LUCIP for the
L-Area Rubble Pile (131-3L) and Groundwater Plume Operable Unit

Appendix A of Post-Construction Report for the L-Area Burning/Rubble Pit (131-L), Gas Cylinder Disposal Facility (131-2L) and L-Area Rubble Pit (131-3L)

WSRC-RP-2003-4126, Revision.1, February 2004

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APPENDIX A

LAND USE CONTROL IMPLEMENTATION PLAN (LUCIP)

FOR THE

GROUNDWATER PLUME

LAND USE CONTROL IMPLEMENTATION PLAN (LUCIP) FOR THE GROUNDWATER PLUME

This groundwater plume Land Use Control Implementation Plan (LUCIP) will be appended to the Savannah River Site (SRS) Land Use Control Assurance Plan (LUCAP). SRS is responsible for implementing the land use controls (LUCs) (e.g., inspections, maintenance, etc.) outlined in this unit-specific LUCIP.

The selected remedy temporarily leaves groundwater contaminated with carbon tetrachloride above the MCL. This poses a potential future risk that will require LUCs for a finite period of time. As negotiated with the United States Environmental Protection Agency (USEPA), and in accordance with USEPA Region IV policy, SRS has developed a LUCAP to ensure that land use restrictions are maintained and periodically verified. This LUCIP provides detailed and specific measures required for the LUCs selected as part of this remedy. The United States Department of Energy (USDOE) is responsible for implementing, maintaining, monitoring, reporting on, and enforcing the LUCs herein. (Upon final approval, the LUCIP will be appended to the LUCAP and thus will be considered incorporated by reference into the post-construction report/final remediation report (PCR/FRR), establishing LUCs, 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 L-Area Rubble Pile

The Record of Decision states, "Institutional control will be contingent on confirmatory sampling results. If no contamination above anticipated (residential) RGs remains at the LRP, unit-specific LUCs will not be implemented (Table 5). If soil contamination above anticipated (residential) RGs does remain, institutional controls will be implemented."

The removal and disposal action performed at the LRP has achieved the residential RGs and no institutional controls are required. As such, this LUCIP will address the temporary controls necessary to support the groundwater remedy only.

1.2 Groundwater Plume

There is a small diffuse groundwater plume of carbon tetrachloride located southwest of the LRP. The source of this plume is depleted.

The groundwater plume will be treated in situ by natural processes in accordance with the approved groundwater mixing zone (GMZA).

1.2.1 Nature and Extent of Contamination at Groundwater Plume

Groundwater Plume

Carbon tetrachloride above its water quality standard was identified in a small diffuse plume of about 2 acres that is located to the southwest of the LRP. This plume is moving away from the LRP. See Figure 1. The source term of this plume is depleted and may or may not have been associated with past disposal actions at the LRP.

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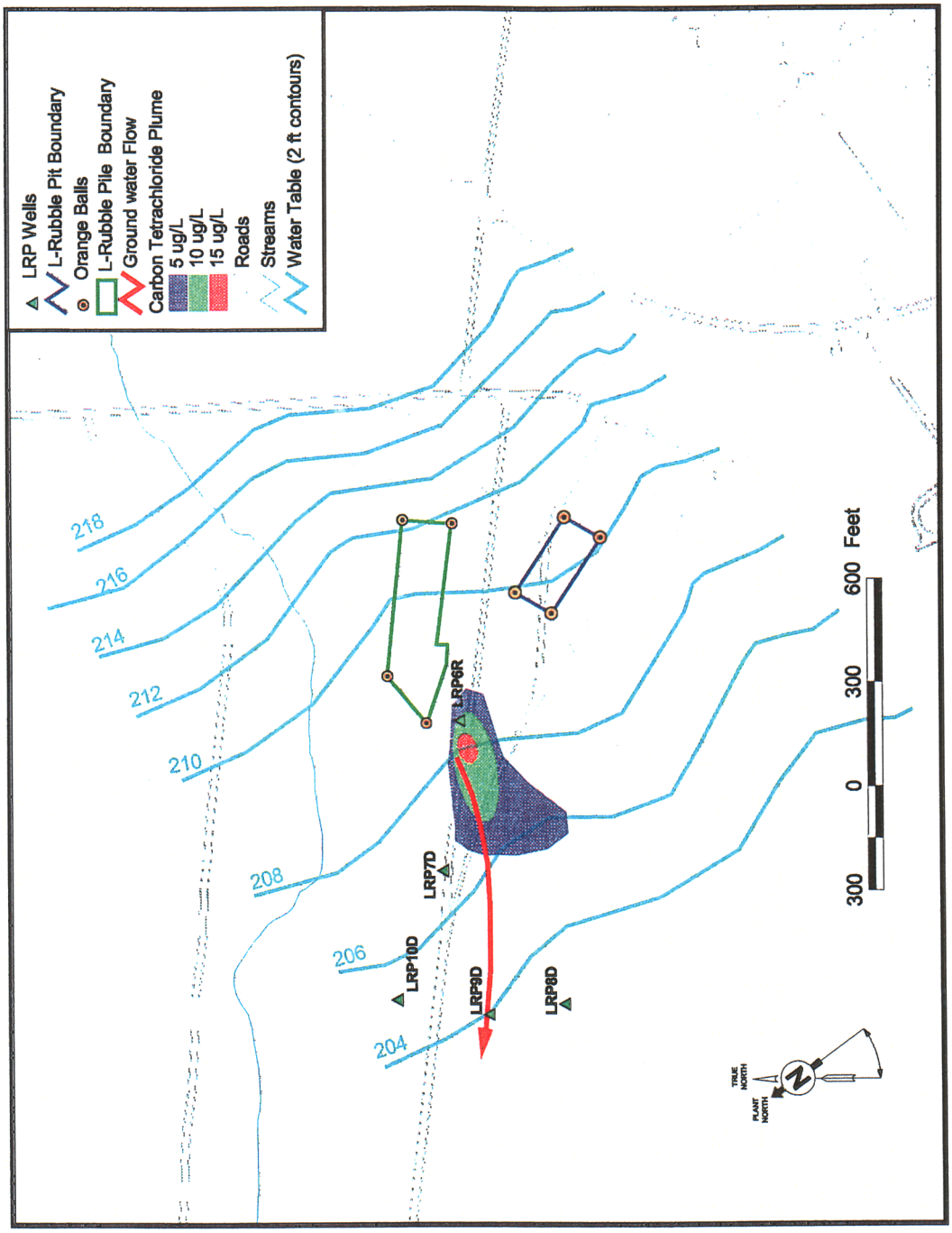

Figure 1. Current Estimated Area of Groundwater Plume Subject to Land Use Controls

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1.3 Remedial Action Overview

1.3.1 Groundwater: Groundwater Mixing Zone, with Institutional Controls until the Maximum Contaminant Level is Attained

The Remedial Action Objectives (RAOs) for groundwater are

- prevent human exposure to carbon tetrachloride in groundwater above the water quality standard.
- Prevent or limit discharge of carbon tetrachloride from groundwater to surface water at levels above the water quality standard.
- Reduce carbon tetrachloride concentrations in groundwater by treating in situ through natural processes to below the water quality standards in accordance with GMZA.

The groundwater plume is being treated in situ by natural processes. Groundwater modeling (WSRC 1999) indicates that natural processes of advection and dispersion will reduce contaminant concentrations below the MCL for carbon tetrachloride.

Monitoring is being performed to confirm that groundwater concentrations are decreasing consistent with the model predictions and the cleanup objectives. Monitoring consists of sampling of the GMZA wells and surface water. Groundwater sampling is being done quarterly for the first year, then semi-annually thereafter until the plume has been demonstrated to be less than MCL. Surface water sampling is performed annually. Details of the compliance monitoring strategy are described in the GMZA (WSRC 2000b), which was approved by SCDHEC. All samples will be analyzed for carbon tetrachloride, chloroform, methylene chloride, and chloromethane.

Institutional controls for the groundwater plume will be implemented as long as groundwater concentration of carbon tetrachloride exceeds the MCL. Figure 2 provides a post-construction groundwater conceptual site model (CSM) that shows the broken exposure pathway.

Institutional controls will be implemented by:

- preventing unauthorized exposure to the contaminated groundwater by off-site workers via the Site Use Program/Site Clearance Program
- protecting authorized monitoring well workers via worker training, work control procedures
- providing access controls against trespassers via the 1992 RCRA Part B Permit Renewal Application which describes the security procedures and equipment, 24-hour surveillance system, artificial or natural barriers, control entry systems, and access control warning signs in place at the SRS boundary

The Five-Year Review Requirement, a CERCLA remedy review, will be conducted every five years to determine whether the groundwater remedy is meeting RAOs.

2.0 Land Use Controls

Land-use controls will be maintained as long as the groundwater plume exceeds the MCL for carbon tetrachloride.

2.1 Access Controls

Access controls are discussed in the institutional controls section above.

2.2 Deed Notification

If the land associated with the contaminated groundwater plume is transferred to non-federal ownership, a deed restriction that precludes the use of the groundwater for drinking water purposes shall be prepared. A survey plat of the land transferred will be prepared by a professional land surveyor, and recorded with appropriate county recording agency to identify the area under land use restriction. If the MCL for carbon tetrachloride is achieved prior to transfer of the land to non-federal ownership, no deed restrictions due to management of waste at the LBRP (131-L), GCDF (131-2L), and LRP (131-3L) will be required.

The contaminated groundwater associated with the remediated LBRP (131-L), GCDF (131-2L), and LRP (131-3L) OUs are managed by a South Carolina approved groundwater mixing zone application, which requires monitoring, reporting and institutional controls until the MCL for carbon tetrachloride is achieved. If the MCL for carbon tetrachloride is achieved prior to transfer of the land to non-federal ownership, no deed restrictions due to management of waste at the LBRP/GCDF/LRP OUs will be required. If the land associated with the contaminated groundwater plume is transferred to non-Federal ownership, a deed restriction that precludes the use of the groundwater for drinking water purposes shall be prepared. At the time of transfer, a survey plat of the transferred land will be prepared by a professional land surveyor, and recorded with the appropriate county recording agency to identify the groundwater plume area under land use restriction.

Figure 1 of the LUCIP shows the current estimated location of the groundwater plume subject to land use controls. The sole basis for land use restrictions for this OU is contaminated groundwater, which is subject to movement and natural attenuation. Hence, information set forth in a survey plat at this time would not be relevant to transfer of land at an undetermined time in the future. Preparation of a survey plat should be deferred until such time as the site is transferred to non-Federal ownership. Preparing the survey

plat coincident with the land transfer will maximize the accuracy of the description of the area under restrictive covenant. The deferred survey plat will be appended to this PCR when it is completed.

Any re-evaluation of the need for the deed restrictions will be done through an amended Record of Decision (ROD) with USEPA and SCDHEC review and approval.

2.3 Field Walkdowns and Surveillance

2.3.1 Maintenance for Institutional Controls

Groundwater plume maintenance will include periodic well inspections (see below) with maintenance as needed. The results of any events and or actions that indicate some potential compromise of institutional controls will be documented in the Federal Facility Agreement (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 SGCP Document Control. The LUCs will be implemented as long as the groundwater remains a threat to human health or the environment.

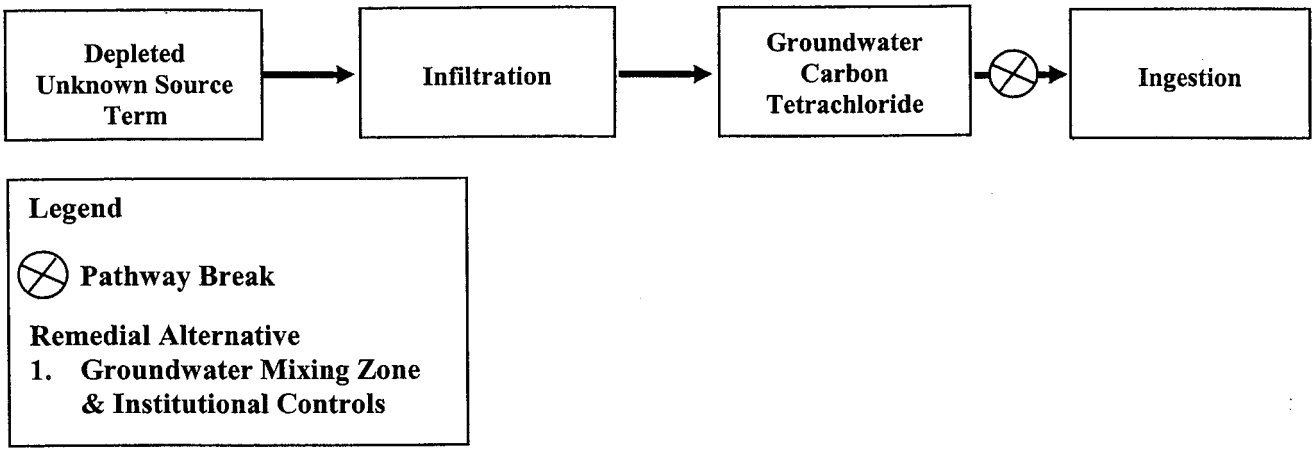

Figure 2. Groundwater Plume POST-Remedial Action Conceptual Site Model

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The following steps will be implemented to maintain the groundwater OU for as long as it is necessary to prevent exposure to the groundwater as long as it is contaminated above the carbon tetrachloride MCL.

- Institutional controls will be maintained as long as the groundwater 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 remedy for the groundwater plume unit must be performed as long as the groundwater remains a threat to human health or the environment.

- The GMZA monitoring wells are maintained in accordance with SRS Monitoring Well Procedures.

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