Land Use Control Implementation Plan for the

F-Area Industrial Solid Waste Land
WSRS-RP-2000-4086, Revision 0, June 2000

ARF # 18062

United States Department of Energy

Savannah River Site

Land Use Control Implementation Plan for the F-Area Industrial Solid Waste Landfill (U)

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Revision 0

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TABLE OF CONTENTS

SECTION **PAGE**

FIGURES i

ACRONYMS ii

1.0 REMEDY SELECTION 1

2.0 LAND USE CONTROLS 3

2.1 Deed Notification 4

2.2 Access Controls 5

2.3 Field Walkdowns and Maintenance for Institutional Controls 8

APPENDIX A F-AREA INDUSTRIAL SOLID WASTE LANDFILL INSPECTION SHEET A-1

FIGURES

FIGURE 1. F-AREA INDUSTRIAL SOLID WASTE LANDFILL IDENTIFICATION SIGN LOCATIONS 7

ACRONYMS

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CSWE	Central Services Works Engineering
FFA	Federal Facility Agreement
LUC	land use control
LUCAP	Land Use Control Assurance Plan
LUCIP	Land Use Control Implementation Plan
PAH	polynuclear aromatic hydrocarbon
RBCs	risk-based concentrations
RCRA	Resource Conservation and Recovery Act
SCDHEC	South Carolina Department of Health and Environmental Control
SRS	Savannah River Site
US DOE	United States Department of Energy
US EPA	United States Environmental Protection Agency
WSRC	Westinghouse Savannah River Company

LAND USE CONTROL IMPLEMENTATION PLAN (LUCIP) FOR THE F-AREA INDUSTRIAL SOLID WASTE LANDFILL

The F-Area Industrial Solid Waste Landfill LUCIP will be appended to the Savannah River Site (SRS) Land Use Control Assurance Plan (LUCAP) upon approval of the LUCIP.

1.0 REMEDY SELECTION

The F-Area Industrial Solid Waste Landfill (Permit No. 025500-1602, formerly IWP-219) is a 2.3-acre borrow pit where soil removal occurred during early construction of SRS industrial facilities. During the mid 1980s creosote material such as railroad crossties, utility poles, highway guardrail posts, and fence posts were disposed of at the location. Since 1992 no additional waste has been disposed of at the F-Area Industrial Solid Waste Landfill. Due to the volume of materials (approximately 200,000 crossties, poles), it was impossible to close this landfill by original design, therefore with South Carolina Department of Health and Environmental Control (SCDHEC) approval a recycling/reuse effort was begun to reduce the overall volume which would require disposal. This recycling/reuse effort began November 1995 and ended November 1996. This recycling/reuse effort reduced approximately 115,000 pieces (railroad crossties and poles) by about 70%, leaving a balance of approximately 7,000 cubic yards of small unusable pieces of ties and poles at the landfill.

All stormwater drainage from the F-Area Industrial Solid Waste Landfill is directed into an existing stormwater outfall (G-20).

SRS previously submitted a closure plan for this unit to SCDHEC (*Closure and Post-Closure Plan* (Revision 1, dated September 16, 1997). Revision 2 was prepared to replace Revision 1. Revision 2 of the *Closure and Post-Closure Care Plan for SRS F-Area Industrial Solid Waste Landfill* meets the permit requirements as well as the requirements of the new industrial solid waste landfill regulations R.61-107.16, which became effective June 26, 1998.

The proposed closure consists of placement of a final cover system over the entire permitted area (i.e., 2.3 acres) of the landfill. Eighteen (18) inches of the cover

will consist of an infiltration layer of compacted clay material with permeability no greater than 1 x 10^{-5} cm/sec. There will also be an erosion layer of one (1) foot of earthen material that is suitable for vegetation. The landfill will be graded to allow proper drainage, and the erosion layer will be placed and seeded to establish vegetative cover. The final grade of the landfill will have a slope of approximately 2% to promote positive drainage.

The cover system will reduce the infiltration of stormwater through the waste, eliminate the potential for exposure of the wastes caused by surface runoff and prevent direct contact of stormwater with the waste materials. Construction of the cover system will also adhere to the requirements of the approved engineering plans and specifications.

The closure will prevent human and ecological exposure to polynuclear aromatic hydrocarbon (PAH) contaminants remaining in the soil. The PAHs benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluroanthene, benzo(g,h,i)perylene, dibenzo(a,h)anthracene, and indeno(1,2,3-c,d)pyrene were found in surface soils exceeding United States Environmental Protection Agency (US EPA) Region III risk-based concentrations (RBCs) for residential ingestion of soil. In addition, the PAHs benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluroanthene were found in isolated surface soil locations exceeding US EPA Region III RBCs for industrial worker ingestion of soil. Table 3 of Attachment 3.3 of the *Closure and Post-Closure Care Plan for SRS F-Area Industrial Solid Waste Landfill* (G-CLP-F-00001, Revision 2) details these exceedances. Any soils outside of the area to be covered in excess of the industrial RBCs, will be moved within the boundary of the permitted area and covered.

A Fate and Transport Evaluation was performed to assess the potential of unit-related contaminants to transport through vadose zone soils to groundwater and determine their environmental fate. This evaluation is similar to those done under the SRS Federal Facility Agreement (FFA) Program in Chapter 5, "Contaminant Fate and Transport," of RCRA Facility Investigation/Remedial Investigation/Baseline Risk Assessment Reports. The evaluation predicted that the contaminants will biodegrade long before reaching the groundwater under the landfill; therefore, none of the PAHs would reach the aquifer (groundwater

concentration estimated to be 0.00 μg/L) and will not adversely impact groundwater.

The highest concentrations of PAHs remain bound in the first foot of soil at the landfill. Closure of the area by placement of a combination of soil and clay cover, as required by the solid waste permit and the industrial solid waste landfill regulations R.61-107.16, will eliminate the surface soil exposure pathway to human and ecological receptors and surface waters. Vegetation growth on the soil cover will be limited to shallow rooted species to prevent biouptake and potential exposures to contaminated vegetation. Institutional controls will be maintained on the F-Area Industrial Solid Waste Landfill to prevent the potential for future human or ecological perturbation of the closed unit.

2.0 LAND USE CONTROLS

For the F-Area Industrial Solid Waste Landfill, the land use control (LUC) objective necessary to ensure protectiveness of the closure is:

- Prevent direct contact with the landfill soil.

The institutional controls required to prevent unauthorized exposure to the contaminated media at the F-Area Industrial Solid Waste Landfill include the following:

- Controlled access to the F-Area Industrial Solid Waste Landfill through existing SRS security gates and perimeter fences, an existing fence and locked gate at the facility itself, and the site use/site clearance programs,
- Prevention of residential land use (i.e., the area is classified for industrial land use only),
- Signs posted in the area to indicate that waste remains in the vicinity of the F-Area Industrial Solid Waste Landfill above levels allowing for unrestricted land use and to contact the landfill custodian prior to entry, and

- Notification of the use of the facility as a landfill to any future landowner through deed notification or other appropriate instrument, as required under R.61-107.16.61.c.(3).

In the long-term, if the F-Area Industrial Solid Waste Landfill is transferred to non-federal ownership, the need for deed restrictions will be evaluated and performed pursuant to CERCLA 120(h). The need for deed restrictions may be re-evaluated at the time of transfer in the event exposure assumptions differ and/or contamination no longer poses an unacceptable risk under residential use. Proposed changes in deed restrictions will require US EPA and SCDHEC review and approval. The survey plat will be reviewed and updated, as necessary, at the time the site is transferred and will be recorded with the Aiken County recording agency. This proposal is consistent with US EPA guidance and is an effective use of risk management principles.

Each element of the institutional controls corrective action is discussed below.

2.1 Deed Notification

In the event the property is transferred, a deed notification will be filed with Aiken County. A deed notification shall be filed with the appropriate county records in accordance with CERCLA 120(h), which requires the government to create a deed when land on which any hazardous substance was stored, released, or disposed is transferred to non-federal ownership. The transference of the F-Area Industrial Solid Waste Landfill is unlikely. Per CERCLA 120(h)(3)(A), the deed shall contain, to the extent practical, such information as is available based on the complete search of agency files, including the following:

- A notice of the type and quantity of such hazardous substances;
- Notice of the time at which such storage, release, or disposal took place;
- A description of the remedial action taken, if any.

Per CERCLA 120(h)(3)(B), the deed shall also contain a covenant warranting that

- All remedial action necessary to protect human health and the environment with respect to any such substance remaining on the property has been taken before the date of such transfer;
- Any additional remedial action found to be necessary after the date of such transfer shall be conducted by the United States Government;
- A clause granting the United Stated Government access to the property in any case in which remedial action or corrective action is found to be necessary after the date of such transfer.

The SCDHEC industrial solid waste landfill regulations, as well as the criteria established in permit number 025500-1602, are applicable to the F-Area Industrial Solid Waste Landfill.

2.2 Access Controls

2.2.1 On-Site Workers

In accordance with WSRC 1D, *Site Infrastructure and Services Manual*, Procedure 3.02, *Site Real Property Configuration Control*, use of all lands and waters on the SRS shall be coordinated via 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 Procedure 3.02, all work at SRS that adds to or modifies features or facilities portrayed on the SRS development maps (i.e., plot plans of facilities/utilities at SRS) is authorized by a Site Clearance Permit before any excavation activities. All Site Clearance requests are reviewed to verify that either an approved Site Use Permit has been obtained or that an existing Site Use Permit has sanctioned the request. Verification of US Department of Energy (US DOE) approval for intended land use must be obtained before issuance of a Site Clearance Permit. The Site Use and Site Clearance Processes are applicable to all activities and personnel on site (including subcontractors). The processes are controlled within the SRS Quality Assurance Program.

The SRS identifies all buildings and facilities on maps used in the Site Use/Site Clearance Program and identifies a 200-foot buffer zone around each facility. This facility is identified on these maps as an industrial solid waste landfill.

Any work proposed in this areas will be strictly controlled and workers will be appropriately trained and briefed about health and safety requirements if work is deemed necessary for maintenance. Any changes in the use or disturbance of the F-Area Industrial Solid Waste Landfill will be cleared with the US EPA and SCDHEC before disturbance occurs. To prevent unknowing entry and to ensure that unrestricted use of the landfill does not occur while under the ownership of the government, identification signs will be posted. The signs will be legible from a distance of at least 25 feet and located in the areas as shown on Figure 1.

The signs will read:

F-Area Industrial Solid Waste Landfill

"Danger – Unauthorized Personnel Keep Out. This area was used to manage hazardous substances. Do not dig or excavate. Do not enter without contacting the landfill custodian."

Custodian: Manager, Central Services Works Engineering Roads & Field Services

Phone: (803) 557-4713

2.2.2 Trespassers

Additionally, while under the ownership of the US DOE, access control of the entire SRS will continues to be maintained in accordance with the 1992 RCRA Permit 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 warning signs (R.61-79.264.14(c)), in place at the SRS boundary to comply with the security requirements of a RCRA-permitted facility.

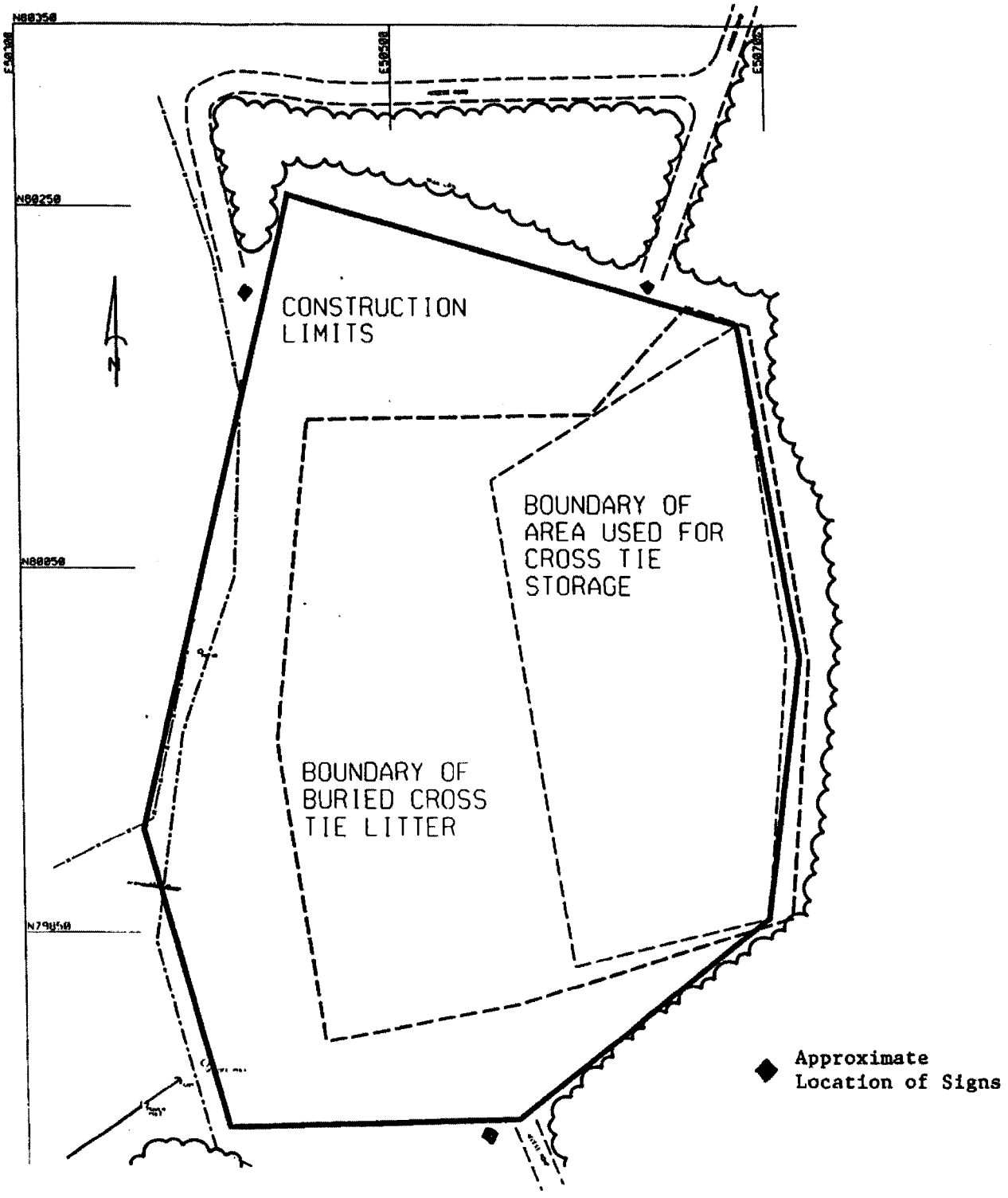

Figure 1. F-Area Industrial Solid Waste Landfill Identification Sign Locations

2.3 Field Walkdowns and Maintenance for Institutional Controls

Monitoring will be performed to verify that LUCIP requirements are being met. Quarterly monitoring of the F-Area Industrial Solid Waste Landfill will be conducted for items such as accuracy and legibility of signs, condition of the fence, security of the gate, visible signs of subsidence or erosion or surface cracking, vegetative cover condition, cover drainage, integrity of run-on and run-off control measures, etc. Subsidence or erosion will be corrected by backfilling the affected area with clean soil and seeding the area to prevent further erosion to conform as closely as possible to the original specifications. The results of any events and/or action that could indicate some potential compromise of institutional controls will be documented in a memorandum to the regulators within 30 days. All other routine maintenance activities (i.e., mowing, etc.) will be documented and maintained in files that are subject to US EPA and SCDHEC review and audit. A copy of the completed inspection form is maintained in the Administrative Record files.

Inspections at the F-Area Industrial Solid Waste Landfill will be performed to ensure that institutional controls remain protective and consistent with all closure/post-closure objectives. The F-Area Industrial Solid Waste Landfill Inspection Sheet is included as Attachment A of this LUCIP.

APPENDIX A

F-AREA INDUSTRIAL SOLID WASTE LANDFILL INSPECTION SHEET

F-AREA INDUSTRIAL SOLID WASTE LANDFILL INSPECTION SHEET

A = Satisfactory **X = Unsatisfactory (Comments Required)**	**A or X**	**Comments or Corrective Action Taken (See Maintenance Register for Corrected Items)**
Check for potential encroachment (ensure that there is no building on the site).		
Was the access gate locked?		
Is the fence in good condition?		
Does the site have brush or woody vegetation that needs cutting and disposal?		
Does the site need to have the grass cut?		
Are the roads to the site accessible?		
Does the site show signs of erosion or subsidence or surface cracking? Are there any signs of burrowing animals (holes)?		
Does the site have adequate vegetative cover?		
Are the site signs correct and legible?		
Does the site need general cleanup (housekeeping)?		
Are the run-on and run-off control measures adequate and of good integrity?		

Inspected By:_____/_____Date/Time:_____/_____
(Print Name) (Signature)

Accompanied By:_____/_____Date/Time:_____/_____
(Print Name) (Signature)

CSWE Manager:_____/_____Date/Time:_____/_____
(Print Name) (Signature)

Note: US EPA and SCDHEC must be notified within 30 days of identification of any area where any breach or compromise of restrictions placed on this institutional control site has occurred.

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