

**LUCIP for the C-Burning/Rubble Pit Operable Unit (131-C) and  
Old C-Area Burning/Rubble Pit (NBN)**

*Land Use Control Implementation Plan for the  
C-Burning/Rubble Pit Operable Unit (131-C) and Old C-Area Burning/Rubble Pit (NBN)*  
(WSRC-RP-2008-4050, Revision 1.1, April 2009)

The LUCIP doesn't specify an inspection frequency. Therefore, DOE submitted a letter to the EPA and SCDHEC requesting approval to perform the inspections on an annual basis in accordance with the approved ICMI/Remedial Design/Remedial Design Report/Remedial Action Work Plan (WSRC-RP-98-4058, Revision 1.1, January 1999) (see ACP-10-276 dated October 1, 2010, ARF #017162). The EPA and SCDHEC approved the request in letters dated October 25, 2010 (ARF #017203) and October 29, 2010 (ARF #017204), respectively.

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**United States Department of Energy**

**Savannah River Site**



**Land Use Control Implementation Plan  
for the C-Area Burning/Rubble Pit Operable Unit (131-C)  
and Old C-Area Burning/Rubble Pit (NBN) (U)**

**CERCLIS NUMBER: 31**

**WSRC-RP-2008-4050**

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**April 2009**

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## **LIST OF ACRONYMS AND ABBREVIATIONS**

ACP	Area Completion Projects
ARAR	applicable or relevant and appropriate requirement
AS	air sparging
CBRP	C-Area Burning/Rubble Pit (131-C) Operable Unit and Old C-Area Burning/Rubble Pit (NBN)
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CM	contaminant migration
Eco	ecological
FFA	Federal Facility Agreement
HAZWOPER	Hazardous Waste Operations and Emergency Response
HH	human health
IA	interim action
IC	institutional control
LLC	limited liability company
LUC	land use control
LUCAP	Land Use Control Assurance Plan
LUCIP	Land Use Control Implementation Plan
µg/L	microgram per liter
µg/kg	microgram/kilogram (parts per billion)
MCL	maximum contaminant level
MNA	monitored natural attenuation
NAD	North American Datum 1927
NBN	no building number
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
OU	operable unit
QA	quality assurance
RA	remedial action
RAO	remedial action objective
RCOC	refined constituent of concern
RCRA	Resource Conservation and Recovery Act
RFI/RI	RCRA facility investigation/remedial investigation
RGO	remedial goal option
RI	remedial investigation
ROD	record of decision
SCDHEC	South Carolina Department of Health and Environmental Control
SGCP	Soil and Groundwater Closure Projects
SRS	Savannah River Site
SVE	soil vapor extraction

**LIST OF ACRONYMS AND ABBREVIATIONS** *(Continued)*

TBC	to-be-considered
USDOE	United States Department of Energy
USEPA	United States Environmental Protection Agency
UTM	Universal Transverse Mercator
VOC	volatile organic compound
WSRC	Westinghouse Savannah River Company LLC prior to December 8, 2005; Washington Savannah River Company LLC after December 8, 2005



## **1.0 INTRODUCTION**

This Land Use Control Implementation Plan (LUCIP) has been prepared for C-Area Burning/Rubble Pit (CBRP) Operable Unit (OU) (131-C) and Old C-Area Burning/Rubble Pit (no building number [NBN]) at the Savannah River Site (SRS). The purpose of the LUCIP is to describe how the land use controls (LUCs) selected in the CBRP Record of Decision (ROD) will be implemented and maintained. The anticipated future land use for the CBRP OU is industrial. The following LUC objectives have been selected for this OU:

- Restrict on-site worker access and prevent unauthorized contact, removal, or excavation of contaminated media (i.e., surface and vadose zone soils)
- Maintain the integrity of any current or future remediation or monitoring systems (i.e., soil cover, soil vapor extraction [SVE] systems, and groundwater monitoring wells)
- Prevent access to or use of groundwater and surface water until remedial goals options (RGOs) are attained
- Prohibit the development and use of property for residential housing, elementary schools, childcare facilities, and playgrounds
- Prevent construction of inhabitable buildings without an evaluation of indoor air quality to address vapor intrusion

The selected remedy leaves contaminated groundwater in place that poses a potential future risk to residents or on-site workers and will require land use restrictions until the contaminant concentrations are at levels that allow unrestricted use and unlimited exposure. 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 implemented a Land Use Control Assurance Plan (LUCAP) (WSRC 1999) to ensure that the LUCs required by numerous remedial decisions at SRS are properly maintained and periodically verified. The requirements of that LUCAP also apply to the LUCs that were selected as part of the remedial action (RA) for the CBRP OU. This additional document, the CBRP OU LUCIP, contains the detailed and specific measures required

to implement and maintain the LUCs selected as part of this particular remedial decision. The LUCs shall be maintained until the OU is suitable for unlimited exposure and unrestricted use. Approval by USEPA and SCDHEC is required for any modification or termination of the institutional controls (ICs).

USDOE is responsible for implementing, maintaining, monitoring, reporting, and enforcing the LUCs in accordance with the approved LUCIP. Upon final approval, the LUCIP will be appended to the LUCAP and should be considered incorporated by reference into the CBRP OU ROD (WSRC 2008), 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). The LUCIP 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 LUCIP will be evaluated for accuracy and protectiveness during the five-year remedy review, and any approved LUCIP modification will be appropriately documented for incorporation by reference into the CBRP OU ROD.

## **1.1 Format of LUCIP**

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

## **2.0 OVERVIEW OF CBRP OU REMEDIAL ACTION**

### **2.1 Description of CBRP OU**

C Area is located in the central portion of SRS. C Reactor achieved criticality in March 1955 and operated until June 1985 when it was placed in warm standby. The reactor was placed in cold standby in 1987. All of the SRS production reactors were shut down as of February 1996.

The CBRP OU LUC outline encompasses all of the groundwater from CBRP west to Fourmile Branch, comprising about 130 acres. The CBRP OU included source units that supported past production activities at C Reactor and other production areas that produced nuclear materials for

national defense. Past activities at the source unit have resulted in groundwater contamination beneath CBRP OU. As the result of characterization activities, SRS has identified the areas in which groundwater contamination exceeds applicable maximum contaminant levels (MCLs) and developed a LUC outline. The LUC outline includes all groundwater contaminated above MCLs within the OU, including a buffer zone to allow for changes in plume geometry over time. Restrictions on the use of groundwater within the LUC outline will be enforced as long as contaminant levels exceed MCLs.

Recognized source units at CBRP have been remediated to reduce the toxicity, mobility, or volume of the contamination that constituted sources of contamination to the groundwater. The source units were previously remediated under the unit-specific interim ROD (WSRC 1998).

## **2.2 Nature and Extent of Contamination at the CBRP OU**

The extent of the known contaminated groundwater above MCLs is limited to the Upper Three Runs (water table) aquifer. Additional wells to be installed as part of the effectiveness monitoring network will verify the vertical extent of contamination.

CBRP OU groundwater emerges along seep lines in the Twin Lakes wetland and Fourmile Branch; these are the only bodies of surface water impacted by CBRP OU refined constituents of concern (RCOCs). Vinyl chloride (VC) (MCL = 2 µg/L, parts per billion) is the only unit-specific RCOC reported from Fourmile Branch; the maximum concentration was 5.24 µg/L in 1998. VC has not been detected in Fourmile Branch in seven sampling events since September 2004. Tetrachloroethylene (PCE) (MCL = 5 µg/L), trichloroethylene (TCE) (MCL = 5 µg/L), and VC are the only unit-specific RCOCs reported in the Twin Lakes wetland, with maximum values of 7.06 µg/L, 26.2 µg/L, and 44.9 µg/L, respectively, in 1998. Only TCE has been detected since 2002, and it has been below the MCL since December 2006.

The RCOCs for CBRP OU are listed by subunit in the following insert:

Media	Subunit	HH RCOCs	CM RCOCs	ARAR (MCLs) RCOCs	Eco RCOCs
Soil	CBRP Disposal Pit	HpCDD, OCDD (future resident)	None	None	HpCDD
	Old CBRP	None	None	None	None
	Mounded area	None	None	None	None
	Concrete drainage ditch	None	None	None	None
	Vadose zone	None	TCE	None	None
Groundwater	Groundwater plume	TCE, cDCE, DCE, VC	None	PCE, TCE, cDCE, DCE, VC, DCM	None
Surface water	Twin Lakes	None	None	PCE, TCE, VC	None
	Fourmile Branch	None	None	VC	None

ARAR applicable or relevant and appropriate requirement  
HpCDD  
cDCE cis-1,2-dichloroethylene  
CM contaminant migration  
DCE 1,1-dichloroethylene  
DCM dichloromethane  
Eco ecological

HH human health  
1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin  
OCDD octachlorodibenzo-p-dioxin  
PCE tetrachloroethylene or perchloroethylene  
TCE trichloroethylene  
VC vinyl chloride

### 2.3 Remedial Action Selected

The selected remedy for the CBRP OU consists of the following actions:

- continued operation of MicroBlower™ SVE system with maintenance of soil cover;
- monitored natural attenuation (MNA) with ICs of groundwater directly downgradient of CBRP; and
- MNA-IC for surface water in the Twin Lakes and Fourmile Branch wetlands.

Remedial action objectives (RAOs) are unit-specific goals that establish the extent of cleanup required to protect human health and the environment and to mitigate the effects of contamination. RAOs are based on an evaluation of ARARs and to-be-considered (TBC) requirements [CERCLA 121(d)(2)(A)].

These RAOs are intended to protect future industrial workers and ecological receptors from the RCOCs in the media of the CBRP OU subunits. RGOs for CBRP OU include contaminant

concentrations in vadose zone soils that will not leach to groundwater above the MCLs, contaminant concentrations in disposal pit soil that will not adversely impact ecological receptors, and contaminant concentrations in groundwater and surface water that do not exceed MCLs. The MCLs are the chemical-specific ARARs for groundwater and surface water. Surface water in Fourmile Branch and the Twin Lakes wetland is not used for any purpose where significant human exposure might occur (i.e., drinking water supply or hygiene, agricultural, process, or recreational purposes).

### **Disposal Pit Surface Soil**

The RAO for surface soil in CBRP is: Prevent exposure of ecological receptors to HpCDD in the pit surface soils.

The RGO for HpCDD as an ecological RCOC is 0.07 µg/kg.

### **Vadose Zone beneath CBRP**

The RAO for vadose zone beneath CBRP is: Prevent migration of TCE from vadose zone soils to groundwater at levels that will exceed the MCL.

The RAO for TCE has been attained due to the interim action (IA) soil cover, SVE system, and air sparging (AS) system. The RGO for TCE as a CM RCOC is 58 µg/kg.

### **Groundwater Plume**

The RAOs for groundwater are:

- Treat and/or mitigate groundwater contaminated above MCLs.
- Prevent human exposure to groundwater contaminated with TCE and PCE above MCLs of 5.0 µg/L.
- Reduce the concentration of TCE and PCE in the groundwater to levels at or below MCLs and attenuate the groundwater plume to the extent practicable.

- Prevent discharge of contaminated groundwater to surface water resulting in concentrations exceeding their MCLs.

The RGOs for groundwater are the MCLs, which are 5.0 µg/L for PCE, 5.0 µg/L for TCE, 7.0 µg/L for DCE, 70.0 µg/L for cDCE, 2.0 µg/L for VC, and 5.0 µg/L for DCM.

### **Surface Water**

The RAO for surface water is: Reduce the levels of TCE, DCE, and VC in surface water at or below the MCLs.

The RGOs for surface water are the MCLs: 5.0 µg/L for PCE, 5.0 µg/L for TCE, and 2.0 µg/L for VC.

Based on modeling and current conditions, RAOs and RGOs are expected to be achieved in the volatile organic compound (VOC) plume in approximately 70 years. MNA/IC will continue until the FFA Core Team agrees that RAOs and RGOs have been met.

The post-RA conceptual site model (see Appendix C, Figure C-1 to this LUCIP) shows the remaining residual risk pathways for the future industrial worker following implementation of the RA.

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

### **3.0 LAND USE CONTROL OBJECTIVES**

The following LUC objectives are necessary to ensure the protectiveness of the selected remedy:

- Restrict on-site worker access and prevent unauthorized contact, removal, or excavation of contaminated media (i.e., surface and vadose zone soils)
- Maintain the integrity of any current or future remediation or monitoring systems (i.e., soil cover, SVE systems, and groundwater monitoring wells)

- Prevent access to or use of groundwater and surface water until remedial goals are attained
- Prohibit the development and use of property for residential housing, elementary schools, childcare facilities, and playgrounds
- Prevent construction of inhabitable buildings without an evaluation of indoor air quality to address vapor intrusion

Groundwater contamination within the OU boundary was investigated during the Resource Conservation Recovery Act (RCRA) facility investigation/remedial investigation (RFI/RI) (WSRC 2002) and a TCE groundwater plume was mapped in the RFI/RI Report. The LUC boundary includes all areas currently contaminated above the MCLs and adequate buffer zone to include any changes in plume geometry over time. LUC boundaries extend westward from CBRP along the plume boundaries to Fourmile Branch and along the Twin Lakes wetland on the south (See Figure A-1 in Appendix A of this LUCIP). The TCE plume on Figure A-1 adequately depicts plume geometry and groundwater contamination concentrations for both TCE and PCE, since TCE plume extent and concentrations are greater than PCE.

#### **4.0 IMPLEMENTATION OF LAND USE CONTROLS**

This section describes the LUCs selected in the ROD to achieve the objectives stated in Section 3.0. This description is included in Table 1. USDOE is responsible for implementing, maintaining, reporting on, and enforcing the LUCs required for the CBRP OU. The LUCIP will become enforceable and will be implemented when approved by USEPA and SCDHEC. USDOE shall notify USEPA and SCDHEC 60 days prior to implementation of any proposed land use changes that are inconsistent with LUC objectives or the selected remedy.

The CBRP OU will be maintained as an industrial use area by implementation of the property record notices (Section 4.1), property record restrictions (Section 4.2), and the use of a certified LUC survey plat (Section 4.3).

**Table 1. Land Use Controls for CBRP OU (Page 1 of 2)**

Type of Control	Purpose of Control	Duration	Implementation	Affected Areas <sup>a</sup>
1. Property Record Notices <sup>b</sup>	Provide notice to anyone searching records about the existence and location of contaminated areas	Until the concentrations 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	Areas of groundwater contamination exceeding MCLs and areas of remaining vadose zone contamination
2. Property record restrictions <sup>c</sup> : Groundwater	Prohibit the use of groundwater in areas of known or suspected contamination	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	Areas of groundwater contamination exceeding MCLs
3. Other Notices <sup>d</sup>	Provide notice to city and/or county about the existence and location of waste disposal and residual contamination areas for zoning/planning purposes	Until the concentrations 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	Areas of groundwater contamination exceeding MCLs and areas of remaining vadose zone contamination
4. Site Use Program <sup>e</sup>	Provide notice to worker/developer (i.e., permit requestor) on extent of contamination and limit penetration activities to those approved by SRS	As long as property remains under USDOE control	Implemented by USDOE Initiated by permit request	Areas of groundwater contamination exceeding MCLs and areas of remaining vadose zone contamination



**Table 2. Land Use Controls for CBRP OU (Page 2 of 2)**

Type of Control	Purpose of Control	Duration	Implementation	Affected Areas <sup>a</sup>
5. Physical Access Controls <sup>f</sup> (e.g., gates, portals)	Control and restrict general site access by workers and the public to prevent unauthorized entry	Until the concentrations of hazardous substances associated with the unit have been reduced to levels that allow for unlimited exposure and unrestricted use	Controls maintained by USDOE	At gated SRS entrances from major public roadways
6. Security Surveillance Measures	Control and monitor access by workers/public	Until the concentrations 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	Patrol of selected areas throughout SRS as necessary

<sup>a</sup>Affected areas – Specific locations identified in the SRS LUCIP or subsequent post-ROD documents

<sup>b</sup>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 and waste disposal areas in the property

<sup>c</sup>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

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

<sup>e</sup>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 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 of contaminated groundwater, will not disturb the affected areas without appropriate precautions and safeguards

<sup>f</sup>Physical Access Controls – Physical barriers or restrictions to entry

The Site Use Program (Section 4.4) will be implemented to prevent onsite worker exposure to contaminated soil, groundwater, and surface water. Other existing measures that will also be used to ensure the safety of onsite workers at CBRP OU include the Site Clearance Program, worker training, procedures, health and safety requirements, work controls, and jobsite briefings.

Physical access controls (Section 4.5) are implemented at the SRS boundary to control and restrict public and trespasser access to the CBRP OU. Signs at the CBRP OU will be maintained to alert onsite workers to the presence of hazardous substances beneath the soil cover and to prevent unauthorized excavation of the soil cover. The signs will also convey the restrictions of unauthorized personnel. Access control warning signs will be placed and maintained at the CBRP OU to prevent unknowing entry and unrestricted use.

#### **4.1 Property Record Notices**

In the long term, if the property is ever transferred to non-federal ownership, the United States Government will take those actions necessary pursuant to Section 120(h) of CERCLA. Those actions will include a deed notification disclosing former onsite nuclear materials production, waste management, and disposal activities; areas of groundwater contamination that have exceeded MCLs; and 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 inform any potential purchaser that local groundwater beneath the property has been contaminated as a result of industrial activities. This requirement is 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 restrictions precluding residential use of the property, specifically preventing the installation of any groundwater supply well within the contaminated aquifer so that groundwater containing contaminants exceeding MCLs cannot be used for drinking water.

The deed shall expressly prohibit activities inconsistent with the remedial goals and objectives in this LUCIP 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 groundwater contamination levels no longer exceed MCLs. Any re-evaluation of the need for the deed restrictions will be done through an amended ROD.

USDOE shall notify USEPA and SCDHEC at least six months prior to property transfer 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 property transfer between federal entities.

#### **4.3 Other Public Notices**

The CBRP OU LUC outline, shown on the design sketch in Appendix A, encloses the area under land use restriction because contaminant concentrations in local groundwater exceed MCLs. The sketch provides a plan view of the CBRP OU with the plume outlined by the 5- $\mu$ g/L TCE contour that encloses all groundwater exceeding the TCE MCL. All areas of MCL exceedance are enclosed by the CBRP OU LUC outline, which also provides a buffer zone around all MCL exceedances. Preparation of a survey plat will be deferred until the site is transferred to non-federal ownership. If the survey plat for the surface area subject to LUCs is prepared at the time the land is transferred, the description of the groundwater area under restrictive covenant will be more current and accurate. The deferred survey plat will be appended to this LUCIP when it is completed.

In addition, if the site is ever transferred to non-federal ownership, a professional land surveyor-certified survey plat of the 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 USDOE 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 WSRC 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 land use (e.g., excavation, well installation, or any other land use) shall be undertaken without prior approval documented by a Site Use Permit. Also, in accordance with WSRC 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 when there is a change to the permitted land use.

SRS is responsible for updating, maintaining, and reviewing site maps, including FFA (1993) OU identifications. If a Site Clearance Request potentially impacts an FFA OU, 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 WSRC 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 on site (including subcontractors). USDOE will notify USEPA and SCDHEC in advance of any

change to any internal procedure, including the Site Use Program, that would affect implementing or maintaining the LUCs. The processes are controlled within the SRS Quality Assurance (QA) Program in accordance with WSRC 1Q Manual, *Quality Assurance* (WSRC 2007). The SRS QA program governs all SRS activities.

SRS identifies all buildings and facilities on maps used in the Site Use 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 cover maintenance or sampling for groundwater or surface water.

No change in land use or excavation at the CBRP OU 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**

No physical access controls are required at the CBRP OU. As discussed in item 5 of Table 1, SRS site boundary fencing and security personnel will prevent trespassers from gaining access to the soil cover, monitoring wells, and surface water.

#### **4.6 Warning Signs**

Warning signs similar to the one shown in Appendix D, Figure D-1, will be erected and maintained around the soil cover to notify future workers of the presence of contaminants beneath the soil cover and to prevent inadvertent excavation of the soil cover. Warning signs will not be installed around the VOC plume because the depth to contaminated groundwater is generally a sufficient barrier to prevent exposure.

These warning signs will be installed as part of the CBRP OU construction per the Corrective Measures Implementation/ Remedial Action Implementation Plan (CMI/RAIP) (WSRC 2009b) schedule. In addition, the final placement of the signage will be documented in the Remedial Action Completion Report.

#### **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 1992 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 Institutional Controls**

Custodial responsibilities for maintenance and inspection of the CBRP OU will be maintained by the Post-Closure Maintenance Group within Area Completion Projects (ACP) (formerly Soil and Groundwater Closure Projects [SGCP]).

Inspection and maintenance of the CBRP soil cover will be performed to ensure the long-term integrity of the soil cover. The groundwater monitoring wells will be inspected and maintenance will be performed as needed in accordance with ACP Monitoring Well Procedures (WSRC 2005). 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 EPA 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 EPA and SCDHEC regarding how the USDOE has addressed or will address the breach within 10 days of sending EPA and SCDHEC notification of the breach. The FFA Annual Progress Report, submitted to the regulatory agencies by the 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 the property use conforms with the deed or lease restrictions and controls; 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 ACP Document Control Center. The LUCs shall be maintained until the concentrations 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 unit-specific LUCIP, including the checklist (similar to that in Appendix B), will be appended to the SRS LUCAP upon final regulatory approval. The preliminary checklist in the LUCAP will be replaced with the final approved checklist in the first biennial effectiveness monitoring report.

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## 5.0 REFERENCES

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- WSRC, 1998. *Interim Record of Decision Remedial Alternative Selection for the C-Area Burning/Rubble Pit (131-C) (U)*, WSRC-RP-98-4039, Revision 1 (September), Westinghouse Savannah River Company, Savannah River Site, Aiken, SC
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- WSRC, 2007. *Quality Assurance (U)*, WSRC Procedure Manual 1Q, Westinghouse Savannah River Company, Savannah River Site, Aiken, SC

*WSRC, 2008. Record of Decision for Remedial Alternative Selection for the C-Area Burning/Rubble Pit Operable Unit (131-C) and Old C-Area Burning/Rubble Pit (NBN) (U), WSRC-RP-2007-4082, Revision 1 (May), Washington Savannah River Company, Savannah River Site, Aiken, SC*

*WSRC, 2009b. Corrective Measures Implementation/ Remedial Action Implementation Plan for the M Area Operable Unit (U), WSRC-RP-2008-4063, Revision 1, Westinghouse Savannah River Company, Savannah River Site, Aiken, SC*

## **APPENDIX A**

### **Land Use Control Implementation Plan Drawing**

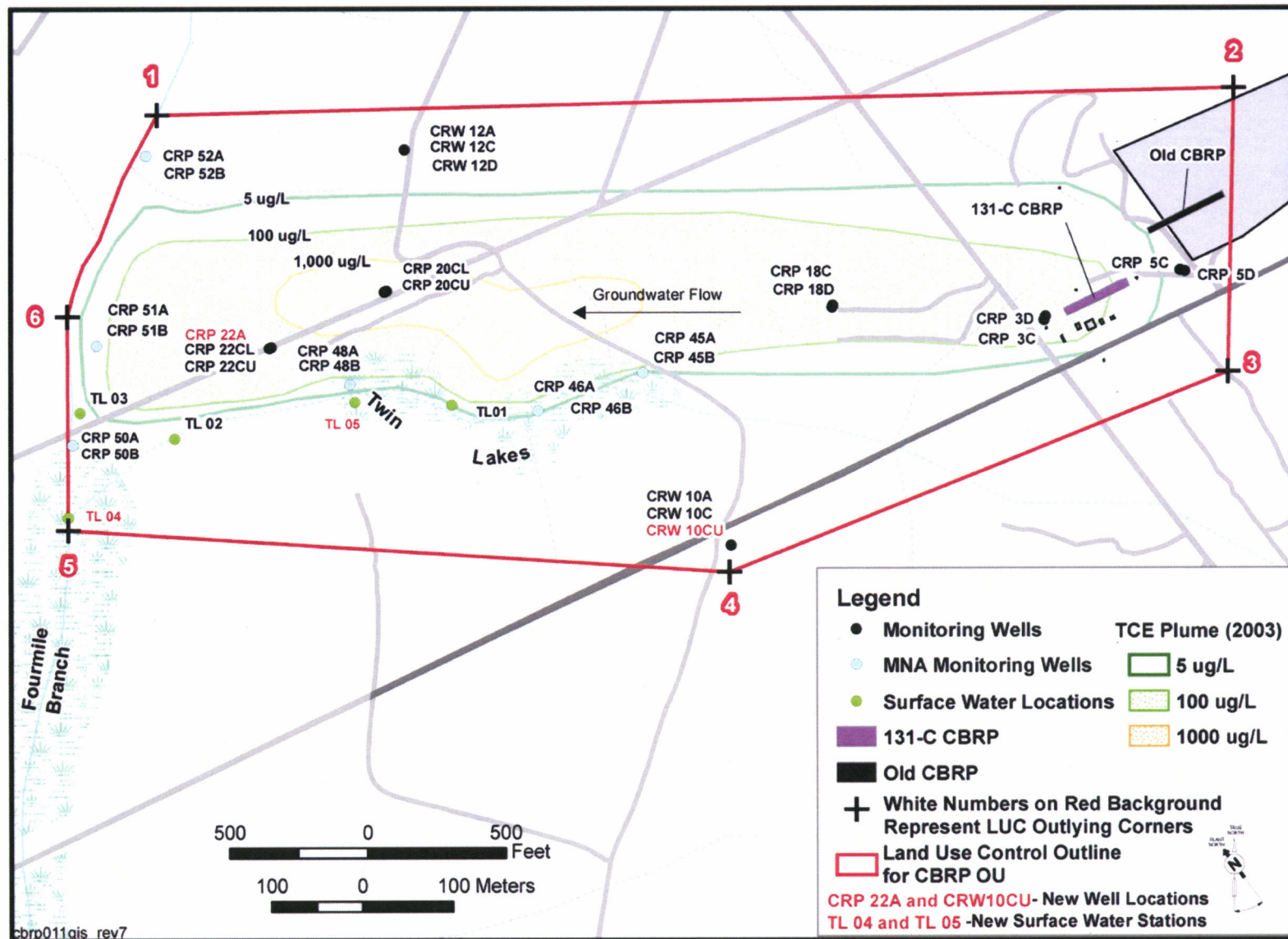


Figure A-1. Land Use Control Implementation Plan As-Built Drawing for CBRP OU

The SRS Grid, Universal Transverse Mercator (UTM), and longitude-latitude (North American Datum [NAD] 1927) coordinates for the major vertices of the CBRP LUC polygon are listed in the insert below. The corners are listed in clockwise order beginning with the most northwesterly corner along Fourmile Branch.

Corner	SRS E	SRS N	UTM E	UTM N	Long-27	Lat-27
NW 1	41854.43	71179.62	435273.502	3679190.748	-81.69484157	33.25148835
NE 2	45057.33	68966.38	436459.448	3679219.894	-81.68211323	33.25182171
SE 3	44439.27	68152.06	436453.22	3678908.448	-81.68215825	33.24901221
S 4	42558.79	68629.82	435904.284	3678688.914	-81.68803506	33.24699964
SW 5	40713.52	70163.06	435174.738	3678735.714	-81.69589621	33.24737818
W 6	41162.91	70785.92	435173.748	3678969.748	-81.69589657	33.24948902

**SOIL & GROUNDWATER CLOSURE PROJECTS**  
**CERCLIS OU #51, SRS INDEX #31**

**Document No. ER-IDS-019-016**  
**Procedure No. ER-SOP-019**  
**Effective Date 5/24/04**

***Field Inspection Checklist C-Area Burning/Rubble Pit (Bldg 131-C) (U)***

**Page 1 of 3**

## **APPENDIX B**

### **Field Inspection Checklist for C-Area Burning/Rubble Pit (131-C) Operable Unit**

**SOIL & GROUNDWATER CLOSURE PROJECTS**  
**CERCLIS OU #51, SRS INDEX #31**

**Document No. ER-IDS-019-016**  
**Procedure No. ER-SOP-019**  
**Effective Date 5/24/04**

***Field Inspection Checklist C-Area Burning/Rubble Pit (Bldg 131-C) (U)***

**Page 1 of 3**

**FIELD INSPECTION CHECKLIST**  
**C-AREA BURNING RUBBLE PIT**  
**(Bldg. 131-C)**

☐ **SCHEDULED**

☐ **UNSCHEDULED**

<b>A= Satisfactory X= Unsatisfactory (Explanation required)</b>	<b>A or X</b>	<b>Observation or Corrective Action Taken</b>
1. Verify that roads are accessible.		
2. Verify that the waste unit signs (4) are in acceptable condition, have the correct information*, and are legible from a distance of 25 ft.  *Refer to ER-AP-127.		
3. Verify that there is no excavation digging or construction activities on the soil cover.		
4. Verify that there is no woody vegetation growing on the soil cover. Remove woody vegetation and repair soil cover as needed.		
5. Visually check vegetative cover for grass density, with no bare spots more than 3 by 3 ft in area. The height of the vegetative cover should not impair the visual inspection of the soil cover. This will be determined by the Inspector.		

SOIL & GROUNDWATER CLOSURE PROJECTS  
CERCLIS OU #51, SRS INDEX #31

Document No. ER-IDS-019-016  
Procedure No. ER-SOP-019  
Effective Date 5/24/04

*Field Inspection Checklist C-Area Burning/Rubble Pit (Bldg 131-C) (U)*

Page 2 of 3

FIELD INSPECTION CHECKLIST  
C-AREA BURNING RUBBLE PIT  
(Bldg. 131-C)

A= Satisfactory X= Unsatisfactory (Explanation required)	A or X	Observation or Corrective Action Taken
6. Visually check soil cover for signs of erosion or depression (subsidence).		
7. Check for signs of burrowing animals.		
8. Other:		

Inspected By: \_\_\_\_\_ / \_\_\_\_\_ Date: \_\_\_\_\_  
(Print name) (Signature)

Reviewed By: \_\_\_\_\_ / \_\_\_\_\_ Date: \_\_\_\_\_  
Post Closure Manager (Print name) (Signature)

**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. Refer to Post Closure Inspection procedures.

**NOTE:** All monitoring wells associated with this waste unit are maintained in accordance with SGCP Monitoring Well Procedures.



SOIL & GROUNDWATER CLOSURE PROJECTS  
CERCLIS OU #51, SRS INDEX #31

Document No. ER-IDS-019-016  
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*Field Inspection Checklist C-Area Burning/Rubble Pit (Bldg 131-C) (U)*

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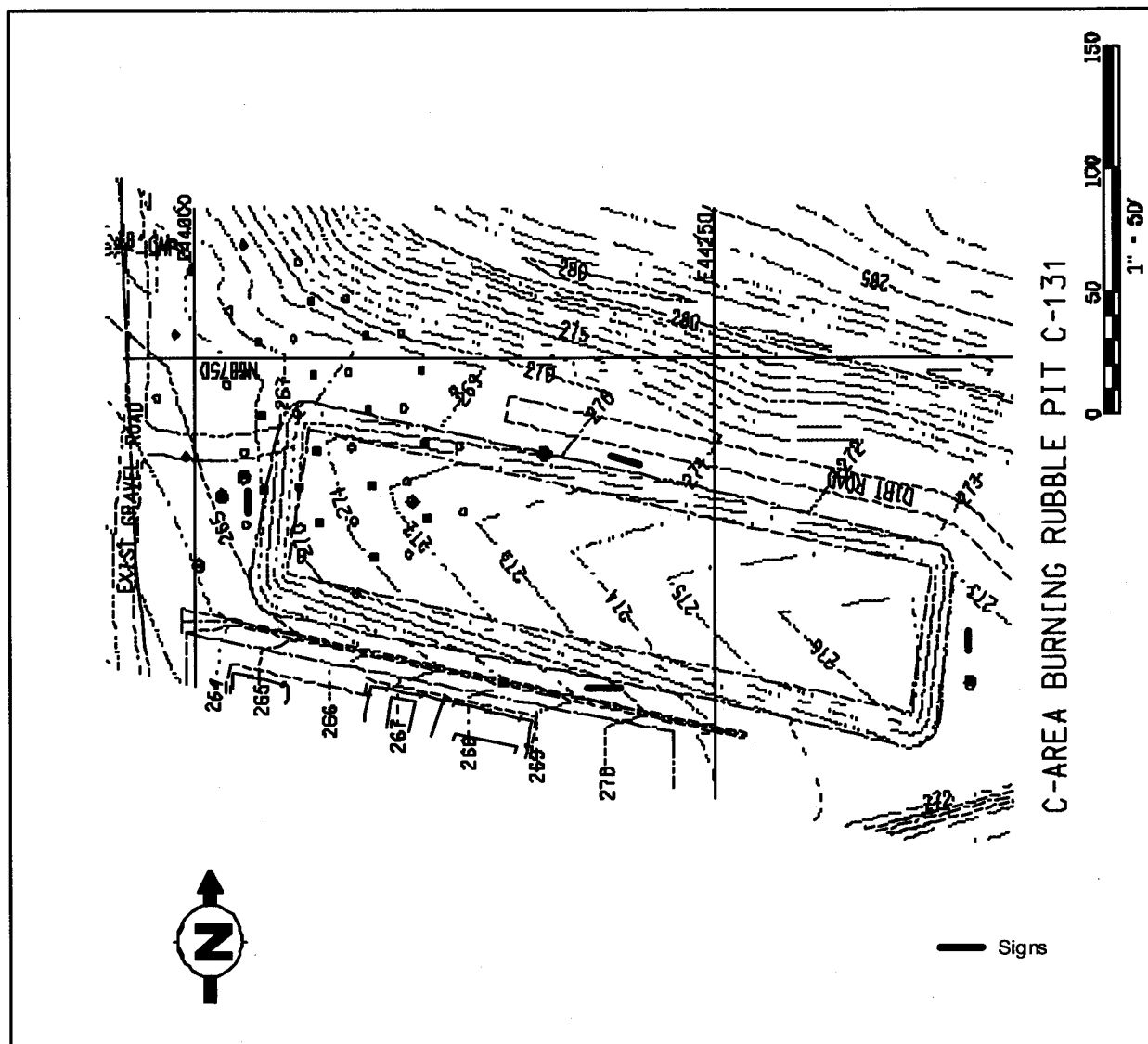


Figure B-1. Map of C-Area Burning Rubble Pit (Bldg. 131-C)

## **APPENDIX C.**

### **Post-Remedial Action Conceptual Site Model for C-Area Burning/Rubble Pit (131-C) Operable Unit and Old C-Area Burning/Rubble Pit (NBN)**

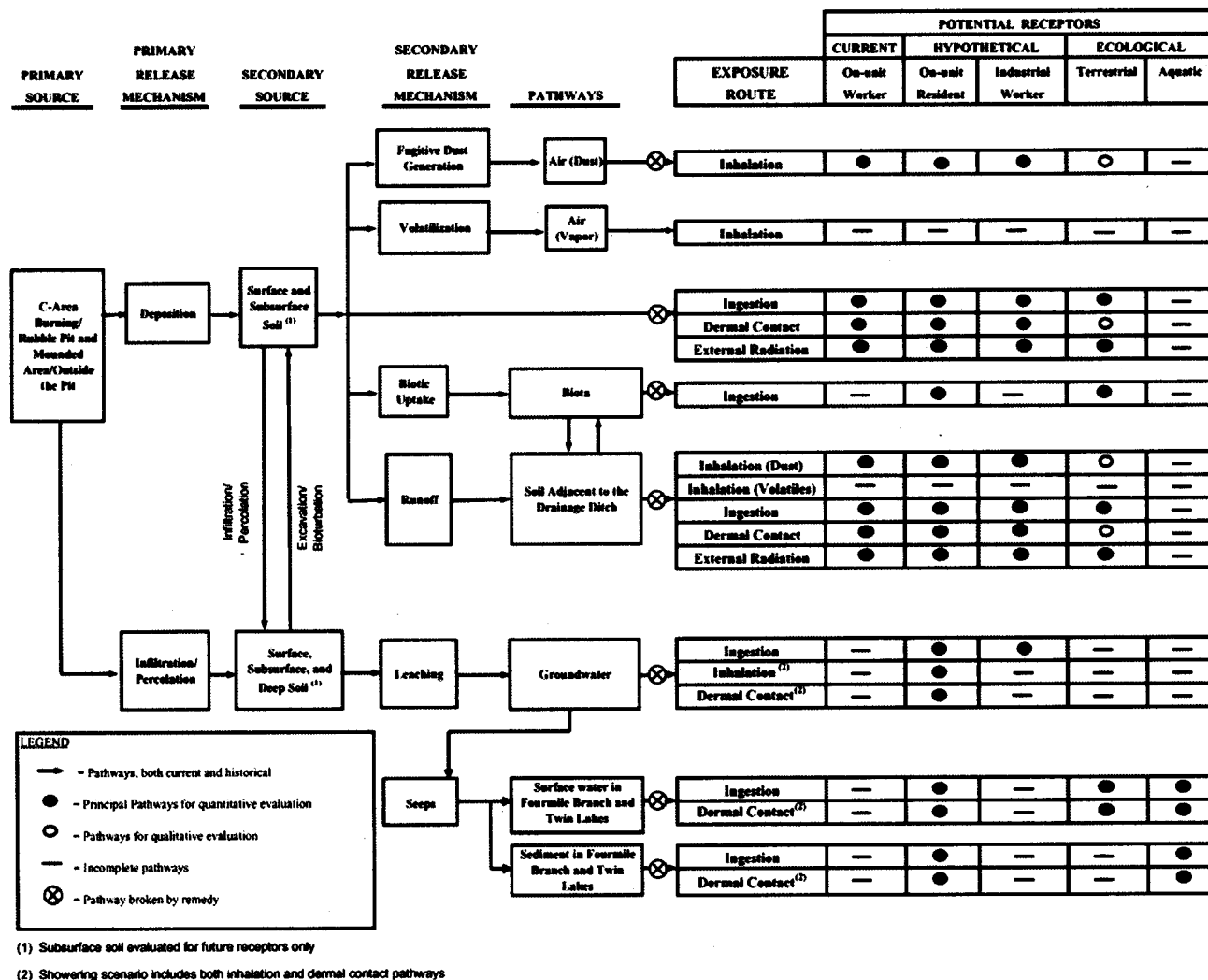


Figure C-1. Post-Remedial Action Conceptual Site Model for CBRP OU

## **APPENDIX D.**

### **Access Control Warning Signs for C-Area Burning/Rubble Pit Operable Unit**

**C-Area Burning/Rubble Pit  
(131-C)**

**DANGER**

**UNAUTHORIZED PERSONNEL KEEP OUT**

**THIS WASTE UNIT WAS USED TO MANAGE HAZARDOUS SUBSTANCES.**

**DO NOT DIG OR EXCAVATE.**

**DO NOT ENTER WITHOUT CONTACTING THE**

**WASTE UNIT CUSTODIAN.**

**CUSTODIAN: MANAGER, POST-CLOSURE MAINTENANCE**

**CONTACT PHONE: (803) 725-PAGE (19192)**

**Figure D-1. Access Control Warning Sign**