LUCIP for the
Old F-Area Seepage Basin, 904-49G

Appendix A of Post-Construction Report for the Old F-Area Seepage Basin, 904-49G

WSRC-RP-2000-4100, Revision.1, August 2001

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 A

Unit-Specific LUCIP for Old F-Area Seepage Basin (Bldg. 904-40G) (U)

LAND USE CONTROL IMPLEMENTATION PLAN (LUCIP)

The Old F-Area Seepage Basin (OFASB) (Bldg. 904-49G) LUCIP will be appended to the Savannah River Site (SRS) Land Use Control Assurance Plan (LUCAP), which has been approved by the United States Department of Energy (USDOE), United States Environmental Protection Agency (USEPA), and South Carolina Department of Health and Environmental Control (SCDHEC).

1.0 REMEDY SELECTION

The OFASB is a Resource Conservation Recovery Act (RCRA)/Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) unit located within the SRS, approximately 600 feet north of F Area and 1 mile east of Road C. The Upper Three Runs Creek is located to the north of the basin. The water table is approximately 75 feet below ground surface in the area of the OFASB. Surface drainage is to the north toward Upper Three Runs Creek, which is 155 feet below the basin elevation.

The OFASB covers a total of 1.3 acres and is approximately 200 by 300 feet in dimension. An earthen berm in the interior divides the basin into two compartments. This unit also includes one effluent ditch line, which is located to the northwest corner of the basin leading toward Upper Three Runs Creek, and one process sewer line, which fed the basin at the southwest corner. The sewer line has an average depth of 9 to 10 feet below the land surface and is approximately 800 feet in length.

Between 1954 and mid-May 1955, approximately 9 to 14 million gallons of wastewater was discharged to the basin. The basin served as an unlined seepage basin for the purpose of reducing radioactive substance concentrations. Since 1955, the OFASB has received occasional discharges of cooling water and rainfall runoff. During a three-month period in 1969, spent nitric acid solution used to etch depleted uranium (from Building 303-M Operations) was discharged to the basin. Wastewater disposal was discontinued after the 1969 discharge.

The operable unit includes a source unit and a groundwater unit. The source unit comprises the basin and associated soil and vegetation, an adjacent ditch line and the sewer line.

The OFASB characterization revealed that surface and subsurface soils within the unit contained the highest concentrations of contaminants as well as contaminants with the highest potential risk. The remedial action selected in the OFASB Record of Decision (ROD) consisted of removal of contaminated vegetation; removal of the top 2 feet of soil from the effluent ditch line and placement into the basin; in situ grouting of the top 2 feet of the basin bottom, and placement of the soils in the basin. The OFASB was then backfilled and compacted. A low permeability engineered soil cover was then constructed over the basin area to eliminate radiation exposure and minimize potential future impacts to the groundwater beneath the OFASB.

Institutional controls will be used as the selected remedy for the waste process sewer line and the surrounding soils. These controls will restrict future use of this land to industrial applications and limit access to the soils. The selected remedy for groundwater is to maintain existing institutional controls and monitor the extent of the groundwater contaminant plume. The RAOs for this remedy are to achieve mixing zone contaminant limits (MZCLs) throughout the groundwater aquifer and not to exceed maximum contaminant levels (MCLs) at the compliance

point as described in the approved groundwater mixing zone application. To implement the groundwater mixing zone demonstration, four compliance boundary wells, three intermediate wells, and the three existing MZCL wells have been utilized.

2.0 LAND USE CONTROL

For the OFASB, the following land use control (LUC) objective is necessary to ensure protectiveness of the remedy:

- Controlled access to the OFASB unit in accordance with the current site use/site clearance programs, including access controls to the sewer line by grouting the manholes and posting signs in the area to indicate that the sewer line and soil beneath the unit has been contaminated with radionuclides.

The elements of the institutional control corrective action, which consists of land restrictions without any engineering controls, are composed of deed notifications when the parcel is transferred from federal ownership (Section 2.1) and access controls comprising posting identification signs (Section 2.2) and field walkdowns and maintenance for general site conditions (Section 2.3). These LUCs will be implemented in perpetuity for this operable unit.

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

2.1 Deed Notification

A deed notification shall be filed in 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 of is transferred to non-federal ownership. In the event the property is transferred, a deed notification will be filed with Aiken County. 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 would be conducted by the United States Government.

2.2 Access Controls

2.2.1 On-Site Workers

In accordance with WSRC ID, *Site Infrastructure and Services Manual,* Procedure 3.02, "Site Real Property Configuration Control," use of all lands and waters at 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 SRS development maps (i.e., plot plans of facilities/utilities at SRS) will be authorized by a Site Clearance Permit before excavation activities take place. 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 DOE approval for intended land use must be obtained before a Site Clearance Permit is issued. 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.

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

All work 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. Any changes in the use or disturbance of the OFASB will be cleared with the USEPA and SCDHEC before disturbance occurs. 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 have been posted at the unit. The signs are legible from a distance of 25 feet and located approximately every 100 feet along the process sewer line and at each manhole and each side of the basin in the area as shown in Figure 7, sheet 1 and 2. The signs read as follows:

Old F-Area Seepage Basin

"DANGER"
UNAUTHORIZED PERSONNEL KEEP OUT.
THIS UNIT WAS USED TO MANAGE HAZARDOUS SUBSTANCES. DO NOT DIG OR EXCAVATE. DO NOT ENTER WITHOUT CONTACTING THE WASTE SITE CUSTODIAN.
CUSTODIAN: MANAGER, POST-CLOSURE MAINTENANCE
PHONE: (803) 952-6882

Old F-Area Seepage Basin Process Piping

"DANGER"
UNAUTHORIZED PERSONNEL KEEP OUT.
THIS SUBSURFACE PIPING SYSTEM WAS USED TO CONVEY HAZARDOUS SUBSTANCES. DO NOT DIG OR EXCAVATE WITHOUT CONTACTING THE WASTE SITE CUSTODIAN.

CUSTODIAN: MANAGER POST-CLOSURE MAINTENANCE
PHONE: (803) 952-6882

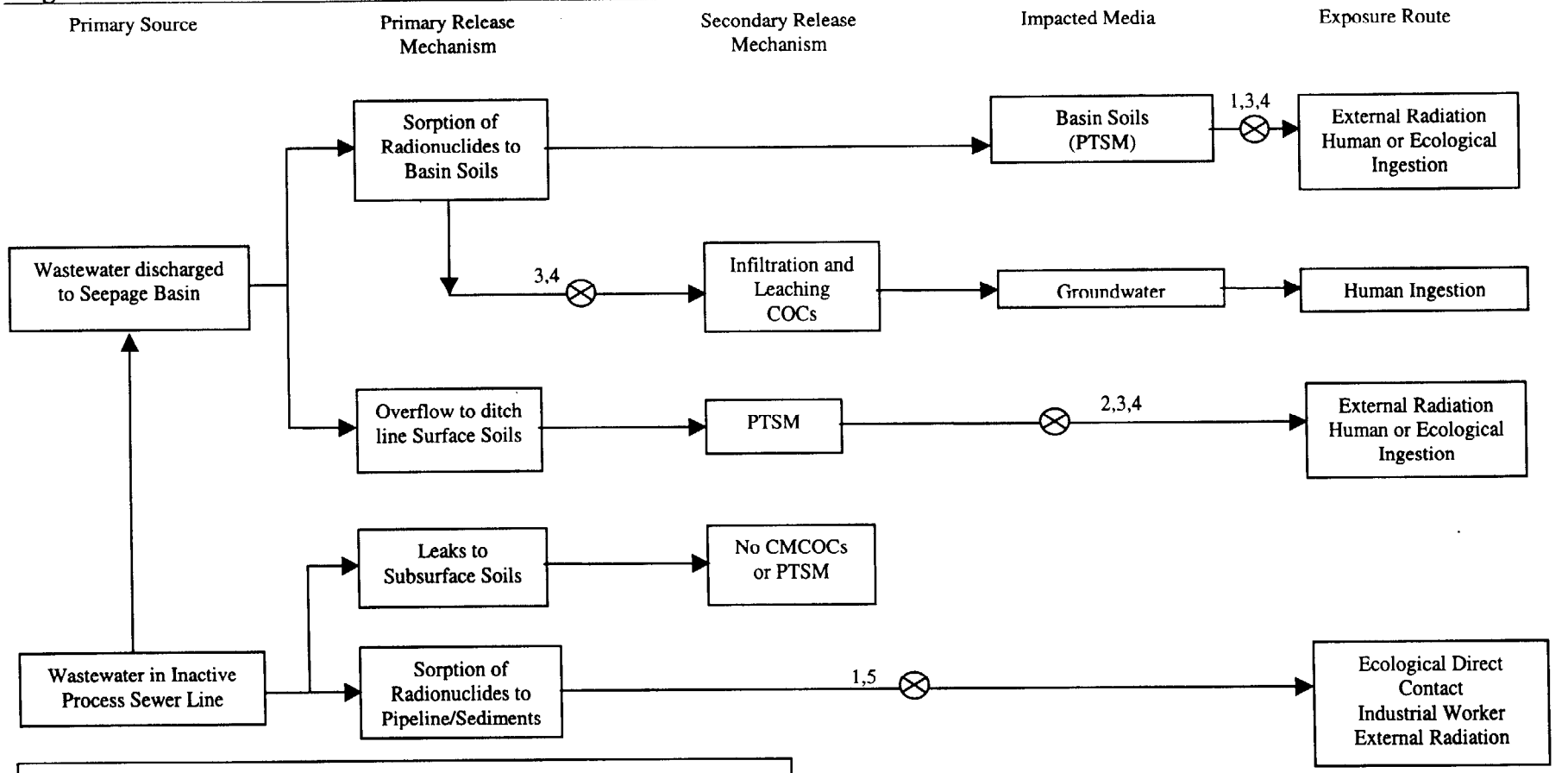
2.2.2 Trespassers

Additionally, while under the ownership of USDOE, access control of the entire SRS will continue to be maintained in accordance with the 1992 RCRA Part B Permit Renewal Application, Volume I, Section F.1. To comply with the security requirements for a RCRA-permitted facility, 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.

2.3 Field Walkdowns and Maintenance for Institutional Controls

Monitoring will be performed to verify that LUCIP requirements have been met. Semi-annual monitoring of the OFASB OU, 904-49G, will be conducted for accuracy and legibility of signs, visible subsidence or erosion of the waste unit, proper vegetative growth, burrowing animals, proper access to the facility, mowing, etc. Subsidence or erosion will be corrected by backfilling the affected area with clean soil and seeding the area to prevent further erosion. USEPA and SCDHEC will be notified of the results of any inspection, event, and/or action that indicates a potential compromise of institutional controls within 30 days of identification. The notification and the reason for the notification will be documented in the Federal Facility Agreement Annual Progress Report. All other routine maintenance activities (i.e., mowing, etc.) will be documented, and the documentation will be maintained in files that are subject to USEPA and SCDHEC review and audit. A copy of the completed inspection form will be maintained in Environmental Restoration Division administrative record files.

Inspections at the OFASB will be performed to ensure that institutional controls remain protective and consistent with all RAOs. Monthly inspections will be performed for the first 2 years and until permanent vegetation is established. After that time, inspections will be performed semi-annually per the inspection checklist.



LEGEND

→ = Pathways – past, current and hypothetical future
1. = Institutional Controls
2. = Consolidation of Soils into Basin
3. = In Situ Stabilization
4. = Low-permeability Soil Cover
5. = Grouting of manholes
⊗ = Remedy breaks this pathway

Notes: In Situ stabilization meets CERCLA preference for treatment and provides qualitative reduction in leachability.

PTSM = principal threat source material
COC = contaminant of concern
CMCOC = contaminant migration contaminant of concern

Figure A-1. Conceptual Site Model (CSM) for the Old F-Area Seepage Basin Post Remedial Action

APPENDIX A

ER INSPECTION CHECKLIST FOR OLD F-AREA SEEPAGE BASIN

Waste Site: _____ **A = Satisfactory** **X = Unsatisfactory (Comments required)**	**A or X**	**Comments or Corrective Action Taken (See Maintenance Register for Corrected Items)**
Check to see if the site needs mowing.		
Verify that the basin and roads are accessible.		
Check for potential encroachments. (Ensure that there is no building on the site.)		
Verify all signs are intact, in good condition, and legible from a distance of at least 25 feet.		
Visually check vegetative cover for grass density. There should be no woody vegetation or shrubs growing on the cover. The height of the vegetative growth should not impair the visual inspection of the site.		
Check the integrity of drainage ditches (if any) for presence of excessive erosion, sediment buildup, and any debris restricting water flow.		
Visually inspect the concrete markers at four corners of the basin to ensure their integrity. The concrete should be visible and free of damage.		
Visually check the basin cover for signs of erosion subsidence and/or depressions.		
Verify that conditions of the roads to the well sites are adequate.		
Inspect the grounds surrounding well sites for vegetation overgrowth, debris, and existence and/or development of erosion features.		

APPENDIX A

ER INSPECTION CHECKLIST FOR OLD F-AREA SEEPAGE BASIN (Cont'd.)

Waste Site: _____ **A = Satisfactory** **X = Unsatisfactory (Comments required)**	**A or X**	**Comments or Corrective Action Taken (See Maintenance Register for Corrected Items)**
Verify that the well posts and protective covers are in place.		
Verify the well is properly identified per R.61-71.6H (South Carolina well standards and regulations).		
Verify the wells' casings are properly locked per R.61-71.11.C.6 (South Carolina well standards and regulations).		
Verify that the previous "Quarterly Monitoring Well Inspection Summary Report" has been sent to ERD Records Interim Storage. This report can be obtained from ERD Waste Treatment.		
Other		
Comments:		

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

Reviewed By:_____/_____Date:_____Time:_____
PM or Designee (Print Name) (Signature)

Note: USEPA 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 operable unit has occurred.