LUCIP for the
K-Area Burning/Rubble Pit, 131-K and K-Area Rubble Pile, 631-20G

Appendix D of Post-Construction Report for the K-Area Burning/Rubble Pit, 131-K and K-Area Rubble Pile, 631-20G

WSRC-RP-2002-4095, Revision.1, October 2002

NOTE: The Westinghouse Savannah River Company (WSRC) and Department of Energy (DOE) organizations responsible for environmental restoration at the Savannah River Site underwent name changes in 2003, as shown below. The responsibilities as outlined in the following document did not change.

Organization	**Previous Name**	**Current Name**
WSRC	Environmental Restoration Division (ERD)	Soils and Groundwater Closure Projects (SGCP)
DOE	Environmental Restoration Division (ERD)	Soil and Groundwater Project (SGP)

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APPENDIX D

LAND USE CONTROL IMPLEMENTATION PLAN

K-AREA BURNING/RUBBLE PIT (131-K)

AND

K- AREA RUBBLE PILE (631-20G) OPERABLE UNIT (KBRP/KRP)

LAND USE CONTROL IMPLEMENTATION PLAN

This KBRP/KRP Land Use Control Implementation Plan (LUCIP) will be appended to the Savannah River Site (SRS) Land Use Control Assurance Plan (LUCAP). The United States Department of Energy (USDOE) is responsible for implementing the land use controls (LUCs) (e.g., inspections, maintenance, etc.) outlined in this unit-specific LUCIP.

The selected remedy leaves hazardous substances in place that pose a potential future risk and will require land use restrictions for an indefinite period of time. As negotiated with the United States Environmental Protection Agency (USEPA), and in accordance with USEPA Region IV policy (Johnston 1998), the SRS has developed a LUCAP (WSRC 2002b) to ensure that land use restrictions are maintained and periodically verified. This LUCIP provides detailed and specific measures required for the land use controls selected as part of this remedy. The USDOE is responsible for implementing, maintaining, monitoring, reporting upon, and enforcing the land use controls herein. Upon final approval, the LUCIP will be appended to the LUCAP and is considered incorporated by reference into the Post Construction Report (PCR), establishing land use controls implementation and maintenance requirements enforceable under the Comprehensive Environmental Response, Compensation, and Recovery Act (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 human health and the environment. LUCIP modification will only occur through another CERCLA document.

1.0 REMEDY SELECTION

1.1 KBRP/RP Operable Unit

Located in K Area in the south-central portion of SRS, the KBRP/KRP operable unit (OU) lies approximately 4.5 km (5.9 miles) east of the nearest site boundary and 0.65 km (0.4 miles) east of K-Reactor Area (Figure 1 in the PCR).

Historical photographs of K-Area indicate that the K-Area Burning/Rubble Pit (KBRP) was constructed between 1955 and 1956. Used for waste burning and burial, the pit was a shallow, unlined excavation measuring approximately 9 m (30 ft) wide, 73 m (240 ft) long, and approximately 2.4 m (8 ft) deep. Based on its dimensions, the total pit volume is approximately 1,640 m^3 (2,140 yd^3) and encompasses an area of approximately 0.07 ha (0.17 acres).

During operation, organic liquids of unknown use and origin, waste oils, paper, plastics, and rubber were disposed of in the pit and burned periodically (WSRC 1998a). Disposal records, including composition, origin, and use of materials disposed, were not kept for this unit during its operation. The use of the KBRP for disposal of combustible wastes was discontinued in 1973. When the pit became full, it was backfilled with soil to grade level.

Historical photographs of K Area indicate that the K-Area Rubble Pile (KRP) was constructed sometime between 1956 and 1961. The KRP consists of a general disposal area, semicircular in shape, measuring approximately 91 m (300 ft) long and 16 to 41 m (50 to 135 ft) wide, with an area of approximately 0.6 ha (1.5 acres). Individual rubble piles within the area are 1.2 to 1.8 m (4 to 6 ft) high. The total estimated waste volume is 2,140 m^3 (2,800 yd^3). The KRP is composed primarily of soil matter, with some broken asphalt, broken concrete pieces, and gravel-sized coal. The coal and asphalt materials exist in a wide range of particle sizes and are dispersed in a highly heterogeneous manner throughout the piles. As with the KBRP, disposal records were not kept for this unit

during its period of operation. The Resource Conservation and Recovery Act (RCRA) Facility Investigation/Remedial Investigation (RFI/RI) included collecting soil samples from individual rubble piles as part of the pit and pile area evaluation (WSRC 1998a).

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

1.2 Nature and Extent of Contamination

The KBRP/KRP OU consists of a source term and groundwater. The following is a brief summary of final constituents of concern (COCs) as defined in the Record of Decision (ROD) document. There is no principal threat source material (PTSM).

Under the future industrial worker scenario, the Baseline Risk Assessment (BRA) identified final COCs for the KBRP (polycyclic aromatic hydrocarbon (PAHs)), for the KRP (PAHs and arsenic) and for the groundwater (tetrachloroethylene (PCE) and trichloroethylene (TCE)). The following COCs and associated risks were identified for the KBRP based on the future industrial worker: benzo(a)anthracene (3.70×10^{-5}), benzo(a)pyrene (3.70×10^{-4}), benzo(b)fluoranthene (5.00×10^{-5}), benzo(k)fluoranthene (2.50×10^{-6}), dibenzo(a,h)anthracite (5.40×10^{-5}), and indeno (1,2,3-c,d)pyrene (2.14×10^{-5}). The following COCs and associated risks were identified for the KRP based on the future industrial worker: benzo(a)anthracene (1.81×10^{-5}), benzo(a)pyre (1.45×10^{-4}), benzo(b)fluoranthene (2.30×10^{-5}), indeno(1,2,3-c,d)pyrene (8.70×10^{-6}), and arsenic (3.35×10^{-5}). The following COCs and associated risks were identified for KBRP and KRP groundwater based on the future industrial worker: PCE (1.6×10^{-6}) and TCE (1.10×10^{-7}).

1.3 Remedial Action Overview

The remedy selected and installed for the OU is:

KBRP/KRP	Soil cover with Institutional Controls
K-Area Groundwater	Monitored Natural Attenuation (MNA)

This remedy included the following actions:

- Installation of a soil cover system,
- Installation of monitoring wells, and
- Implementation of land-use controls, including warning signs, to ensure continued protection of human health or the environment.

Per the ROD, MNA would be implemented pursuant to the groundwater mixing zone application (GMZA) (WSRC 1999b). The ROD deferred to the GMZA for details establishing the long-term groundwater monitoring program to ensure maximum mixing zone concentration limits (MZCL) are not exceeded. Therefore hereafter MNA is referred to as GMZA.

The post-remedial action conceptual site model, Attachment A, shows the broken pathways and the remaining residual risk to the future industrial worker.

2.0 LAND USE CONTROLS

In order to ensure the protectiveness of the remedy described above, the KBRP/KRP OU land use control objective is to:

- Prevent contact, removal, or excavation of buried waste in the OU areas designated in the LUCIP and preclude future residential or agricultural use of the area, and

- Prevent unauthorized access to groundwater.

Current access controls and a deed notification needed to maintain the LUCs are described in the following sections of this LUCIP.

2.1 Access Controls

2.1.1 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 SRS shall be coordinated via the Site Use Program. All employees, contractors, and visitors to the SRS require adherence to the Site Use Program. This program ensures that all work performed on the SRS that adds, modifies, or removes features portrayed on the SRS development maps is authorized. No use of land (i.e., excavation or any other land use) shall be undertaken without prior approval documented by a Site Use Permit. This authorization is obtained through the completion of a Site Clearance Request Form. Also, in accordance with 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 excavation activities are conducted. All site clearance requests will be reviewed to verify that either an approved Site Use Permit has been obtained or that an existing Site Use Permit has sanctioned the request.

The SRS, specifically the Site Development, Planning, and Mapping Department, is responsible for updating, maintaining, and reviewing site maps, including Federal Facility Agreement (FFA) OU identifications. If a site clearance request is made that may impact

a FFA OU, the Site Clearance Request Form is sent to the FFA OU reviewer, who is in the Environmental Restoration Division (ERD), for either approval or disapproval. The roles and responsibilities of each individual are detailed in WSRC 1D, Procedure 3.02. Verification of USDOE 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 (QA) Program. The SRS QA Program is the governing QA Program for all SRS activities, including those in the ERD. The activities that are performed in the ERD must comply with SRS QA Program procedures as well as ERD-specific procedures.

SRS identifies all buildings and facilities on maps used in the Site Use/Site Clearance Program. This waste unit is identified on these maps as a CERCLA facility.

Any work proposed in these 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. No major change in land use nor excavation at the KBRP/KRP OU shall be undertaken without United States Environmental Protection Agency (USEPA) and South Carolina Department of Health and Environmental Control (SCDHEC) approval. To prevent unknowing entry and to ensure that unrestricted use of the waste unit does not occur while under ownership of the government, identification signs will be posted at the unit.

Custodial responsibilities for maintenance and inspection of the KBRP/KRP waste site will be maintained by the Post-Closure Maintenance group within the ERD.

The warning signs for the soil cover will be legible from a distance of at least 25 feet. The soil cover signs will read as follows:

K-Area Burning/Rubble Pit (131-K) and Rubble Pile (631-20G)

"Danger – Unauthorized Personnel Keep Out. This unit contains hazardous substances. Do not dig or excavate. Do not enter without contacting the waste site custodian."

Custodian: Manager, Post-Closure Monitoring and Maintenance

Phone: (803) 725- 7243 Pager ID: 19192

2.1.2 Trespassers

While under the ownership of USDOE, access control of the entire SRS will continue to be maintained in accordance with the 1992 Resource Conservation and Recovery Act (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 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.

2.2 LUCIP Deed Notification

In the long term, if the property is ever transferred to non-federal ownership, the US 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 remedial actions 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, in perpetuity, 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 the RCRA deed notification requirements at final closure of a RCRA facility if contamination will remain at the unit.

The deed shall also include deed restrictions precluding residential use of the property. 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 through an amended ROD with USEPA and SCDHEC review and approval.

In addition, if the site is ever transferred to non-federal ownership, a survey plat of the OU will be prepared, certified by a professional land surveyor, and recorded with the appropriate county recording agency.

Note: Survey Plat (Attachment B, SK-C-5373), and the line marked "AREA SUBJECT TO LAND USE CONTROLS" define the area subject to Land Use Controls.

2.3 Field Walkdown and Maintenance for Institutional Controls

After the remediation of the KBRP/KRP OU, only maintenance activities will be required per this remedial action. No operations other than GMZA monitoring (WSRC 1999b) will be required.

The results of any events or actions that indicate some potential compromise of institutional controls will be documented in the FFA Annual Progress 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 ERD Administrative Record Files.

The following steps will be implemented to maintain the soil cover for as long as the waste remains a threat to human health or the environment:

- Perform periodic (annual) visual inspections for evidence of damage to the soil cover due to erosion or intrusion by burrowing animals. The inspection will also

address upkeep of the vegetative cover and access control barriers (i.e., the warning signs). (Attachment C provides a unit-specific inspection data sheet for the KBRP/KRP waste unit).

- Perform necessary repairs (when required as identified during inspection) to maintain the functional integrity of the soil cover and the warning signs.

- Enforce SRS institutional controls through access controls by restricting access to the closed waste unit. Institutional controls will be maintained as long as the waste remains a threat to human health or the environment.

- As required by the National Oil and Hazardous Substance Contingency Plan (NCP), a five-year review of the ROD for the KBRP/KRP unit will be performed as long as the waste remains a threat to human health or the environment.

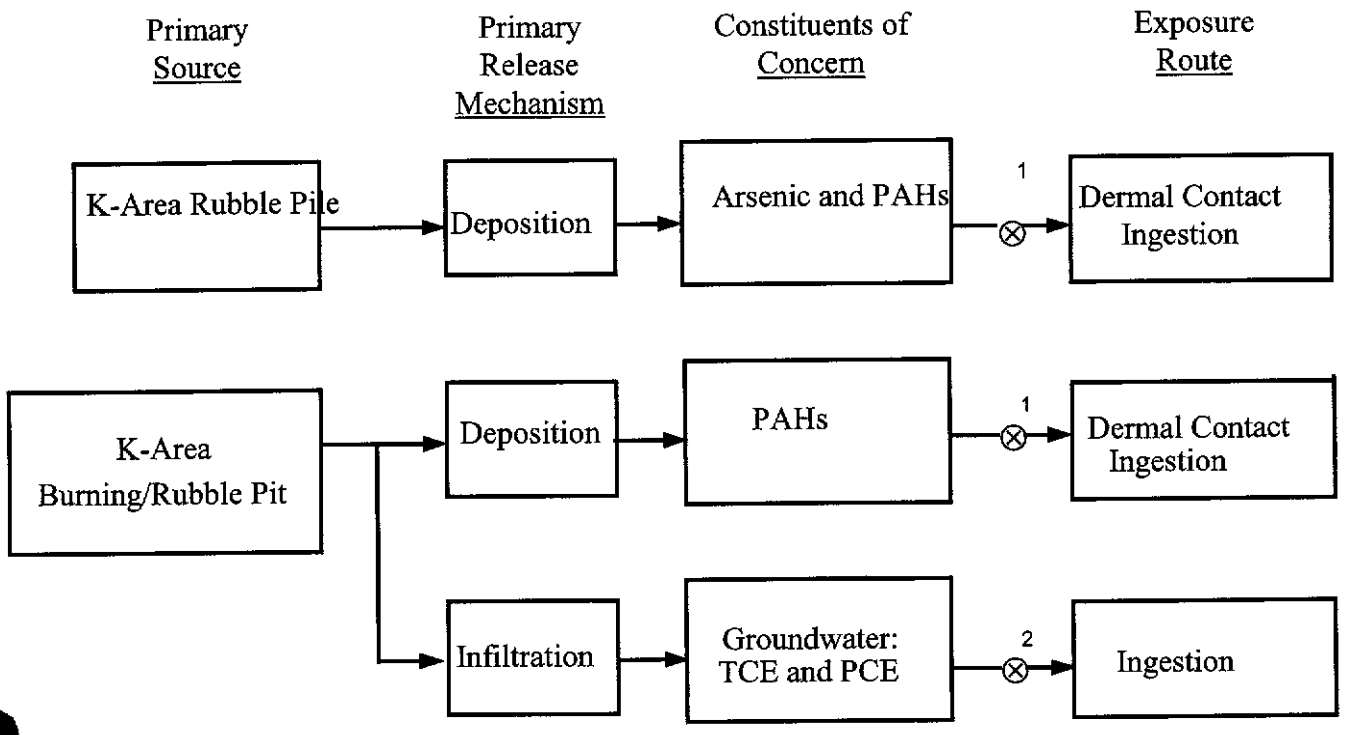
The waste site inspectors are to be trained and certified as Hazardous Waste Operations and Emergency Response (HAZWOPER), RCRA Well Inspectors (ERD specific training), ERD RCRA Waste Unit Inspectors, Radiological Workers, etc., as applicable for the specific inspection. They will also be trained based 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 no single person will conduct all of the inspections or grass cutting operations.

This unit-specific LUCIP, including the checklist, will be appended to the SRS LUCAP.

Per Section 3.6 of the LUCAP, this LUCIP identifies the area under land-use restriction via a survey plat (see Attachment B). If the OU is ever transferred to non-federal ownership, a survey plat of the area, prepared by a certified professional land surveyor, will be recorded with the county recording agency.

ATTACHMENT A

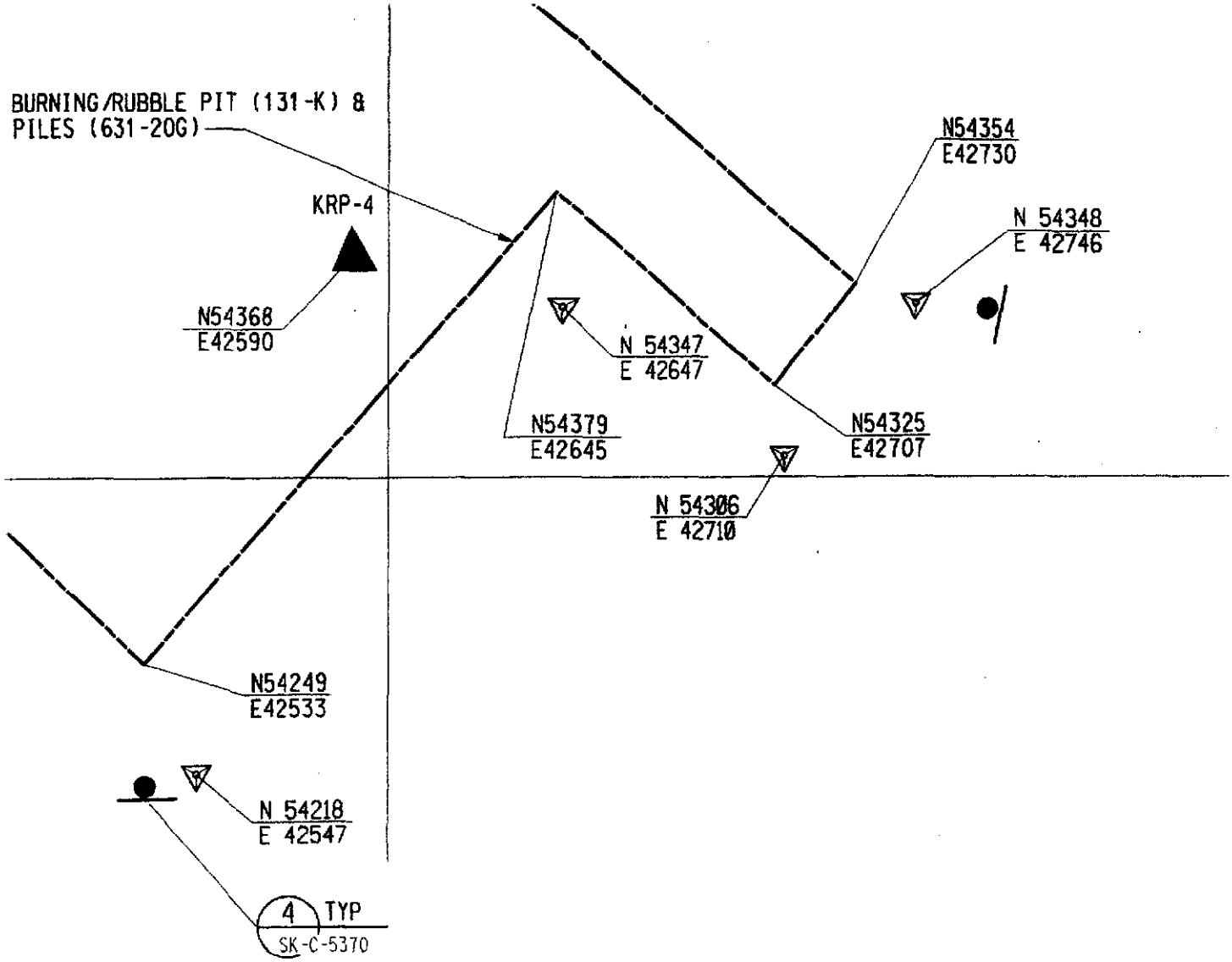
K-AREA BURNING RUBBLE PIT AND RUBBLE PILE POST-REMEDIAL ACTION CONCEPTUAL SITE MODEL



Legend
⊗ Pathway break
Remedial Alternatives:
(1) Soil Cover
(2) GMZA

ATTACHMENT B

LAND USE CONTROL IMPLEMENTATION PLAN SURVEY PLAT (SK-C-5373)



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UNITED STATES DEPARTMENT OF ENERGY

SAVANNAH RIVER SITE

AS-BUILT OF K-AREA BURNING/RUBBLE PIT (131-k) AND RUBBLE PILES (631-20G)

LAND USE CONTROL IMPLEMENTATION PLAN
SURVEY PLAT (U)

SCALE	SRS DRAWING NO.	SHEET NO.	LATEST REVISION
AS NOTED	SK-C-5373	1 OF 1	0