviewed to verify that either an approved Site Use Permit has been obtained or that the request is sanctioned by an existing Site Use Permit. All land use requirements applicable for the OU will be provided to the Site Use Program for use in determining issuance of Site Clearance Permits. In addition, the Site Use Permit must be amended when the geographic configuration or buffer zone used to establish the permit boundary changes or there is a change to the permitted land use.

SRS is responsible for updating, maintaining, and reviewing site maps, including FFA (FFA 1993) OU identifications. If a Site Clearance Request potentially impacts an FFA OU (i.e., C-, K-, or L-Reactor Complexes), the Site Clearance Request Form is sent to the appropriate FFA OU reviewer for approval. The roles and responsibilities of each individual are detailed in

manual 1D, Procedure 3.02. Before a Site Clearance Permit is issued, verification of USDOE approval for intended land use must be obtained. The site use and site clearance processes are applicable to all activities and personnel at SRS (including subcontractors). The USDOE will notify USEPA and SCDHEC in advance of any change to any internal procedure, including the Site Use Program which would affect implementing or maintaining the LUCs. The processes are controlled within the SRS Quality Assurance (QA) Program in accordance with 1Q Manual, *Quality Assurance*, (WSRC 2008). The SRS QA program governs all SRS activities.

All maintenance and engineering work performed at SRS is controlled though SRS Work Control Procedures. Any work proposed in the C-, K-, or L-Reactor Complex areas will be strictly controlled and workers will be appropriately trained and briefed about health and safety requirements if work is deemed necessary.

No change in land use at the C-, K-, or L-Reactor Complexes shall be undertaken without USEPA and SCDHEC approval. Approval by USEPA and SCDHEC is required for any modification or termination of the ICs and implementation actions, and USDOE must obtain prior approval from USEPA and SCDHEC before taking any anticipated action that may disrupt the effectiveness of the LUCs or alter or negate the need for LUCs.

4.5 Physical Access Controls

The C-, K-, and L-Reactor Areas are, at a minimum, defined as Property Protection Areas (PPA). Entrance requirements, warning signs and/or notices are often posted around the perimeter and at the entrances to buildings designated as a PPA. Access requirements include holding a valid security or visitor badge. Access to buildings during non-business hours are controlled by cipher-locked doors.

4.6 Warning Signs

Locations within the C-, K-, or L-Reactor Complexes that contain hazardous or radiological materials/contaminants are identified by posting (existing signs) to those individuals granted access through the physical access controls described above. The purposes of the signs are to

provide notice to prevent access to unauthorized areas; to warn individuals of the presence of hazardous or radiological materials/contaminants; and provide contact information on the hazards therein. Signs are so designed to be legible from a distance of at least 7.6 m (25 ft).

4.7 Other Access Controls and Security/Surveillance Measures

While under the ownership of USDOE, access control of the entire SRS will be maintained in accordance with the 2000 RCRA Part B Permit Renewal Application, Volume I, Section F.1. This section describes the 24-hour surveillance system (R.61-79.264.14(b)(1)), artificial or natural barriers (R.61-79.264.14(b)(2)(I)), control entry systems (R.61-79.264.14(b)(2)(ii)), and access control warning signs (R.61-79.264.14(c)) in place at the SRS boundary to comply with the security requirements for a RCRA-permitted facility.

4.8 Field Inspection and Maintenance for Land Use Controls

Upon approval of this EALUCIP for the C-, K-, and L-Reactor Complexes, only inspection and maintenance activities will be required by this RA. The Reactor Complexes will be inspected per the Field Inspection Checklist in Appendix C. Field inspections will be performed annually. Additional inspections may be necessary in the event of unusual weather or any other condition warranting inspection.

Any activity that is inconsistent with the IC objectives or use restrictions, or any other action that may interfere with the effectiveness of the ICs will be addressed by the USDOE as soon as practicable, but in no case will the process be initiated later than 10 days after the USDOE becomes aware of the breach. The USDOE will notify USEPA and SCDHEC as soon as practicable but no longer than 10 days after discovery of any activity that is inconsistent with the IC objectives or use restrictions, or any other action that may interfere with the effectiveness of the ICs. The USDOE will notify USEPA and SCDHEC regarding how the USDOE has addressed or will address the breach within 10 days of sending USEPA and SCDHEC notification of the breach. The FFA Annual Progress Report, submitted to the regulatory agencies by USDOE, will provide the status of the ICs and describe how any IC deficiencies or

inconsistent uses have been addressed. In the event of property transfer or lease, the Annual Report will cite findings on the following: whether the use restrictions and controls referenced above were communicated in the deed(s) or lease restrictions; whether property use conforms with the deed or lease restrictions and controls; and whether the owners and state/local agencies have been notified regarding the deed or lease restrictions and controls. The FFA Annual Progress Report(s) will be used in the preparation of the Five-Year Remedy Review Report.

All other routine maintenance activities will be documented and maintained in files subject to USEPA and SCDHEC review and audit. A copy of the completed inspection form is maintained in the Area Completion Projects (ACP) Document Control. The LUCs shall be maintained until the concentration of hazardous substances associated with the unit have been reduced to levels that allow for unlimited exposure and unrestricted use.

The waste unit inspectors are to be trained in Hazardous Waste Operations and Emergency Response (HAZWOPER), RCRA Well Inspections (ACP-specific training), ACP RCRA Waste Unit Inspections, Radiological Worker Training, etc., as applicable for the specific inspection. They will also be trained based on the individual requirements of the regulatory approved closure documents for each waste unit. In addition, the inspectors are to attend yearly refresher courses. Over the years, different personnel may conduct the inspections and maintenance activities.

This EALUCIP, including the checklist (Appendix C), will be appended to the SRS LUCAP upon final regulatory approval.

5.0 REFERENCES

FFA, 1993. *Federal Facility Agreement for the Savannah River Site*, Administrative Docket No. 89-05-FF (Effective Date: August 16, 1993)

SRNS, 2009. *Early Action Record of Decision Remedial Alternative Selection for the C-, K-, L, and R-Reactor Complexes (U),* Revision 1, SRNS-RP-2009-00707, Savannah River Nuclear Solutions, Savannah River Site, Aiken SC (September)

USDOE, 1996. *Savannah River Site Future Use Project Report*, Stakeholder-Preferred Recommendations for SRS Land and Facilities, USDOE Savannah River Operations Office, January

USDOE, 1998. DOE Order 430.1A, *Life Cycle Management* (Approved October 14, 1998)

WSRC, 1999. *Land Use Control Assurance Plan for the Savannah River Site*, WSRC-RP-98-4125, Current Updated Version, Savannah River Nuclear Solutions, Savannah River Site, Aiken, SC

WSRC, 2006*. Procedure Manual 1D, *Site Infrastructure and Services Manual (U)*, Procedure 3.02, "Site Real Property Configuration Control," Current Revision, Westinghouse Savannah River Company, Savannah River Site, Aiken, SC

WSRC, 2008*. Procedure Manual 1Q, *Quality Assurance (U)*, Current Revision, Westinghouse Savannah River Company, Savannah River Site, Aiken, SC

*WSRC procedures have been accepted by SRNS, but have not yet received an SRNS or SRS procedure number.

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APPENDIX A

POST-REMEDIAL ACTION CONCEPTUAL SITE MODEL

FOR THE C-, K-, AND L-REACTOR COMPLEXES

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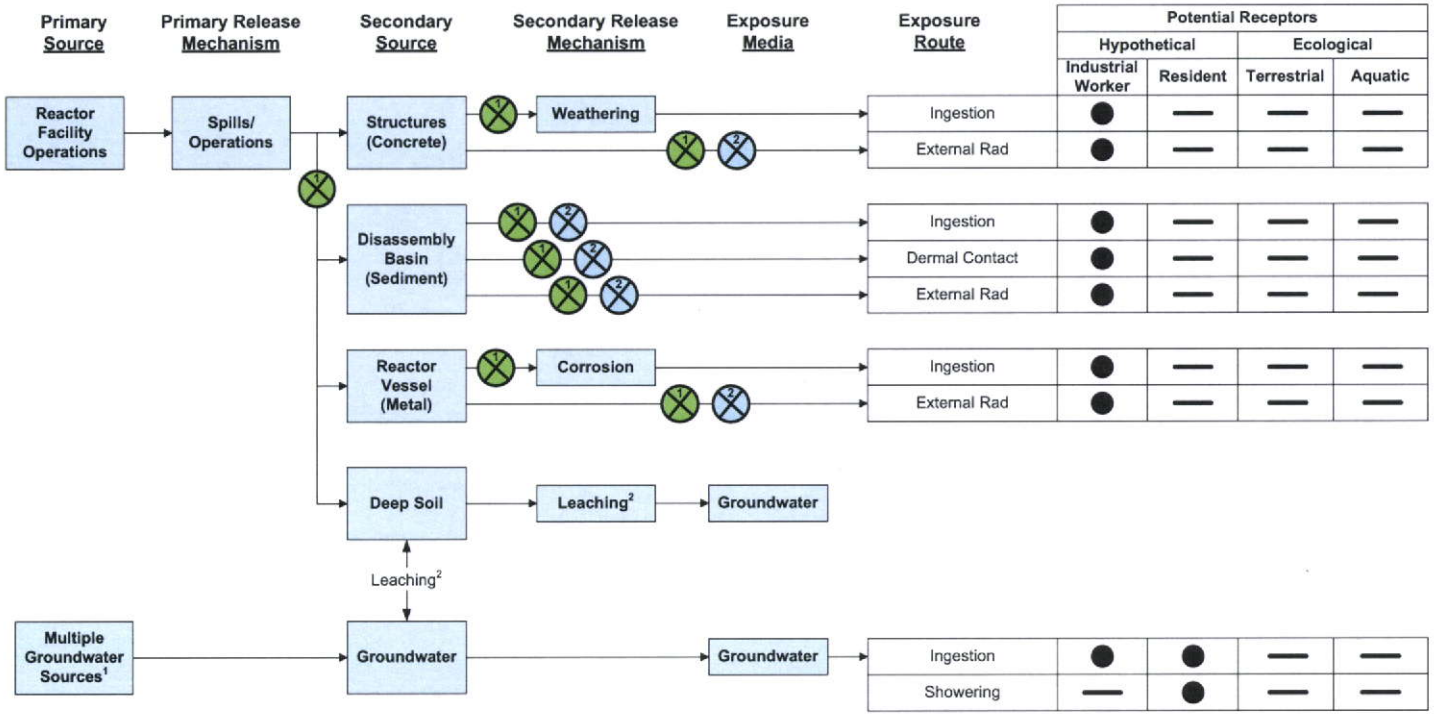

Key:
- Pathways: Current, historic, and hypothetical future
- Complete Exposure Pathway
- Incomplete Exposure Pathway
- Remedy Component 1 (ISD) Breaks this Pathway
- Remedy Component 2 (LUCs) Breaks this Pathway

Footnotes:
[1] Groundwater has been impacted by multiple sources within the various Area OUs and will be addressed under the Groundwater OUs for each of the Area OUs that include the Reactor Complexes.
[2] Leaching represents the potential of a contaminant in deep soil to migrate to groundwater above MCLs and does not represent a human or ecological exposure route. This pathway will be evaluated under the Groundwater OUs for each of the Reactor Complexes.

Figure A-1. Post-Remedial Action Conceptual Site Model for the C-, K-, and L-Reactor Complexes

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APPENDIX B

AS-BUILT LAND USE MAPS

FOR C-, K-, AND L-REACTOR COMPLEXES

EARLY ACTION LAND USE CONTROL IMPLEMENTATION PLAN

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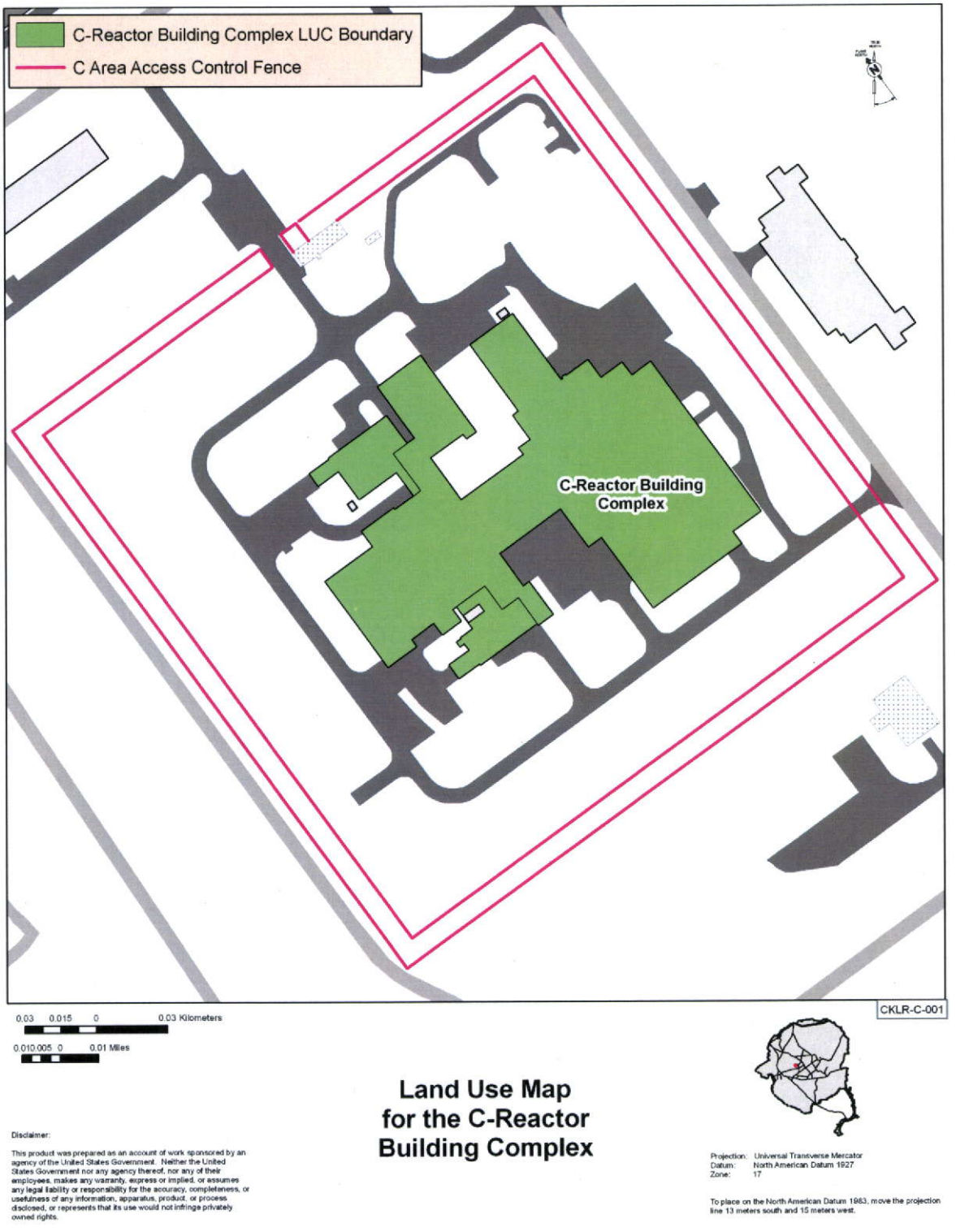

Figure B-1. Land Use Map for the C-Reactor Building Complex

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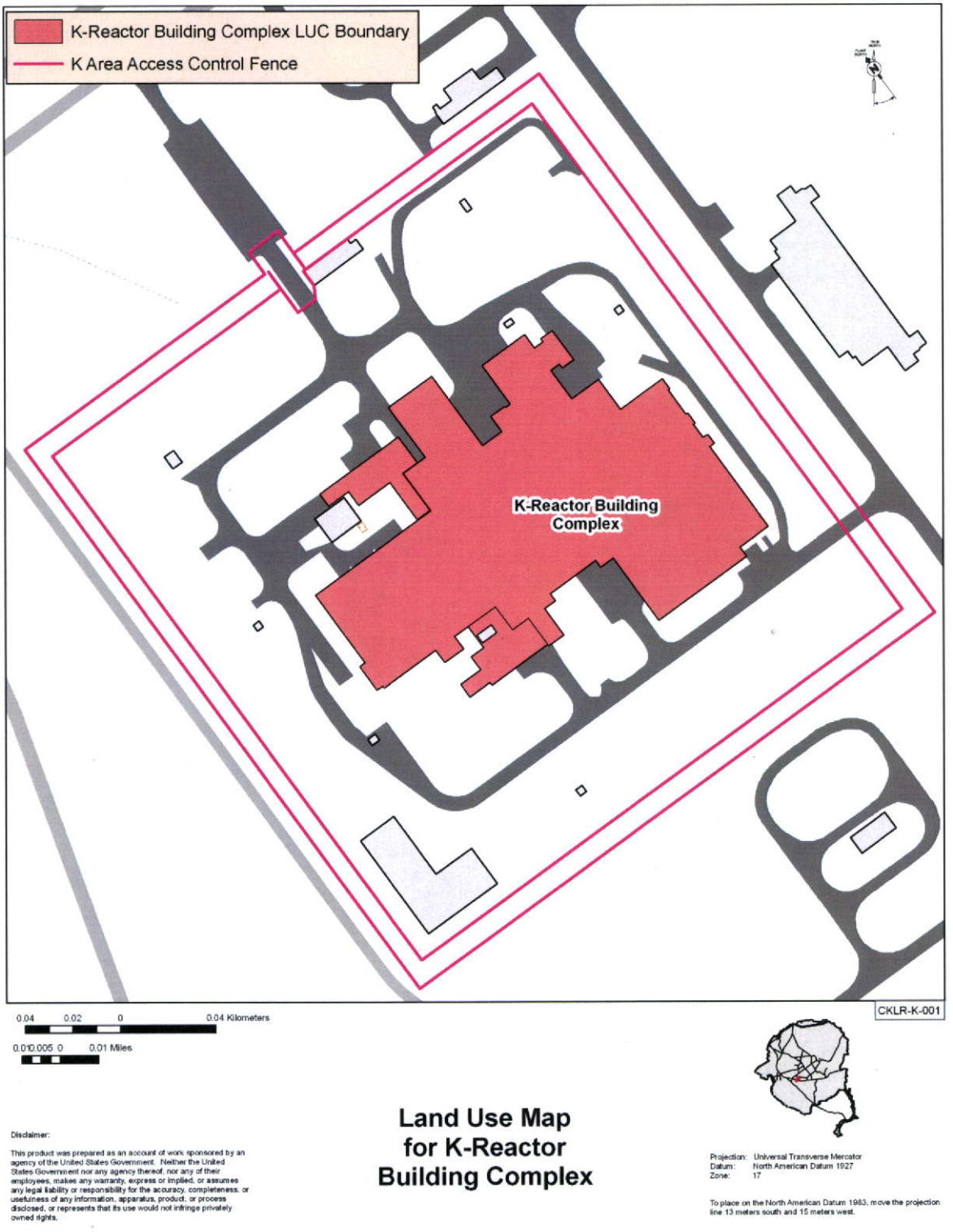

Figure B-2. Land Use Map for the K-Reactor Building Complex

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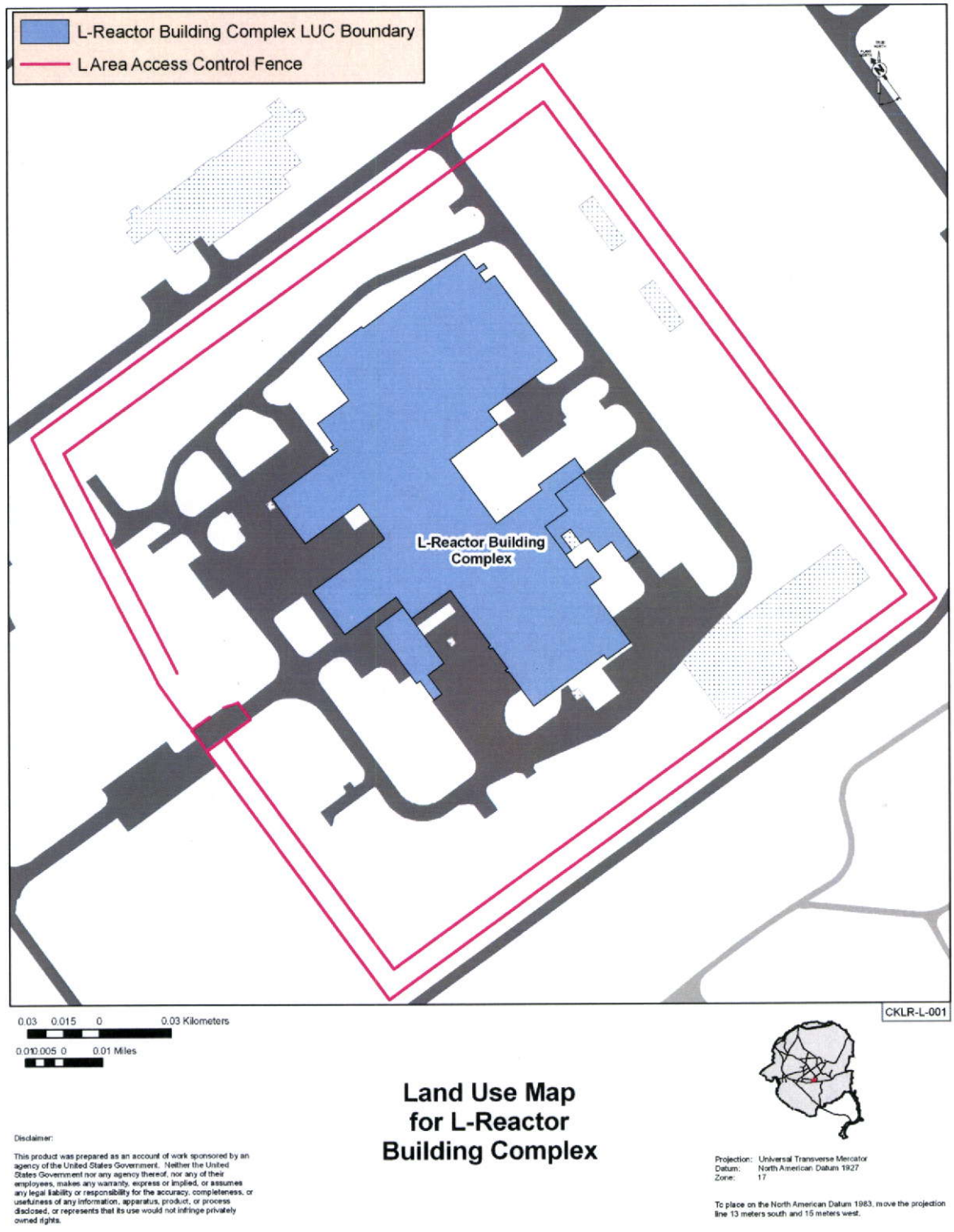

Figure B-3. Land Use Map for the L-Reactor Building Complex

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APPENDIX C

FOR THE C-, K-, AND L-REACTOR COMPLEXES

FIELD INSPECTION CHECKLIST

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FIELD INSPECTION CHECKLIST

FOR THE C-, K-, AND L-REACTOR COMPLEXES WASTE UNIT

☐ **SCHEDULED** ☐ **UNSCHEDULED**

A= Satisfactory X= Unsatisfactory (Explanation required)	A or X	Observation of Corrective Action Taken
1. Verify that the roads are accessible.		
2. Verify that the existing warning signs are in acceptable condition, have the correct information, and are legible from a distance of 25 feet.		
3. Verify that any required access controls to the reactor building complexes are in place and functioning.		

Inspected by:

_____ / _____ _____
(Print Name) (Signature) (Date)

Post-Closure Manager:

_____ / _____ _____
(Print Name) (Signature) (Date)

CAUTION: The inspector shall notify the Post-Closure Manager (PCM) and Environmental Compliance Authority (ECA) IMMEDIATELY if there has been a breach or compromise of the institutional controls of this waste unit. The notification shall be in accordance with SRS post-closure inspection procedures.

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