United States Department of Energy

Savannah River Site

Interim Record of Decision Remedial Alternative Selection for the Chemicals, Metals, and Pesticides Pits (080-17G, 080-17.1G, 080-18G, 080-18.1G, 080-18.2G, 080-18.3G, 080-19G) (U)

WSRC-RP-98-4192

Rev. 1.1

August 1999

Prepared by:
Westinghouse Savannah River Company
Savannah River Site
Aiken, SC 29808

Prepared for U.S. Department of Energy under Contract No. DE-AC09-96SR18500

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SAVANNAH RIVER SITE

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INTERIM RECORD OF DECISION
REMEDIAL ALTERNATIVE SELECTION (U)

Chemicals, Metals, and Pesticides Pits

(080-17G, 080-17.1G, 080-18G, 080-18.1G, 080-18.2G, 080-18.3G, 080-19G)(U)

WSRC-RP-98-4192
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Savannah River Site
Aiken, South Carolina

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for the
U. S. Department of Energy Under Contract DE-AC09-96SR18500
Savannah River Operations Office
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DECLARATION FOR THE INTERIM RECORD OF DECISION

Unit Name and Location
Chemicals, Metals, and Pesticides (CMP) Pits
Savannah River Site
Aiken, South Carolina

The CMP Pits operable unit (OU) is listed as a Resource Conservation and Recovery Act (RCRA) 3004(u) Solid Waste Management Unit/Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) unit in Appendix C of the Federal Facility Agreement (FFA) for the Savannah River Site (SRS). The CMP Pits Operable Unit consists of the pit area, ballast area, vadose zone, groundwater hot spot, and distal portion of the groundwater plume (distal plume). The following media are associated with this operable unit: Ballast Area Surface Soil (including pit area perimeter surface soils), Vadose Zone (CMP Pits Subsurface Soil), and Groundwater Hot Spot. The groundwater hot spot includes the water table in and around the pit area within the 1000 µg/l volatile organic compound (VOC) isoconcentration contour. The distal plume is currently under investigation and will be addressed in a later remedial action.

The ballast area surface soil and the pit area perimeter surface soil near the ballast area were found to be contaminated with similar contaminants. Because of this circumstance, the pit area perimeter surface soil contamination is considered a single area of contamination primarily associated with the ballast area. The two areas are collectively referred to as the "ballast area".

Statement of Basis and Purpose

This decision document presents selected remedial alternatives for the CMP Pits located at the SRS south of Aiken, South Carolina. The selected alternatives were developed in accordance with CERCLA, as amended by Superfund Amendments and Reauthorization Act (SARA), RCRA, and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the administrative record file for this specific RCRA/CERCLA unit.

Assessment of the Site

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response actions selected in this interim record of decision (IROD), may present an imminent and substantial endangerment to public health, welfare, or the environment. In accordance with EPA guidance on "Estimating Potential for Occurrence of Dense Non-Aqueous Phase Liquid (DNAPL) at Superfund Sites", historical site use and site characterization data indicates that there is moderate potential for DNAPL in groundwater at the CMP Pits.

Description of the Selected Remedy

A review of the contamination present within the soils and groundwater at the CMP Pits indicates that the wastes represent principal source threats due to the high concentrations of contaminants. The ballast area, vadose zone and groundwater hot spot contamination can be categorized as follows:

- High concentrations of PCB (Aroclor-1248) and Pesticide (DDD, DDE, and DDT) represent a principal source threat in the ballast area. Maximum concentrations of Aroclor-1248 (15,300 µg/kg), DDD (1,870 µg/kg), DDE (1,340 µg/kg), and DDT (115,000 µg/kg) significantly exceed the recommended remedial goals (RGs).

- High concentrations of dichloromethane (DCM) (296,000 µg/kg), tetrachloroethylene (PCE) (6,980,000 µg/kg), and trichloroethylene (TCE) (31,000 µg/kg) in the vadose zone represent a principal source threat.

- High concentrations of DCM (560 µg/l), PCE (6,950 µg/l) and TCE (1,600 µg/l) in the aquifer sediments within the groundwater hot spot area represent a principal source threat.

The action suggested in this IROD is consistent with a bias for treatment of principal source threat materials because:

- treatment technologies are feasible and available in a reasonable time frame

- the volume and complexity of the site make implementation technically and economically practicable

- implementation will not result in severe effects across environmental media.

Although additional groundwater characterization and evaluation of the distal plume is required to identify a final groundwater remedy, an interim action is necessary to address principal source threat material in the vadose zone and groundwater hot spot. The IRAOs established for this IROD are:

Ballast Area

- Prevent direct contact with PCB and pesticides contaminated surface soils, such that the contaminants of concern are not a continued significant risk to human health or the ecology. The RGs for removal of these soils are 1 mg/kg Aroclor-1248, 490 µg/kg heptachlor, 50 µg/kg dieldrin, 60 µg/kg endrin, 10 µg/kg DDD, 20 µg/kg DDE, and 60 µg/kg DDT. The RGs requiring Land Use Controls are 180 µg/kg for heptachlor and 47 µg/kg for dieldrin.

Removal of the ballast area soils will achieve the ballast area remedial goals that are expected to be protective for industrial use and ecological exposure, and are in compliance with ARARs under 40 CFR 761 (TSCA). Although these interim remedial goals are protective for the expected future land use, it is expected that the final remedy may include land use controls for the Ballast Area. The degree of residual contamination remaining at the ballast area following the removal action will be quantified. The removal action at the ballast area will include mapping of residual contamination to clearly define areas requiring Land Use Controls. Therefore, Land Use Control decisions will be deferred and documented in the final ROD.

Vadose Zone

- Treat the vadose zone soils beneath the pits where the combined PCE and TCE concentrations exceed 2,000 µg/kg, with active treatment techniques as long as effective, with an overall objective to reduce the potential migration of solvents to the water table that result in contamination concentrations exceeding the MCL.

- Continue to provide infiltration control with a cover system in the vadose zone treatment area, to reduce the potential migration of solvents from the vadose zone to the water table.

Groundwater Hot Spot

- Treat the water table in the vicinity of the pits, within the 1,000 µg/l total VOC isoconcentration contour, with an objective to reduce concentrations and control migration of VOCs within the 1,000 µg/l contour.

The preferred alternatives for the CMP Pits OU are to:

- Excavate the ballast area soils, dispose offsite, and backfill to grade

- Conduct soil vapor extraction (SVE) in the vadose zone and install asphalt cover to provide infiltration control

- Conduct air sparging (AS) in the groundwater hot spot with SVE

Statutory Determination

Based on the CMP Pits RCRA Facility Investigation/Remedial Investigation (RFI/RI) report and the baseline risk assessment (BRA), the CMP Pits OU poses a risk to human health and the environment.

This interim action is protective of human health and the environment, complies with Federal and State applicable or relevant and appropriate requirements for this limited-scope action, except for the Safe Drinking Water Act Maximum Contaminant Levels (MCLs) which will be waived under

§300.430(f)(1)(ii)(C)(*1*), the interim action waiver. This remedy is cost-effective. Although this interim action is not intended to fully address the statutory mandate for permanence and treatment to the maximum extent practicable, this interim action utilizes treatment and thus is in furtherance of that statutory mandate. Because this action does not constitute the final remedy for the CMP Pits OU, the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element, although partially addressed in this remedy, will be considered further by the evaluation of final response actions. Subsequent actions are planned to address fully the threats posed by the conditions at the CMP Pits OU. Because this remedy will result in hazardous substances remaining on site above health-based levels, a review will be conducted to ensure that the remedy continues to provide adequate protection of human health and the environment within five years after commencement of the remedial action. Because this is an interim action ROD, review of this site and of this remedy will be continuing as final remedial alternatives for the CMP Pits OU are developed.

The following information is included in the Decision Summary section of this Record of Decision. Additional information can be found in the Administrative Record file for this site.

- Chemicals of concern (COCs) and their respective concentrations
- Baseline risk represented by the COCs
- Cleanup levels established for COCs and the basis for the levels
- Current and future land and groundwater use assumptions used in the baseline risk assessment and ROD
- Estimated capital, operation and maintenance (O&M), and total present worth costs; discount rate; and the number of years over which the remedy cost estimates are projected
- Decisive factor(s) that led to selecting the remedy (i.e., describe how the Selected Remedy provides the best balance of tradeoffs with respect to the balancing and modifying criteria)

Since final clean up levels have not been identified for this interim action, information regarding the land and groundwater use that will be available at the site as a result of the Selected Remedy is not included in the Decision Summary section of the Interim Record of Decision but will be included in the Final Record of Decision.

8/25/99
Date

Thomas F. Heenan
Assistant Manager for Environmental Programs
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9/24/99
Date

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11/29/99
Date

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Deputy Commissioner
Environmental Quality Control
South Carolina Department of Health and Environmental Control

ORIGINAL

INTERIM DECISION SUMMARY
REMEDIAL ALTERNATIVE SELECTION (U)

Chemical, Metals, and Pesticides (CMP) Pits Operable Unit (U)

WSRC-RP-98-4192
Rev. 1.1
August 1999

Savannah River Site
Aiken, South Carolina

Prepared by:

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TABLE OF CONTENTS

FIGURES

TABLES

ACRONYMS AND ABBREVIATIONS

ARAR	Applicable, or Relevant and Appropriate Requirement
AS	Air Sparging
BRA	Baseline Risk Assessment
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CMI/RD/RDR/RA WP	Corrective Measures Implementation/Remedial Design/Remedial Design Report/Remedial Action Work Plan
CMP Pits	Chemicals, Metals and Pesticides Pits
CMS/FS	Corrective Measures Study/Feasibility Study
CSM	Conceptual Site Model
COC	Constituent of Concern
cfm	Cubic feet per minute
DCM	dichloromethane
ERA	Ecological Risk Assessment
ER	Environmental Restoration
ELCR	Excess lifetime cancer risk
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FFA	Federal Facility Agreement
gpd	Gallons per day
gpm	Gallons per minute
HI	Hazard Index
IAPP	Interim Action Proposed Plan
IRAO	Interim Remedial Action Objective
IROD	Interim Record of Decision
MCL	Maximum Contaminant Level
µg/kg	Microgram per kilogram
µg/l	Microgram per liter
NCP	National Oil and Substances Pollution Contingency Plan
NEPA	National Environmental Policy Act
NPL	National Priorities List
OU	Operable Unit
PCB	Polychlorinated biphenyl
PCE	Tetrachloroethylene
pCi/l	Pico Curies per Liter
ppb	Parts per billion
ppm	Parts per million
RCRA	Resource Conservation and Recovery Act
RFI/RI/BRA	RCRA Facility Investigation/Remedial Investigation Report with Baseline Risk Assessment
RG	Remedial Goal
ROD	Record of Decision
SRS	Savannah River Site
SVE	Soil Vapor Extraction
SCDHEC	South Carolina Department of Health and Environmental Control
SCHWMR	South Carolina Hazardous Waste Management Regulations
SARA	Superfund Amendments and Reauthorization Act
TSCA	Toxic Substance Control Act
TCE	Trichloroethylene

ACRONYMS AND ABBREVIATIONS (continued)

US DOE	U.S. Department of Energy
US EPA	U.S. Environmental Protection Agency
VIA	Values Impact Assessment
VOC	Volatile Organic Compound
WSRC	Westinghouse Savannah River Company

I. SAVANNAH RIVER SITE AND OPERABLE UNIT NAME, LOCATION, AND DESCRIPTION HISTORY

Savannah River Site Location, Description, and Process History

The Savannah River Site (SRS) occupies approximately 310 square miles of land adjacent to the Savannah River, principally in Aiken and Barnwell counties of western South Carolina. SRS is a secured U.S. Government facility with no permanent residents and is located approximately 25 miles southeast of Augusta, Georgia, and 20 miles south of Aiken, South Carolina.

The U.S. Department of Energy (US DOE) owns SRS, which is currently managed and operated by Westinghouse Savannah River Company (WSRC). SRS has historically produced tritium, plutonium, and other special nuclear materials for national defense and the space program. The processes required to meet these needs have produced both chemical and radioactive wastes.

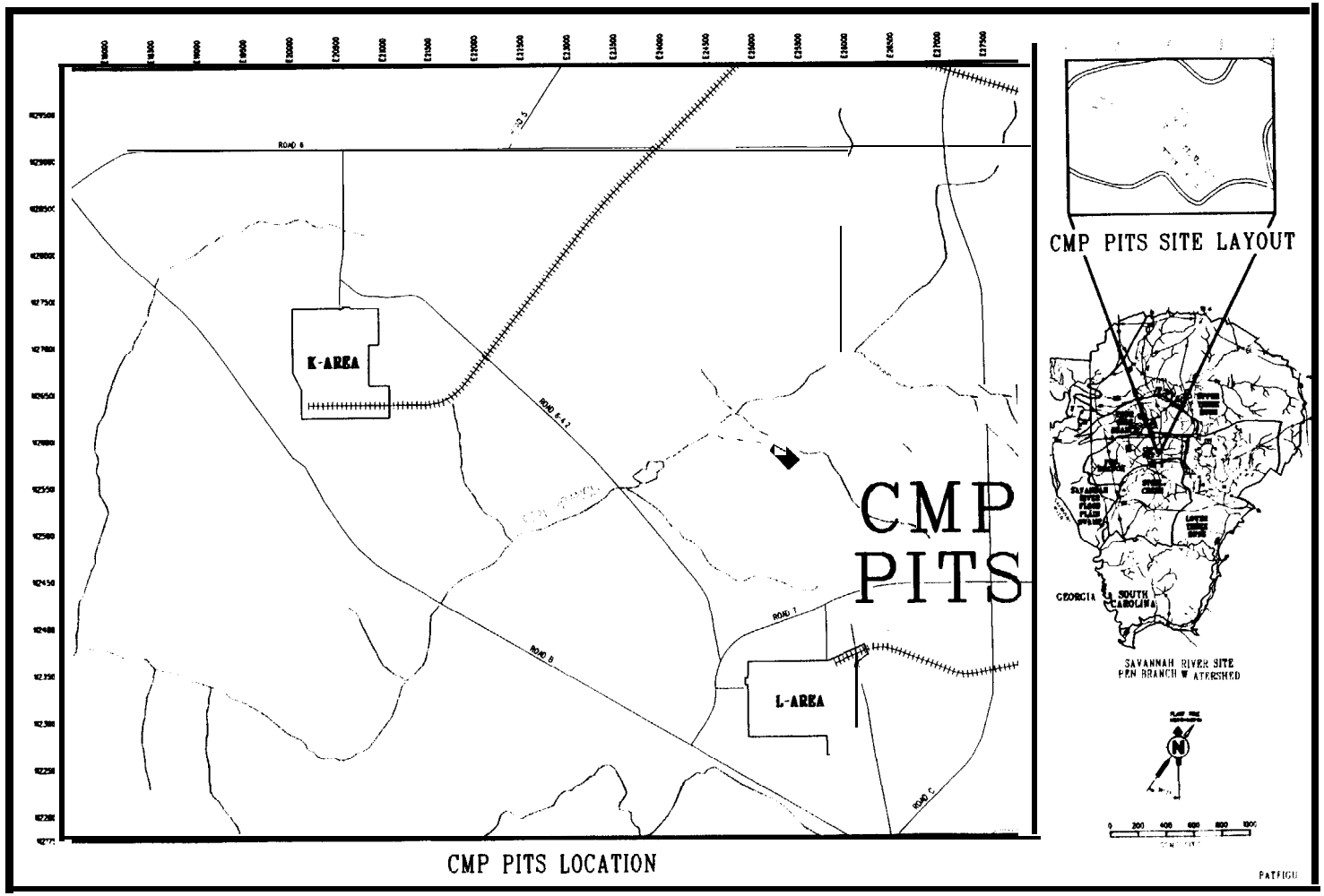
Operable Unit Name, Location, Description, and Process History

The Federal Facility Agreement (FFA) for SRS lists the CMP Pits as a Resource Conservation and Recovery Act/Comprehensive Environmental Response, Compensation and Liability Act (RCRA/CERCLA) unit. As such, the CMP Pits required further evaluation through an investigation process that integrates and combines the RCRA Facility Investigation (RFI) process with the CERCLA Remedial Investigation (RI) process to determine the actual or potential impact to human health and the environment.

The CMP Pits are located in the central portion of the SRS in Barnwell County more than seven miles from the site boundary. Figure 1 provides an aerial photo of the CMP Pits. They are approximately 5,200 feet north of the L-Area perimeter fence. The Pen Branch stream is located approximately 1,250 feet north of the unit (Figure 2). The unit consists of seven unlined pits, placed in two rows, that formerly occupied the top of a knoll at an approximate elevation of 310 feet above mean sea level. The pits are 10 to 15 feet wide, 45 to 70 feet long, and 10 to 15 feet deep. The ballast area is located at the northern edge of the knoll and extends down the side slope of the knoll for a distance of 20 to 30 feet.

Figure 1. Aerial View of CMP Pits

Figure 2. Location of CMP Pits



The CMP Pits Operable Unit consists of the pit area, ballast area, vadose zone, groundwater hot spot, and distal portion of the groundwater plume (distal plume). This interim remedial action applies to the (1) ballast area (including pit area perimeter surface soil), (2) vadose zone (pit area subsurface soil), and (3) groundwater hot spot. The groundwater hot spot includes the water table in and around the pit area within the 1000 µg/l volatile organic compound (VOC) isoconcentration contour. The distal plume is currently under investigation and will be addressed in a later remedial action.

The ballast area surface soil and the pit area perimeter surface soil near the ballast area were found to be contaminated with similar contaminants. Because of this circumstance, the pit area perimeter surface soil contamination is considered a single area of contamination primarily associated with the ballast area. The two areas will be collectively referred to as the "ballast area" throughout this document.

II. SITE AND OPERABLE UNIT COMPLIANCE HISTORY

SRS Operational History

The primary mission of SRS has been to produce tritium (^{3}H), plutonium-239 (^{239}Pu), and other special nuclear materials for our nation's defense programs. Production of nuclear materials for the defense programs was discontinued in 1988. SRS has provided nuclear materials for the space program as well as for medical, industrial, and research efforts. The byproducts of nuclear material production processes are chemical and radioactive wastes. These wastes have been treated, stored, and in some cases disposed at SRS. Past disposal practices have resulted in soil and groundwater contamination.

SRS Compliance History

Waste materials handled at SRS are regulated and managed under RCRA, a comprehensive law requiring responsible management of hazardous waste. Certain SRS activities have required federal operating or post-closure permits under RCRA. SRS received a hazardous waste permit from the South Carolina Department of Health and Environmental Control (SCDHEC); the permit was most recently renewed on September 5, 1995. Part IV of the permit mandates that

SRS establish and implement an RFI Program to fulfill the requirements specified in Section 3004(u) of the federal permit.

On December 21, 1989, SRS was included on the National Priorities List (NPL). A site included on the NPL falls under the jurisdiction of CERCLA. In accordance with Section 120 of CERCLA, US DOE has negotiated a Federal Facility Agreement (FFA) with the United States Environmental Protection Agency (US EPA) and SCDHEC to coordinate remedial activities at SRS with one comprehensive strategy. This coordinated strategy has produced a single approach to address the requirements of both the RCRA and CERCLA programs.

US DOE has completed a National Environmental Policy Act (NEPA) Values Impact Assessment (VIA) (US DOE 1998) that addresses NEPA concerns related to the remediation of the CMP Pits area through assessment of potential cumulative, off-site, ecological, and socioeconomic impacts. The VIA was prepared in accordance with *Savannah River Site NEPA/CERCLA Integration Guidance* (Marcy and Sessions 1997) because CERCLA is the regulatory driver for the remediation action. An assessment of NEPA values is therefore integrated into the CERCLA process for the CMP Pits area remedial action as directed by US DOE Order 451.1A (NEPA Compliance Program) and as advised by the Council of Environmental Quality. The NEPA VIA (US DOE 1998) is included as a reference and is available in the Administrative Record for this operable unit.

OU Operational History

The CMP Pits were placed in operation in August 1971. Formal disposal records were not maintained so the volume and content of the wastes disposed in some of the pits were not recorded. The pits were designated to receive pesticides, chemicals and metals. There is evidence that fluorescent light ballasts containing polychlorinated biphenyls (PCBs) were disposed during April 1979. These ballast systems were typically filled with heat transfer oil, which provided thermal insulation and a heat dissipation capability. The heat transfer oils typically contained PCBs. Partial disposal records for these pits indicate disposal of TCE, PCE, lighting ballasts and pesticides. These pits were backfilled and closed in December 1979.

CMP Pits Early Action

After the pits were backfilled and closed in 1979, SRS initiated groundwater monitoring. In 1981, analytical results indicated the presence of TCE and PCE in the water table. Soil samples taken during the installation of additional monitoring wells indicated that soils adjacent to the unit were also contaminated with volatile organic compounds to a depth of approximately 65 feet. Subsequent to these findings, SRS initiated a remedial action in 1984 with the concurrence of SCDHEC and excavated the contents of all of the pits. The CMP Pits early closure was not formally performed under any regulatory program; however, SCDHEC inspections occurred routinely throughout the entire closure. The unit was identified as a RCRA/CERCLA unit in 1989.

Pesticides and drums of buried chemicals were removed from the CMP Pits. Contaminated soil was excavated until total volatile organic compound (VOC) concentrations were less than 100 mg/kg and pesticide concentrations were less than 25 mg/kg. However, elevated levels of some constituents remain at the CMP Pits. Soil, drums and other containers removed were managed consistent with existing regulations and subsequently identified as RCRA listed wastes (F, D, P and U codes). This material was placed in metal boxes and stored in the appropriate permitted hazardous waste storage facility located on Savannah River Site.

Backfilling activities were begun in October 1984 following the completion of excavation and soil sampling. The deeper second-stage excavations were backfilled first utilizing 1 to 3 inch coarse aggregate. Subsequent to the backfilling of the below-grade excavations, construction of an infiltration blanket, manholes and drain pipes were initiated. The infiltration blanket, manholes and drain pipes were part of a remedial design to allow for venting of the soil or extraction of groundwater, if necessary (WSRC 1994a). Active soil venting never occurred.

The infiltration blanket contained at a minimum 2 feet of crushed compacted aggregate. The base of the trenches and the lower three feet of the side slopes initially were lined with Typar™ filter fabric. Crushed aggregate was then placed and compacted on top of the filter fabric. Concurrent with the aggregate placement, seven manholes were installed. Six-inch diameter perforated corrugated polyethylene drainage tubing was installed between manholes. The infiltration blanket was covered with at layer of Typar™ filter fabric, creating a Typar™ envelope around the entire aggregate blanket.

The pits were then backfilled with clean soil that was compacted to approximately 4 feet below the existing ground surface. A low infiltration cap consisting of 80-mil high-density polyethylene was installed and covered with approximately 3 feet of clean soil fill and 1 foot of topsoil (Figure 3). A 1 to 2 foot drainage ditch outside of the capped area was excavated around the entire site and lined with gravel. Following completion of the drainage ditch, the site was seeded.

Ballast Area

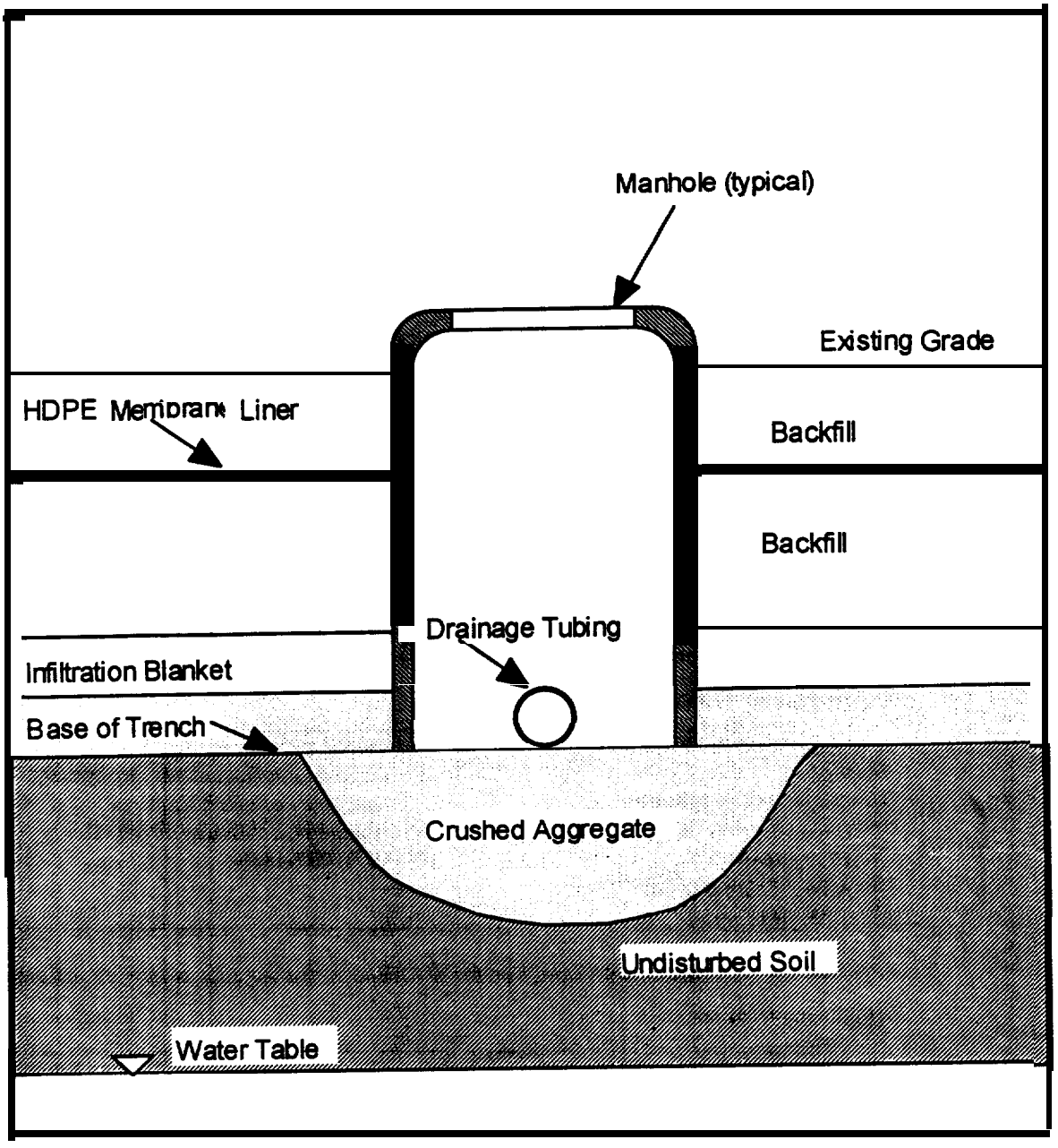
The ballast area originally contained lighting ballasts that were removed during the characterization activities in 1995. The contamination in this area is thought to be related to the 1984 drum and soil removal at the pits. Specifically, it is believed that the soil contamination relates directly to excavated soils that were misapplied to this area as if it were clean fill. The lighting ballasts observed at or near the surface were removed from the area and disposed of as potential PCB-contaminated waste material in keeping with all applicable federal, state and local government regulations and guidelines.

In 1996, a maintenance activity was undertaken by SRS in the ballast area to minimize erosion of surface soil by stormwater runoff. Approximately 6 inches of clean soil was spread over the entire ballast area, perimeter drainage was channeled to drainage pipes placed in the former gullies, and erosion control stabilization measures (riprap, reseeding, and erosion protection fabric) were applied to the ground surface. Characterization and assessment performed in support of the Baseline Risk Assessment indicated that exposure to soil erosion (gully area) did not result in exposure of human health or ecological receptors above acceptable levels.

Operable Unit Compliance History

An RFI/RI characterization and a Baseline Risk Assessment (BRA) were conducted for the unit between 1994 and 1997 and the results presented in the RFI/RI/BRA report (WSRC 1997). A Corrective Measures Study/Feasibility Study (CMS/FS) (WSRC 1998a) and Statement of Basis/Proposed Plan (SB/PP) (WSRC 1998b) for the CMP Pits were submitted for US EPA and SCDHEC approval January 1998. Subsequently, an Interim Action Proposed Plan (WSRC 1999) was submitted in accordance with the FFA and the approved implementation schedule, and was approved by US EPA and SCDHEC in March 1999.

Figure 3. Cross Section of Early Action (1984) Backfill and Cover



III. HIGHLIGHTS OF COMMUNITY PARTICIPATION

Both RCRA and CERCLA require that the public receive an opportunity to review and comment on the proposed interim remedial alternative. Public participation requirements, listed in South Carolina Hazardous Waste Management Regulation (SCHWMR) R.61-79.124 and in CERCLA, Sections 113 and 117, include establishment of an administrative record file at or near the facility at issue. The file documents the investigation and selection of the remedial alternatives for addressing the CMP Pits.

The SRS Public Involvement Plan (US DOE 1994) addresses RCRA, CERCLA, and NEPA requirements and supports public involvement in the decision-making process for permitting, closure, and the selection of remedial alternatives. SCHWMR R.61-79.124 and CERCLA Section 117(a), as amended, require the advertisement of the draft permit modification, if needed, and notice of any proposed remedial action and provide the public an opportunity to participate in the selection of the remedial action. The *Interim Action Proposed Plan for the CMP Pits Operable Unit (U)*, a part of the administrative record file, highlights key aspects of the investigation and identifies the preferred action for addressing the CMP Pits. The administrative record file is available at the following locations:

U. S. Department of Energy Public Reading Room Gregg-Graniteville Library University of South Carolina-Aiken 171 University Parkway Aiken, South Carolina 29801 (803) 641-3465	Thomas Cooper Library Government Documents Department University of South Carolina Columbia, South Carolina 29208 (803) 777-4866

The RCRA Administrative Record File for SCDHEC is available for review by the public at the following locations:

The South Carolina Department of Health and Environmental Control Bureau of Land and Waste Management 8901 Farrow Road Columbia, South Carolina 29203 (803) 896-4000	Lower Savannah District Environmental Quality Control Office 218 Beaufort Street, Northeast Aiken, South Carolina 29802 (803) 641-7670

The public was notified of the public comment period through the *SRS Environmental Bulletin*, a newsletter sent to approximately 3,500 citizens in South Carolina and Georgia; through notices in the *Aiken Standard*, the *Allendale Citizen Leader*, the *Augusta Chronicle*, the *Barnwell People-Sentinel*, and *The State* newspapers; and through announcements on local radio stations.

The 30-day public comment period began on 3/15/99 and ended 4/13/99. The IAPP was presented to the SRS Citizen Advisory Board in an open public meeting on March 22 and 23, 1999. A *responsiveness summary* was prepared to address comments received during the public comment period. The responsiveness summary is included in Appendix A of this IROD.

IV. SCOPE AND ROLE OF THE OPERABLE UNIT WITHIN THE SITE STRATEGY

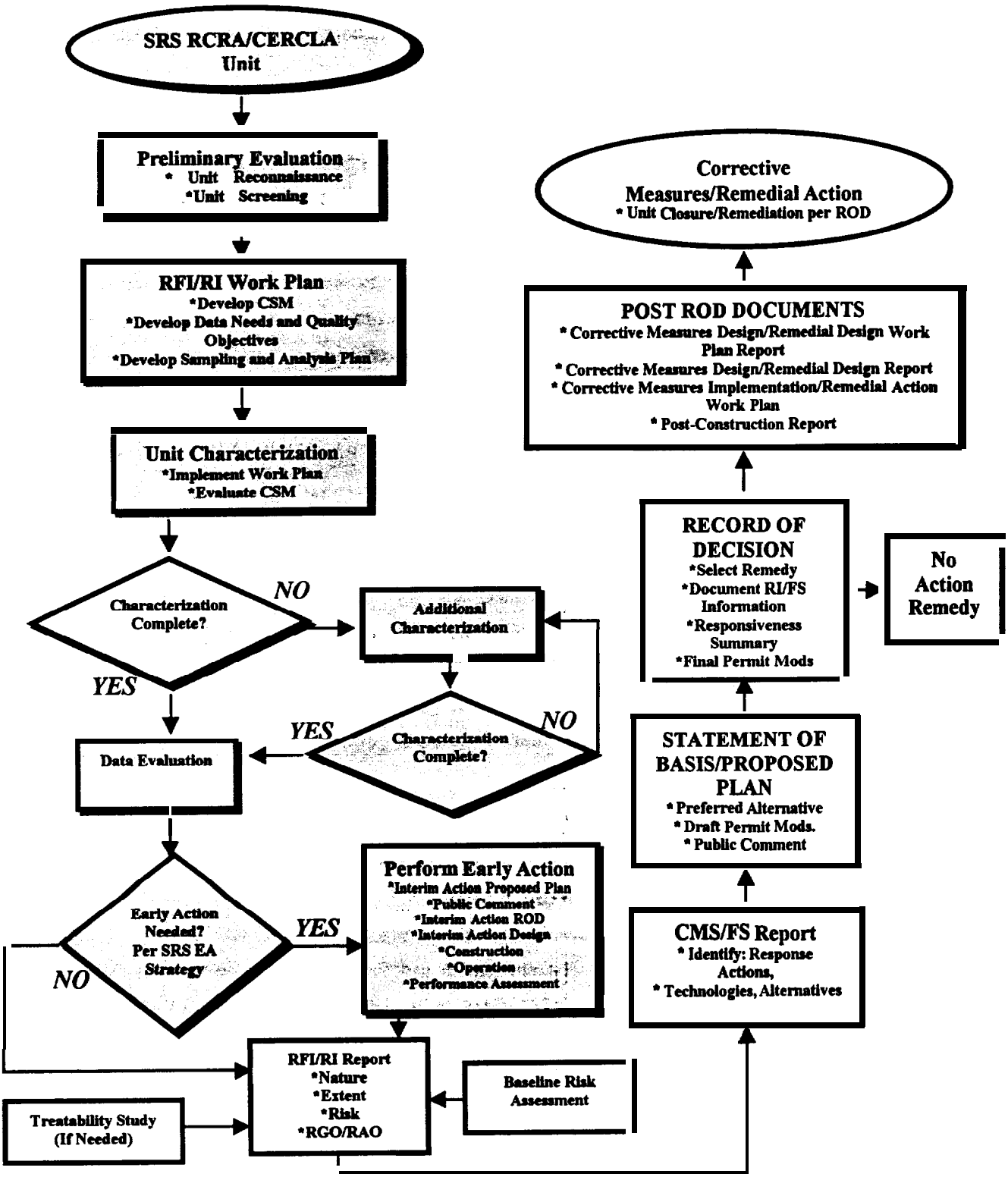
RCRA/CERCLA Programs at SRS

RCRA/CERCLA units, including the CMP Pits at SRS, are subject to a multi-stage remedial investigation process that integrates the requirements of RCRA and CERCLA as outlined in the RFI/RI Program Plan (WSRC 1993). The RCRA/CERCLA process consists of

- investigation and characterization of potentially impacted environmental media (such as soil, groundwater, and surface water) associated with the waste site and surrounding areas;
- the evaluation of risk to human health and the local ecological community;
- the screening of possible remedial actions to identify the selected technology which will protect human health and the environment;
- implementation of the selected alternative;
- documentation that the remediation has been performed competently; and
- evaluation of the effectiveness of the technology.

The steps of this process are iterative in nature and include decision points, which involve concurrence with US DOE (as owner/manager), US EPA and SCDHEC (as regulatory oversight), and the public. The RCRA/CERCLA process was used for characterization of the CMP Pits OU and for developing the remedial alternatives and finally for selecting the remedial action. Figure 4 illustrates the RCRA/CERCLA process and is consistent with the SRS ER RI/FS Early Action Strategy.

Figure 4. RCRA/CERCLA Logic and Documentation for the CMP Pits Interim Action



CMP Pits Remedial Strategy

The overall strategy for addressing the CMP Pits is to (1) perform an RFI/RI characterization to identify the nature and extent of contamination and the media of concern; (2) perform a baseline risk assessment (BRA) to evaluate media of concern, constituents of concern (COCs), exposure pathways and potential risks; (3) evaluate the possible interim remedial alternatives and acquire community involvement in the remedial selection and document the process in the Interim Action Proposed Plan (IAPP), (4) evaluate and perform an interim action to remediate, as needed the identified media, (5) evaluate the possible remedial alternatives and acquire community involvement in the remedial selection and document the process in the Corrective Measures Study/Feasibility Study (CMS/FS) and Proposed Plan (PP); and (6) evaluate and perform a final action to remediate, as needed, the identified media.

Remediation of the CMP Pits will proceed with an approach consistent with the US EPA guidance document *Presumptive Response Strategy and Ex-Situ Treatment Technologies for Contaminated Ground Water CERCLA Sites* (US EPA 1996). The interim action will focus on remediation of the (1) CMP Pits area subsurface soil (vadose zone), (2) groundwater hot spot, and (3) ballast area surface soils (including pit area perimeter surface soils). The interim action is intended to prevent further migration of contaminants from the source, prevent further migration of the highest VOC concentrations in the groundwater, and remove the contaminants in the ballast area to prevent industrial worker and ecological exposure to the ballast area surface soil. In addition, the interim action will provide additional site characterization data.

Due to the complexity of the distal plume and the current uncertainties with the hydrogeology, further characterization will be conducted concurrently with this interim action. The characterization results associated with the distal plume will be included in the CMS/FS and will support the pursuit of a final remedial action consistent with the Integrated Interim and Final Action Implementation Schedule (Figure 13). This schedule is consistent with the approved operable unit strategy for the CMP Pits. It provides the shortest path forward to a final ROD for this unit as agreed to by the three parties. The extent of the distal plume is currently being characterized as indicated in the schedule. A decision document will be developed based on the characterization results and a decision meeting between the three parties will be held in September 1999. At this time, it will be determined if a final action can be determined for the distal plume or whether or not additional information is needed, such as the effectiveness of source control at the unit. If necessary, the operable unit strategy would be revised as a result of this decision meeting.

The CMP Pits, along with several other waste units, are located within the Pen Branch Watershed (Figure 2). Several operable units within this watershed will be evaluated to determine impacts to associated streams and wetlands. SRS will manage all operable units to minimize impact to the Pen Branch watershed. This proposed interim action for the CMP Pits is not a final action but is proposed to minimize the impact of the CMP Pits on the Pen Branch watershed.

V. OPERABLE UNIT CHARACTERISTICS

Media Assessment

The primary sources of contamination associated with the CMP Pits OU are the Ballast Area Surface Soil and Vadose Zone Soil. Therefore, a conceptual site model was developed to identify the primary sources, primary contaminated media, migration pathways, and potential receptors for the CMP Pits OU (Figure 5).

Primary Sources and Release Mechanisms

Surface Soil

Analytical data collected for the RFI/RI indicate that impact to the soil media associated with the ballast area and vadose zone has occurred from chemical contaminants (i.e., pesticides, PCBs, and VOCs). Pesticides are the most prevalent constituents at the ballast area. The sample results indicate that the pesticides are grouped in the center of the ballast area. Only one PCB, Aroclor-1248, was detected at the ballast area. Approximately 1300 cubic yards of soil is contaminated with pesticides. Of the 1300 cubic yards, 300 cubic yards are also contaminated with PCBs (Aroclor-1248). Figure 6 illustrates the relative extent of the PCB and pesticide contamination exceeding the RGs in the ballast area.

Figure 5. Conceptual Site Model for the CMP Pits

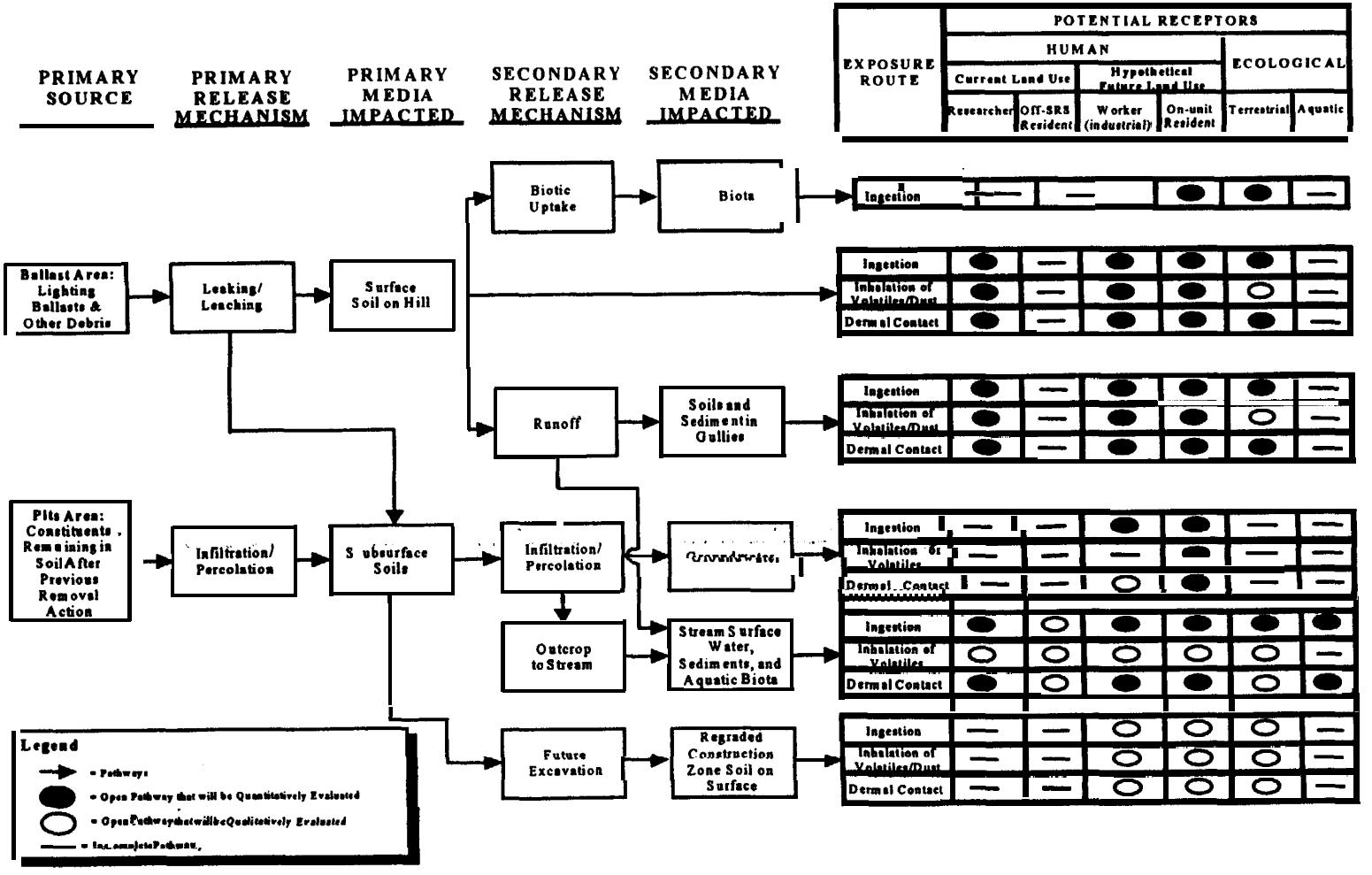
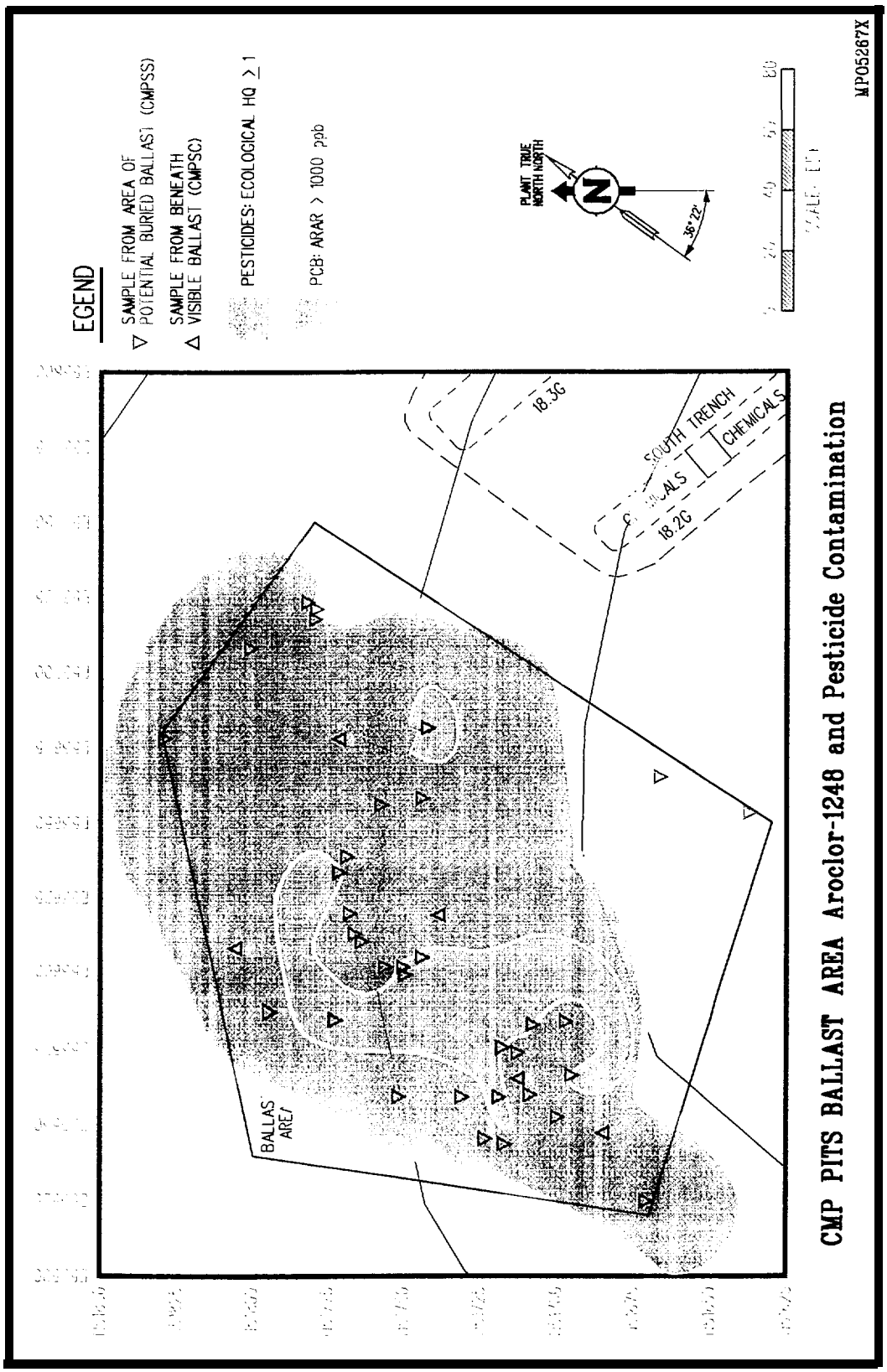


Figure 6. **Planar View of PCB and Pesticide Contamination at the Ballast Area**



Subsurface Soil

High concentrations of VOCs (principally PCE) have been identified in the vadose zone under the original chemical pits (18.3G and 18.1G). Lateral extent of contamination within the vadose zone is confined to the boundary of the two original chemical pits while the vertical extent reaches to the water table. Therefore, these two pits are the probable source of groundwater contamination. Figure 7 illustrates the relative extent of the VOC contamination in the vadose zone.

Secondary Sources and Release Mechanisms

Groundwater

The tan clay confining zone divides the Upper Three Runs Aquifer at the CMP Pits into the upper water table and the lower water table. The depth to the water table in the area of the CMP Pits varies from 80 to more than 100 feet below ground surface. The saturated thickness of the upper water table varies from 5 to 23 feet across the area.

Concentrations of DCM (560 µg/l), PCE (6950 µg/l), and TCE (1600 µg/l) in the upper water table exceed their Safe Drinking Water Act maximum contaminant levels (MCLs) of 5 µg/l. Concentrations of PCE and TCE are up to 500 times greater in the upper water table than in the lower water table. This indicates that contamination is not migrating readily below the tan clay confining layer. Since the concentrations in the lower water table are only two times MCL, remediation of the lower water table will be addressed as part of the final remedial action.

The groundwater hot spot beneath and adjacent to the CMP Pits area is defined by VOC contamination in excess of 1,000 µg/l. Figures 8 and 9 illustrate the known extent of the hot spot and its general configuration. The shape and migration behavior of the hot spot appears to be significantly affected by an area of lower permeability (and subsequent lower VOC concentration) to the north of the pit area. Specifically, the geometry of the hot spot suggests that it is migrating to the northeast and northwest around a low permeability area, from the vadose zone source towards Pen Branch.

In accordance with EPA guidance on "Estimating Potential for Occurrence of DNAPL at Superfund Sites", historical site use and site characterization was used to evaluate the potential for occurrence of DNAPL. While historical site use information suggests that there is a high probability of DNAPL because of waste practices employed at the site, site characterization data does not indicate the presence of DNAPL because:

- DNAPL has not been found in monitoring wells, observed in soil cores, or physically observed in the aquifer

- Chemical analyses of groundwater or soil does not indicate the possible presence of DNAPL at the site

- It is unlikely that the existing field program could miss DNAPL at the site

Based upon this evaluation, there is a moderate potential for DNAPL at the CMP Pits.

Figure 7. Cross-sectional View of the CMP Pits Subsurface (Vadose Zone) Remediation Area

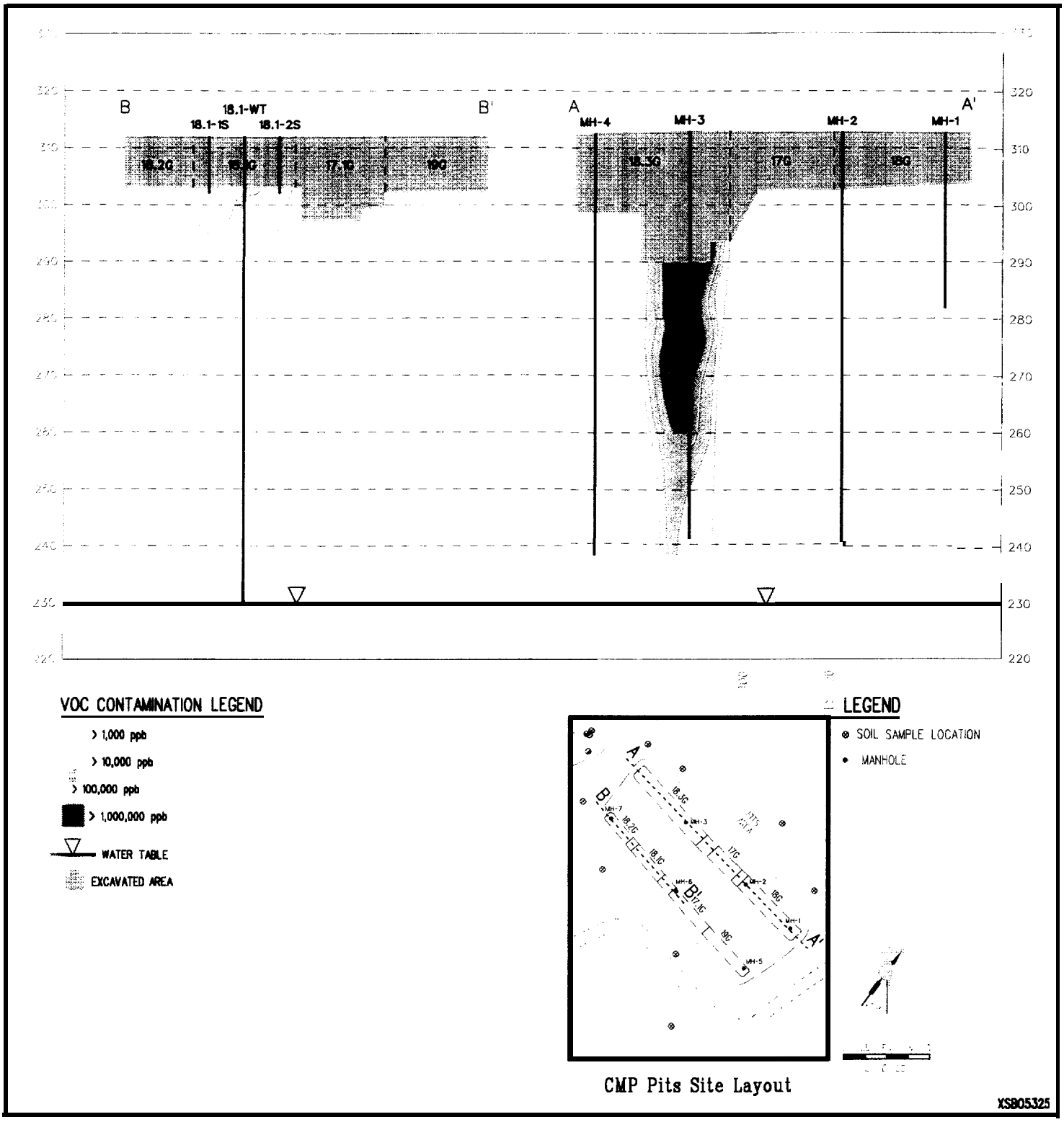
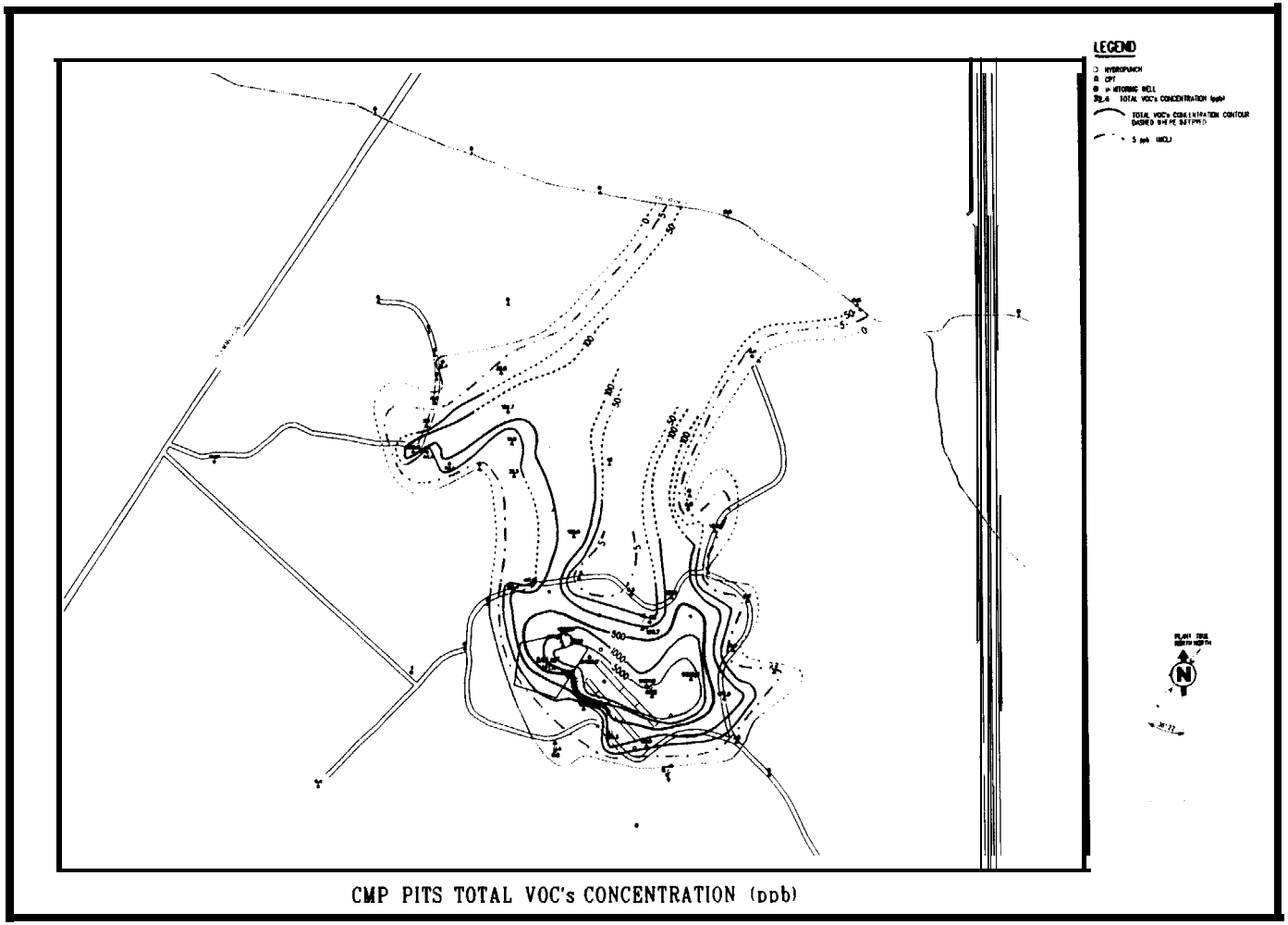
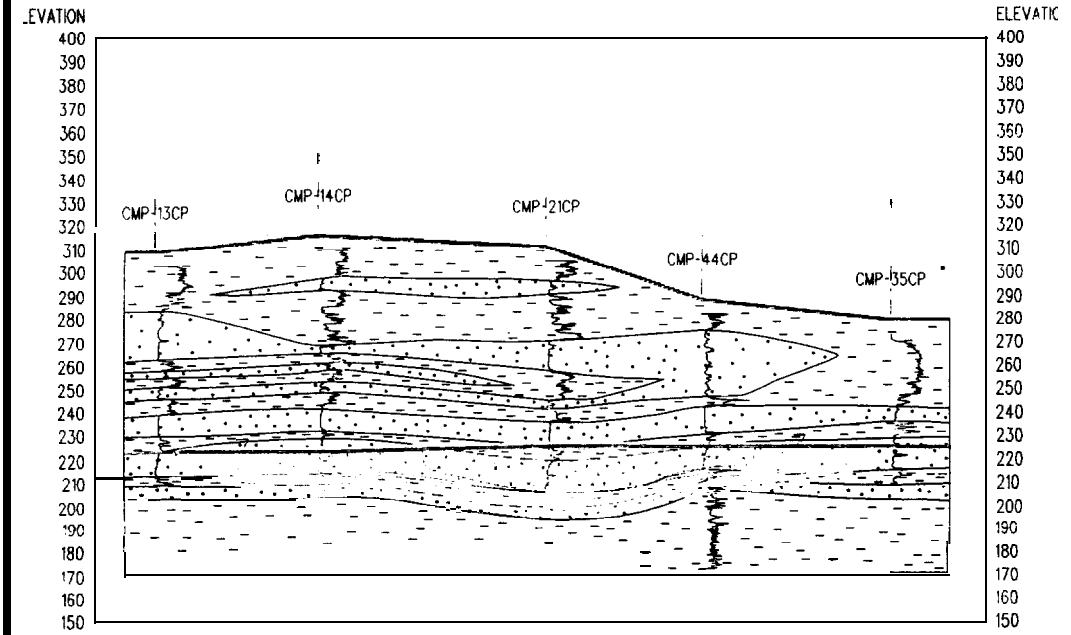


Figure 8. CMP Pits Total VOCs Concentration





CMP PITS CROSS-SECTION C-C'

LEGEND

GROUND SURFACE

TIP SLEEVE RATIO

INTERBEDDED SANDS AND CLAYEY SAND

INTERBEDDED SANDY CLAY AND CLAYEY SAND

WATER TABLE

PLUME LEGEND

5 50 ppb

50 100 ppb

100 - 1,000 ppb

> 1,000 ppb

0 50 100 150 200

HORIZONTAL SCALE: FEET

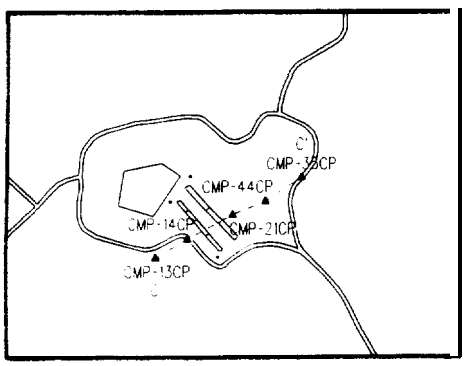
0
20
40
60
80

VERTICAL SCALE: FEET

PLANT TRUE NORTH NORTH

N

36°22'



CMP PITS SAMPLE LOCATION MAP

YSB06199

Figure 9. CMP Pits Cross-Section C-C'

VI. SUMMARY OF OPERABLE UNIT RISKS

As a component of the remedial investigation process, a BRA was performed for the CMP Pits OU. The BRA consists of human health and ecological risk assessments. Summary information for the human health and ecological risk assessments follows. Additional information from the BRA can be found in *RCRA Facility Investigation/Remedial Investigation Report with Baseline Risk Assessment for the Chemicals, Metals and Pesticides (CMP) Pits (080-1 7G, 080-17. 1G, 080-18. 1G, 080-18.2G, 080-18.3G, & 080-19G) (U)* (WSRC 1997).

Human Health Risk Assessment

The human health risk assessment considered both current and future land uses and the individuals who are likely to be exposed. US EPA methods were used to conduct the risk assessment. Both carcinogenic and noncarcinogenic risks were estimated for the relevant pathway/receptor combinations.

Current Land Use Results

Ballast Area

- The chemical cancer risk to the current worker is associated with ingestion of soil and dermal contact with p',p'-DDT in the soil.

Future Land Use Results

Ballast Area

- The chemical cancer risk for the hypothetical future industrial worker is associated with ingestion of, and dermal contact with Aroclor-1248, p',p'-DDT and dieldrin in surface soil.
- The chemical cancer risk for the hypothetical future resident (adult/child) is primarily associated with the uptake of Aroclor-1248, p',p'-DDT and dieldrin from produce ingestion.
- The chemical noncancer hazard for the hypothetical future resident (adult/child) is associated with the uptake of p',p'-DDT and dieldrin from the soil into the produce plants (i.e., produce ingestion).

Pits Area Perimeter Surface Soil

- The chemical cancer risk for the hypothetical future industrial worker is associated with ingestion of produce and dermal contact with aldrin, p',p'-DDT and dieldrin in surface soil.
- The chemical cancer risk for the hypothetical future resident (adult/child) is primarily associated with the uptake of arsenic and dieldrin from produce ingestion.
- The chemical noncancer hazard for the hypothetical future resident (adult/child) is primarily associated with the uptake of arsenic, p',p'-DDT, and dieldrin from produce ingestion.

dwa

- The chemical cancer risk for the future industrial worker is associated with DCM, TCE and PCE.
- The chemical cancer risk for the future industrial worker and future resident (child/adult) is associated with DCM, TCE and PCE.

Ecological Risk Assessment

The purpose of the ecological risk assessment (ERA) component of the BRA is to evaluate the likelihood that adverse ecological effects may occur or are occurring as a result of exposure to unit-related constituents based on a weight-of-evidence approach. An ecological risk does not exist unless a given constituent has the ability to cause one or more adverse effects and either co-occurs with or is contacted by an ecological receptor for a sufficient length of time or at a sufficient intensity to elicit the identified adverse effect.

The baseline ecological risk assessment defined the likelihood of harmful effects or the risk to ecological receptors from exposure to contaminants at the CMP Pits. Receptors include both terrestrial plants and animals and their habitats.

The results of the ecological risk assessment identified risks to terrestrial receptors from metals, pesticides, and PCBs in the ballast area. Metals pose the highest risk to vegetation, earthworms, and shrews at the ballast area. Aroclor-1248 and pesticides pose risk to shrews and wrens at the ballast area.

Risk Assessment Summary

Table 1 summarizes the total media human health risk/hazard index and total cumulative risk for each exposure group for the various land uses.

- There are no primary soil COCs identified for the industrial worker.

- The ballast area surface soil and the pit area perimeter surface soil near the ballast area were found to be contaminated with similar contaminants.

- The ballast area has been shown to have potential produce ingestion risks above 1×10^{-4} for the hypothetical future resident.

- The vadose zone poses a threat to groundwater quality because of potential leaching from soil to groundwater, resulting in groundwater concentrations exceeding MCLs. Primary contributors to this pathway are VOCs (i.e., DCM, PCE, and TCE). These constituents have been identified as the only contaminant migration COCs in the soil.

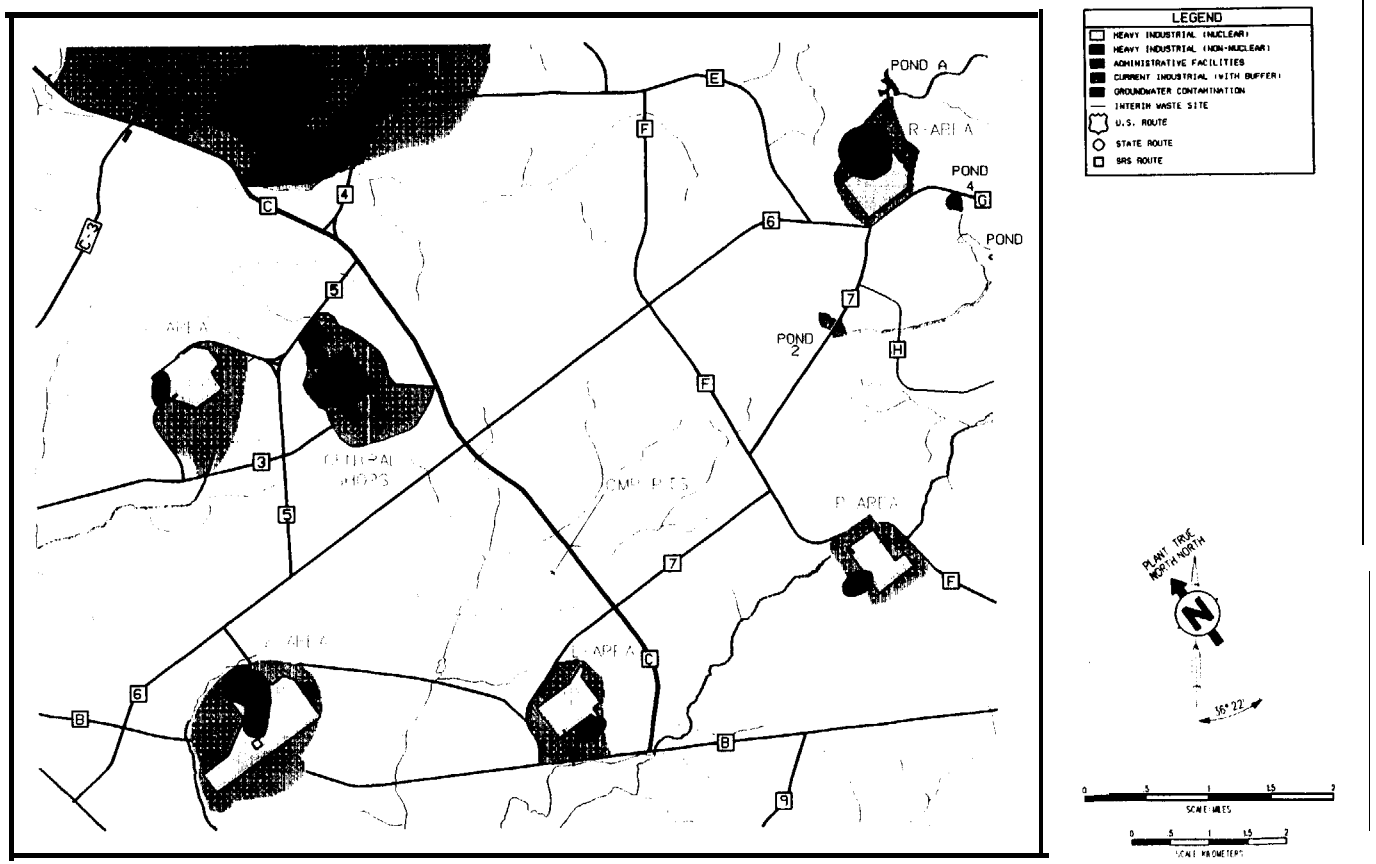
- The final ecological COCs in the ballast area soil are DDD, DDE, DDT, dieldrin, endrin, and Aroclor-1248. These COCs may impact the environment for both soil-dwelling and non-soil-dwelling ecological receptors.

- Due to the nature of the soil contamination, it is anticipated that the CMP Pits area will be a limited-use area with restrictions. Although the CMP Pits Area is located outside of an Industrial use zone defined by Figure 3-3 of the FFA Implementation Plan, recommended RGs are based upon being protective of the industrial worker. Figure 10 illustrates the relationship between the CMP Pits area and the other reactor areas designated as future heavy industrial (nuclear) areas. Although, this area has not been designated a future industrial use area, its proximity to other industrial areas and its location at the site interior at considerable distance from any site boundaries further supports consideration of future industrial use of this area.

TABLE 1. OPERABLE UNIT TOTAL MEDIA RISK/HAZARD INDEX

Exposure Group	Land Use	Total Media Risk/Hazard Index			Total Cumulative Risk
		Soil	Produce	Groundwater	
Ballast Area	Current Worker	Risk – 1E-05	NA	NA	1E-05
	Future Resident	HI – 0.8 Risk – 6E-05	HI – 2 Risk – 2E-04	HI – 0.6 Risk – 5E-05	3E-04
	Future Worker	Risk – 1E-05	NA	Risk – 1E-05	2E-05
Pits Area (area adjacent to ballast area)	Future Resident	HI – 0.9 Risk – 5E-05	HI– 9 Risk – 1E-03	HI– 0.6 Risk – 5E-05	1E-03
	Future Worker	Risk – 1E-05	NA	Risk – 1E-05	2E-05

Figure 10. Future Land Use Map of CMP Pits and Surrounding Area (from FIP Figure 3-3)



FUTURE LAND USE MAP OF CMP PITS AND SURROUNDING AREA (From FIP Figure 3-3)

MLG5697

Remedial Goals

Table 2 lists proposed RGs (chemical concentrations associated with levels of risk) for ballast area soils and the justification for selection of an industrial scenario for human health risks. The PCB RG is based upon promulgated cleanup standards. The heptachlor RG is based upon human health 10^{-6} risks (industrial worker), and the remaining pesticides RGs are based upon ecological risks.

Principal or Low-Level Threat Source Material Review

An Interim Remedial Action for the CMP Pits is recommended based upon the RFI/RI/BRA. Although all source materials (drums, lighting ballast, etc.) were removed as part of the 1984 CMP Pits Early Action and in 1995 as part of the characterization activities, contaminated media remains in the ballast area, vadose zone and groundwater. A review of the contamination present within the soils and groundwater at the CMP Pits indicates that the wastes represent principal source threats due to the high concentrations of contaminants. The ballast area, vadose zone and groundwater hot spot contamination can be categorized as follows.

- High concentrations of PCB (Aroclor-1248) and Pesticide (DDD, DDE, and DDT) represent a principal source threat in the ballast area. Maximum concentrations of Aroclor-1248 (15,300 µg/kg), DDD (1,870 µg/kg), DDE (1,340 µg/kg), and DDT (1 15,000 µg/kg) significantly exceed the recommended RGs (Table 2).

- High concentrations of DCM (296,000 µg/kg), PCE (6,980,000 µg/kg), and TCE (31,000 µg/kg) in the vadose zone represent a principal source threat.

- High concentrations of DCM (560 µg/l), PCE (6,950 µg/l) and TCE (1,600 µg/l) in the aquifer sediments within the groundwater hot spot area represent a principal source threat.

The action proposed is consistent with a bias for treatment of principal threat source materials because:

- treatment technologies are feasible and available in a reasonable time frame,

- the volume and complexity of the site make implementation technically and economically practicable, and

- implementation will not result in severe effects across environmental media.

TABLE 2. BALLAST AREA RGS

COC	RME	Residential RGs by risk range (without produce)[a]			Industrial RGs by risk range			Ecological RGs	ARAR	Recommended RG[c] (µg/kg)
		1×10^{-6}	1×10^{-5}	1×10^{-4}	1×10^{-6}	1×10^{-5}	1×10^{-4}	HQ ≥ 1		
PCB										
Aroclor-1248	2110	110	1,110	11,100	320	3,200	32,000	--		<1000
Pesticides										
Heptachlor	310	180	1,800	18,000		4,900	49,000	--	--	490
Dieldrin	200	47	470	4,700	110	1,100	11,000		--	50
Endrin	400	--	--	--	--	--	--		--	60
DDD	100	--	--	--	--	--	--		--	10
DDE	100	--	--	--	--	--	--		--	20
DDT	22000	--	--	--	--	--	--			60

(Constituent RG units in µg/kg. Shaded boxes represent recommended RGs.)

Notes:

The recommended RGs are protective of human health and the environment and are based upon the long-term strategy for the CMP Pits area. Although the CMP Pits area is located outside of the Industrial Use Zone (defined by Figure 3-3 of the FFA Implementation Plan), it is anticipated that the CMP Pits area will be a limited use area with restrictions similar to an industrial use zone. Unrestricted residential land use of the CMP Pits area would result in an unnecessary increase in human health risk due to excavation in the vadose zone, anddisturbance of the existing protective cap and drainage systems previously placed over the disposal pits. Restricting land use and institutional controls are necessary at this unit to provide continued protection to human health and the environment from exposure to contaminants and to prevent destruction of the previous remedial action.

The recommended RG for heptachlor is therefore based upon the industrial scenario and is protective of the industrial worker (1×10^{-6} risk). The RG for Aroclor-1248 is an action level based upon promulgated clean up standards (40CFR Part 761 Disposal of PCB; Final Rule) and is also protective of the industrial worker. The RGs for dieldrin, endrin, p,p'-DDD, p,p'-DDE, and p,p'-DDT are based upon ecological risks.

Footnotes:

a. RG is for a child resident

b. Potential RG scenarios for Aroclor-1248:
   - No further action: <=1,000 µg/kg
   - High Occupancy area (335 hours/year) – covered with a cap meeting requirements specified in the regulations: >1,000 µg/kg and <=10,000 µg/kg
   - Low Occupancy area – <=25,000 µg/kg

c. The recommended RG for Aroclor-1248 is consistent with the action level requirements for disposal of PCB. Recommended RGs for pesticides are based upon the human health risk to the future industrial worker (1×10^{-6}) or upon the ecological risk.

-- – Not a Human Health or Ecological COC or no ARAR available

VII. INTERIM REMEDIAL ACTION OBJECTIVES AND DESCRIPTION OF CONSIDERED ALTERNATIVES FOR THE CMP PITS OPERABLE UNIT

Interim Remedial Action Objectives

Interim remedial action objectives (IRAOs) specify unit-specific contaminants, media of concern, potential exposure pathways, and remediation goals. The IRAOs are based on the nature and extent of contamination, threatened resources, human and environmental risk information, and the potential for human and environmental exposure. Initially, preliminary remedial goals are developed based upon applicable, or relevant and appropriate requirements (ARARs) or other information from the RFI/RI report and the BRA. These goals are modified as more information concerning the unit and potential remedial technologies become available. Final remedial goals are determined when the remedy is selected; the goals establish exposure levels that are protective of human health and the environment.

ARARs are cleanup standards, standards of control, and other substantive requirements, criteria, or limitations, promulgated under federal, state, or local environmental law, that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site. Three types of ARARs (action-, chemical-, and location-specific) have been developed to simplify identification and compliance with environmental requirements. Action-specific requirements set controls on the design, performance, and other aspects of implementation of specific remedial activities. Chemical-specific requirements are media-specific and health-based concentration limits developed for site-specific levels of constituents in specific media. Location-specific ARARs must consider federal, state, and local requirements that reflect the physiographical and environmental characteristics of the unit for the immediate area. The action-specific, chemical-specific, or location-specific ARARs (requirements) and to-be-considered requirements relevant to establishing remedial action objectives for the CMP Pits are shown in Table 3.

Based on the risks posed by PCBs and pesticide in the Ballast Area and TCE and PCE in the Vadose Zone and the Groundwater Hot Spot, the general interim remedial action objectives for the CMP Pits OU are as follows:

Ballast Area

- Prevent direct contact with PCB and pesticides contaminated surface soils, such that the contaminants of concern are not a continued significant risk to human health or the ecology. The RGs for removal of these soils are 1 mg/kg Aroclor-1248, 490 µg/kg heptachlor, 50 µg/kg dieldrin, 60 µg/kg endrin, 10 µg/kg DDD, 20 µg/kg DDE, and 60 µg/kg DDT. The RGs requiring Land Use Controls are 180 µg/kg heptachlor and 47 µg/kg dieldrin.

Vadose Zone

- Treat the vadose zone soils beneath the pits where the combined PCE and TCE concentrations exceed 2,000 µg/kg, with active treatment techniques as long as effective, with an overall objective to reduce the potential migration of solvents to the water table that result in contamination concentrations exceeding the MCL.

- Continue to provide infiltration control with a cover system in the vadose zone treatment area, to reduce the potential migration of solvents from the vadose zone to the water table.

Groundwater Hot Spot

- Treat the water table in the vicinity of the pits, within the 1,000 µg/l total VOC isoconcentration contour, with an objective to reduce concentrations and control migration of VOCs within the 1,000 µg/l contour.

Description of Considered Alternatives

This section summarizes the alternatives for the ballast area, vadose zone and groundwater hot spot. The rationale for the selection of the preferred alternative is presented in Section VIII. (The "BA" associated with the alternatives refers to ballast area alternatives. The "VZ" associated with the alternatives refers to the vadose zone alternatives and the "GWHS" refers to the groundwater hot spot alternatives.)

TABLE 3. CHEMICAL-, ACTION-, LOCATION- SPECIFIC ARARs

Citation(s)	Status	Requirement Summary	Reason for Inclusion
Chemical			
40 CFR 141 - MCLs and MCLGs and SC R.61-58.5 - MCLs and MCLGs	Relevant and Appropriate	MCLs and MCLGs for groundwater that may be a source of drinking water	MCLs should generally be met for cleanup of groundwater under the CERCLA program. MCLs are an ARAR that is relevant but will not be met due to the interim remedy waiver.
40 CFR 143.3 Secondary Drinking Water Standards	Relevant and Appropriate	Establishes levels for contaminants that affect the aesthetic qualities of drinking water	Secondary Drinking Water Standards potentially relevant for setting remediation levels
40 CFR 261 and SC R. 61-79.261 Identification and Listing of RCRA Hazardous Waste	Applicable	Defines criteria for determining whether a waste is RCRA hazardous waste.	Any waste media that are actively managed or shipped off site must be tested to determine if they are RCRA characteristic wastes. Discarded pesticides and chemicals are RCRA listed hazardous wastes.
40 CFR 263 and SC R. 61-79.263 Standards Applicable to Transporters of Hazardous Waste	Applicable	Identifies transporter requirements including manifests, record keeping, and actions for accidental waste discharges.	Applicable to off-site transportation of RCRA hazardous waste.
40 CFR 264 and SC R.61-79.264 Standards for Owners and Operators of Hazardous Waste TSDs	Applicable	General performance standards for Treatment, Storage and Disposal facilities.	Applicable to contaminated soil treated off-site.
40 CFR 268 Land Disposal Restrictions (LDRs) (RCRA)	Applicable	Prohibits land disposal and specifies treatment standards for specific RCRA hazardous wastes	Movement of excavated materials from their original location triggers the RCRA LDRs. Pesticides and solvents are RCRA listed waste..
40 CFR 761, (TSCA)	Relevant and Appropriate	Identifies cleanup levels and disposal requirements for cleaning, decontaminating, or removing PCB remediation waste.	§761.61(a)(4)(I)(A) identifies <1mg/kg as the cleanup level for high occupancy areas without further conditions. Requirements for water are in §761.79(b)(1). Disposal requirements specified in §761.61(a)(5)(i)(B)(2)(ii), §761.61(a)(5)(i)(B)(2)(iii) or §761.61(b)(2)(i). EPA-IV policy consistent with §761.61(c) allows storage of containerized/packaged PCB bulk remediation waste up to 180 days from containerization within AOC.
SC R.61-62.5 Air Quality Standards	Applicable	Establishes air quality standards for emissions	Standard 2 Toxic Air Pollutants and Standard 8 Ambient Air Quality Standards
SC R.61-68 Water Classification	Relevant and Appropriate	States official classified water uses for all surface and groundwater in South Carolina.	Mandates meeting MCLs for groundwater unless a Mixing Zone is established. Ground-water Mixing Zone guidance allows developing alternative compliance levels for groundwater

TABLE 3. CHEMICAL-, ACTION-, LOCATION- SPECIFIC ARARS (CONTINUED)

Citation(s)	Status	Requirement Summary	Reason for Inclusion
Action			
40 CFR 50.6, Federal Air Regulations	Applicable	The concentration of particulate matter (PM_{10}) in ambient air shall not exceed 50 $\mu g/m^3$ (annual arithmetic mean) or 150 $\mu g/m^3$ (24-hour average concentration).	Earth-moving activities will generate airborne dust that will have the potential to exceed the levels specified. Dust suppression will likely be required to minimize dust emissions.
40 CFR 107, 171-179 DOT Hazardous Materials Transportation Regulations	Applicable	Specifies requirements for handling, packaging, labeling, and transporting wastes containing DOT hazardous substances.	Applicable to contaminated soil or investigation-derived wastes shipped off-site.
40 CFR 165 (FIFRA) Disposal of Pesticides	Applicable	Identifies acceptable and unacceptable methods of disposal for organic and inorganic pesticides.	Incineration is recommended for organic pesticides except those that contain mercury, lead, cadmium, and arsenic.
SC R.61-9 NPDES Permits	Applicable	Requires notification of intent to discharge storm water from construction associated with industrial activity that will result in a land disturbance of 5 acres or more and/or industrial activities and sets the requirements for the control of storm water discharges	Potentially applicable if stormwater is discharged during construction activities.
SC R.61-62. 1 Air Permit Requirements	Applicable	Requires Construction and Operating permits for sources of air pollution	SVE unit require permits for construction and operation
SC R.61-62.6 Fugitive Dust	Applicable	Fugitive particulate material shall be controlled	Construction activities shall minimize fugitive particulate emissions. Earth-moving activities have the potential to generate airborne particulate matter
SC R61-71, Well Construction Standards	Applicable	Prescribes minimum standards for the construction of groundwater wells	Standards for installation and abandonment of groundwater.
SC R.61-67 Standards for Wastewater Facility Construction	Applicable	Permits to construct wastewater treatment and transportation systems. Permit to operate prior to startup and licensing of operators.	SVE units require permit to operate.
SC R.72-300 Standards for Stormwater Management and Sediment Reduction.	Applicable	Stormwater management and sediment control plan for land disturbances	Excavation activities will require an erosion control plan.
29 CFR 1910 Occupational Worker Safety (OSHA)	Applicable	Identifies health and safety requirements for remediation workers.	Worker activities involving hazardous materials must be conducted according to a project health and safety plan.
Location			
16 USC 703	Applicable	The remedial action must be conducted in a manner that minimizes impacts to migratory birds and their habitats.	Migratory bird populations may be present in the vicinity of the SRS.
Executive Order 11990	Applicable	The remedial action must minimize the destruction, loss, or degradation of wetlands.	Wetlands are located in the vicinity of the CMP Pits; however, they will be unaffected by this action.

Summary of Alternatives for the Ballast Area

Alternative BA-1: No Action

The "no action" option is required by the NCP to serve as the base line for comparison with other remediation methods. Under this alternative, no remedial efforts would be conducted to remove, treat, or otherwise lessen the toxicity, mobility, or affected volume of contaminated media. Institutional controls similar to those that already exist would not continue under this scenario.

The No Action Alternative would not be protective of human health because of risk of direct contact by an industrial worker or hypothetical future resident. The No Action Alternative would not be protective of the environment because of risk of ingestion of contaminants by terrestrial ecological receptors. Concentration-based remediation goals in surface soil would not be met.

Alternative BA-2: Install RCRA Cap Over the Ballast Area

Alternative BA-2 entails installation of a RCRA cap over the ballast area to eliminate direct contact of PCB and pesticide contamination. A RCRA cap would be required to be protective of the pesticide contamination that is listed hazardous waste.

Alternative BA-2 would eliminate potential human or environmental exposure in the primary transport/exposure pathways (direct contact and bio-uptake in the food web). Alternative BA-2 would not be protective of the future worker involved in the remediation of the vadose zone or the groundwater hot spot. Alternative BA-2 would effectively reduce mobility by minimizing bio-uptake and stormwater runoff. Concentration-based remediation goals in surface soil would not be met.

Alternative BA-3: Remove the Ballast Area Soils, Dispose Off Site, and Backfill to Grade

Alternative BA-3 entails excavation of contaminated soil within the ballast area, off-site shipment and disposal, and backfilling the excavated area to grade. Residual contamination remaining at the ballast area cannot be quantified with the data currently available. Alternative BA-3 will include mapping of contamination to clearly define areas of residual contamination requiring Land Use Controls. Therefore, Land Use Control decisions will be deferred and documented in the Final ROD.

Alternative BA-3 would be protective of human health and the environment. Contaminated soil exceeding RGs present in the ballast area would be permanently removed from the unit reducing human or ecological exposure, bio-uptake and stormwater runoff. Concentration-based remediation goals in surface soil would be met.

In 1996, clean soil was placed over the ballast area to prevent soil erosion and movement of contaminated material. Alternative BA-3 would perform sampling to confirm that the top 6 inches is still clean uncontaminated soil. After confirmation, the clean soil will be removed and segregated to use later as replacement backfill and minimize the amount of soil sent off SRS for disposal. Contaminated soils removed will be disposed of at a commercial RCRA permitted facility, in compliance with the CERCLA Offsite Rule. Because the soils are considered a RCRA hazardous waste and subject to the RCRA Land Disposal Restrictions they will require treatment prior to disposal consistent with the regulations. The soils also may contain PCBs that are regulated under TSCA, and the use of a RCRA hazardous waste landfill will comply with the new requirements for disposal of PCB remediation waste under 761.61. If the soil contains both a listed wasted and PCBs, the soil may be incinerated prior to being land disposed in order to meet the LDRs. The incinerator would be subject to the both the TSCA and RCRA permitting process.

Listed decontamination fluids containing constituents exceeding health based values will be managed as a hazardous waste, consistent with US EPA's Contained-In Policy. (WSRC 1994b) Under this alternative, the decontamination fluids are expected to be below health based values and thus will no longer be subject to RCRA Subtitle C hazardous waste regulations. The decontamination fluids found to be below health based values will be disposed of on unit.

Summary of Alternatives for the Vadose Zone

Alternative VZ-1: No Action

The "no action" option is required by the NCP to serve as the base line for comparison with other remediation methods. Under this alternative, no remedial efforts would be conducted to remove, treat, or otherwise lessen the toxicity, mobility, or affected volume of contaminated media. Institutional controls similar to those that already exist (cable barrier, groundwater monitoring) would not continue under this No Action scenario.

The No Action Alternative would not include maintenance of the existing synthetic membrane cap over the Pits Area. The No Action Alternative would not be protective of human health because of risk due to groundwater ingestion by a hypothetical future resident. Vertical migration of contaminants from the vadose zone to groundwater and further transport within the aquifers would continue unabated.

Alternative VZ-2: Conduct Soil Vapor Extraction (SVE) in Subsurface Soils and Install Asphalt Cover to Provide Infiltration Control

Alternative VZ-2 entails installation of an SVE system in the pit area to remove volatilized contaminants from the soil. An asphalt cover would be placed over the area to minimize infiltration and prevent leaching. Potential system modifications would consist of active and passive enhancements to the SVE system. Active enhancements could include modifications to the SVE configuration. Passive systems such as a barometric pumping system could also be installed. Based upon soil gas surveys and engineering calculations no offgas treatment would be required to maintain VOC emissions within air quality permit limits.

Alternative VZ-2 provides moderate protection of human health and the environment. Upon completion of the characterization to determine the extent of the plume, an appropriate final strategy for the vadose zone and groundwater hot spot will be developed and the final Record of Decision will be submitted for review and approval consistent with the enclosed schedule (Figure 13).

Listed decontamination fluids and purge water containing constituents exceeding health based values will be managed as a hazardous waste, consistent with US EPA's Contained-In Policy (WSRC 1994b). Under this alternative, the decontamination fluids and purge water is expected to be below health based values and thus will no longer be subject to RCRA Subtitle C hazardous waste regulations per Management of Remediation Waste Under RCRA (USEPA 1998). The decontamination fluids and purge water found to be below health based values will be disposed of on unit. The decontamination fluids and purge water above health based values, will be disposed of consistent with the IDW Management Plan in an on–SRS Offsite Rule Approved facility.

Summary of Alternatives for the Groundwater Hot Spot

Alternative GWHS-1: No Action

The "no action" option is required by the NCP to serve as the base line for comparison with other remediation methods. Under this alternative, no remedial efforts would be conducted to remove, treat, or otherwise lessen the toxicity, mobility, or affected volume of contaminated groundwater. Groundwater concentrations would continue to exceed MCLs.

Alternative GWHS-2: Conduct Air Sparging in Groundwater Hot Spot with SVE

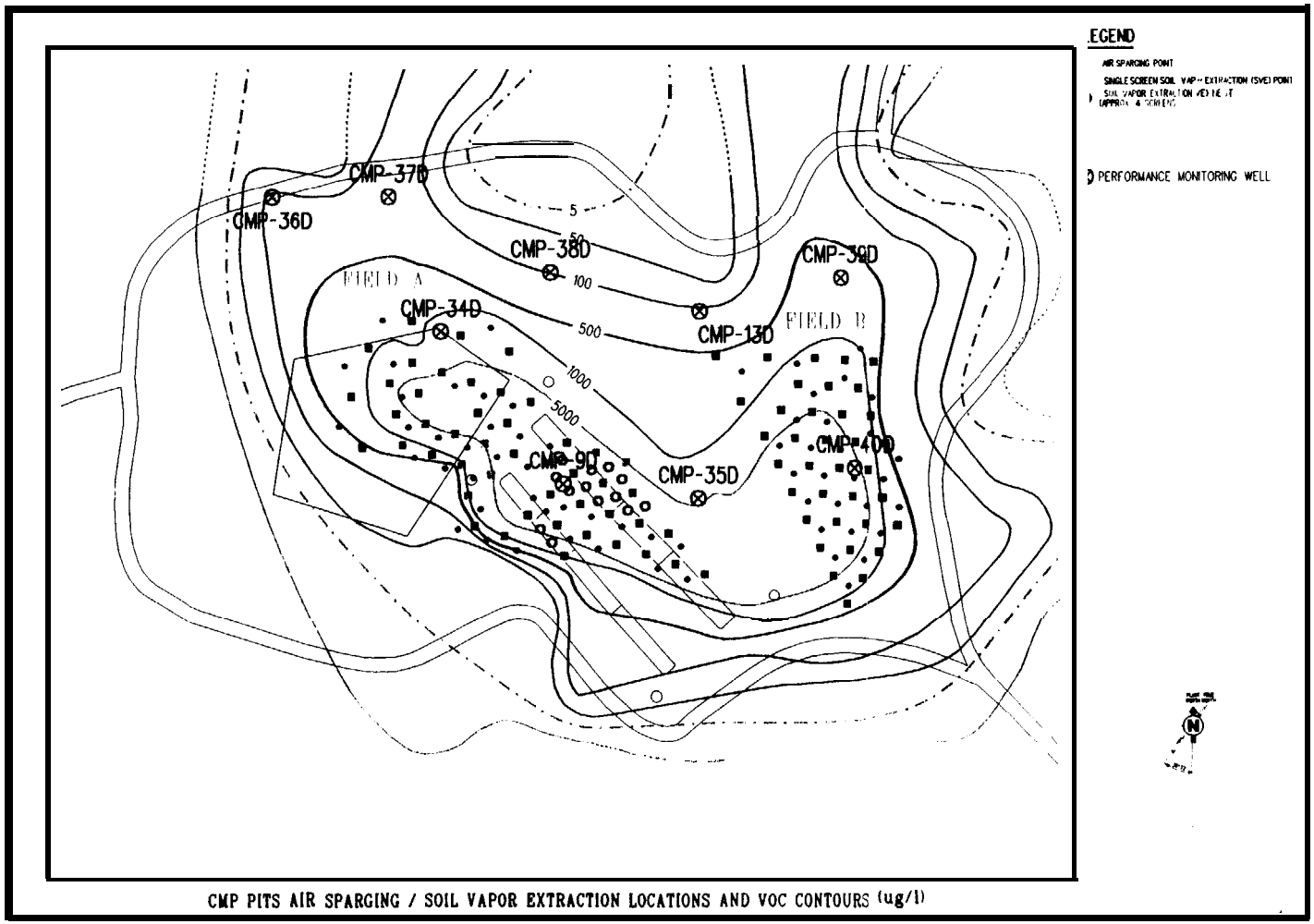
Alternative GWHS-2 entails installation of AS/SVE points in the area of the contamination plume with VOC concentrations greater than 1,000 µg/l. The AS/SVE system will volatilize contaminants in the groundwater and remove them from the soil vapor phase just above the water table surface.

The groundwater remediation would include two AS/SVE systems identified as Field A and Field B. Fields A and B encompass areas approximately 300 to 500 feet wide by 350 to 450 feet long where the aquifer thickness is 25 feet. Figure 11 illustrates the sparge and extraction points with respect to the VOC contours.

AS/SVE was selected to treat the hot spot because the water table aquifer in the area is thought to be relatively low in hydraulic permeability and therefore extractive techniques are likely to be impracticable. However, the permeability of the formation for air is thought to be sufficiently high to make injection of air practicable. The air sparging within the water table aquifer reduces VOC concentrations by promoting the volatilization of the VOCs from the water. SVE is required to remove the vapors from the vadose zone prior to condensation of the vapors.

The air sparging points are expected to have an effective radius of approximately 15 feet. The local spacing of air sparging points and SVE points on Figure 11 is consistent with the anticipated effective area. The overall arrangement of AS/SVE fields is consistent with the demonstrated migration paths of the hot spot VOCs from the source area to the distal portions of the groundwater plume, and the highest known concentrations of VOCs.

Figure 11. CMP Pits AS/SVE Well Locations and VOC Contours (µg/l)



SRS believes that the large number of injection and extraction points will have a rapid and significant impact on the concentrations of VOCs within the water table in the vicinity of the pits and downgradient. In addition, SRS believes that the number and position of the points is appropriate for an interim action, considering that some points may be determined to be not as effective as others, and additional points may be added as needed based upon system operating performance. The AS and SVE points will be installed using direct push technology.

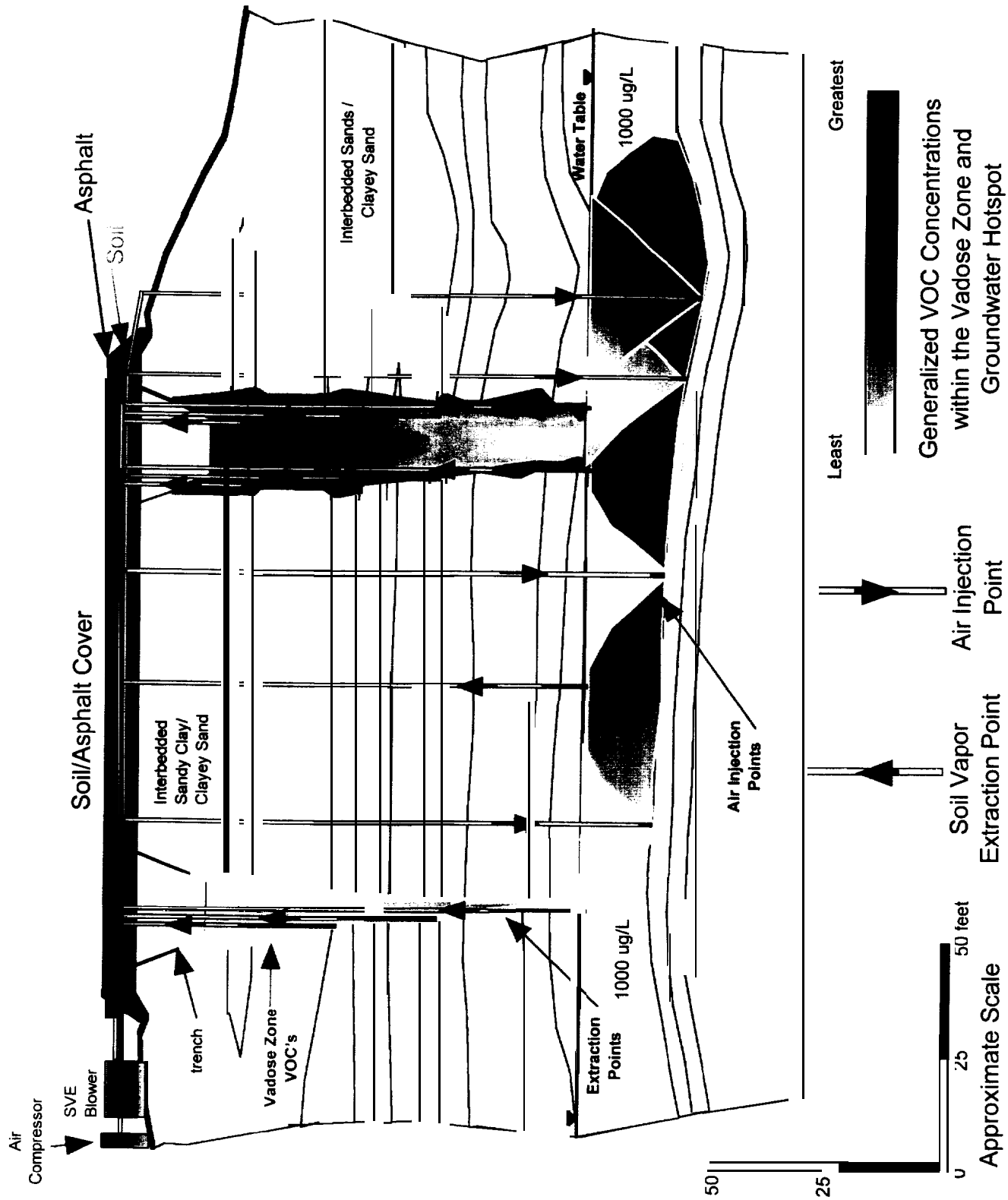
No offgas treatment would be required to maintain VOC emissions within air quality permit limits. Figure 12 illustrates the conceptual design for the CMP Pits groundwater hot spot remediation. Active enhancements to the AS system may include modifications to the injection system configuration or injection of nutrients and methane. Appropriate and necessary underground injection permit approvals will be obtained from SCDHEC prior to injection of nutrients, methane, etc. in subsurface.

Alternative GWHS-2 would provide moderate protection of human health and the environment. The AS/SVE system would be operated until the point of diminishing returns is reached, as agreed to by US DOE, US EPA, and SCDHEC. MCLs for individual constituents (e.g., PCE) may continue to be exceeded in the groundwater at the end of the interim action.

Costs associated with Alternative GWHS-2 include labor and materials to install the SVE and AS points and blower systems. Included in the costs is operation and maintenance for a period of approximately 5 years and administrative controls (i.e., maintenance of existing CMP Pits access controls, groundwater sampling, site maintenance activities, etc.) costs.

Listed decontamination fluids and purge water containing constituents exceeding health based values will be managed as a hazardous waste, consistent with US EPA's Contained-In Policy (WSRC 1994b). Under this alternative, the decontamination fluids and purge water is expected to be below health based values and thus will no longer be subject to RCRA Subtitle C hazardous waste regulations per Management of Remediation Waste Under RCRA (USEPA 1998). The decontamination fluids and purge water found to be below health based values will be disposed of on unit. The decontamination fluids and purge water above health based values, will be disposed of consistent with the IDW Management Plan in and On-SRS Offsite Rule Approved facility.

Figure 12. Conceptual CMP Pits Groundwater Hot Spot Remediation System



Alternative GWHS-3: Remove Groundwater in Hot Spots and Treat using Air Stripping/Carbon Adsorption

Alternative GWHS-3 entails installation of a groundwater extraction system designed to treat the water table zone hot spots. Aquifer pumping tests would be performed during the remedial design phase to select well diameter and spacing, pumping rates, capture zones, and groundwater quality.

Conceptual layout of the system includes approximately six 4-in. diameter wells spaced approximately 150 feet apart within the plume hot spots in the Pits Area. The initial extraction rate is estimated at approximately 16,500 gpd per well for the first 100 days of pumping until a drawdown of approximately 5.8 feet is achieved. The steady-state rate of extraction is estimated at 8,000 gpd per well, or a total of 48,000 gpd from the well array. The number of wells pumped may be reduced as the groundwater extraction system is operated, as the zone of contamination is reduced.

Extracted groundwater would be treated on site using ex situ air stripping, followed by activated carbon adsorption as a polishing step. The conceptual process design involves the use of two air stripping towers, each about 2 feet in diameter and 19 feet tall, filled with packing material. Each tower would have an operating capacity of 90 gpm and 1,550 cfm air flow. Approximately two carbon adsorption units would be used in conjunction with the towers. Depending on the groundwater chemistry, a pretreatment step, such as iron precipitation, may be required to prevent fouling. Once treated, the residual groundwater would be discharged directly to Pen Branch. Residual solids and spent carbon would be disposed of off site at a permitted commercial hazardous waste disposal facility.

Alternative GWHS-3 would be moderately protective of human health and the environment. Groundwater contamination within the water table zone would be reduced and the extracted contaminants would be permanently removed. Groundwater extraction is a well-established and proven technology for removal of VOCs at other hazardous waste sites.

Commercial vendors are readily available for treatment and disposal. However, the effectiveness of this GWHS-3 is highly dependent upon the formation permeability. Formation permeability is thought to be relatively low and may cause GWHS-3 to be impracticable to implement.

Costs associated with Alternative GWHS-3 include labor and materials for the installation of groundwater extraction wells, pumps, and air stripping/carbon adsorption treatment system, and the operation and maintenance of those extraction and treatment systems for a period of 5 years. Costs associated with administrative controls (maintenance of existing CMP Pits access controls, sampling of all media, site maintenance activities, etc.) are included for a period of 5 years.

VIII. SUMMARY OF COMPARATIVE ANALYSIS OF THE ALTERNATIVES

Evaluation Criteria

Nine criteria, derived from the statutory requirements of CERCLA Section 121, have been established by the NCP. In selecting the preferred alternative, the CERCLA criteria were used to evaluate the alternatives developed in the CMS/FS (WSRC 1998a). The criteria are as follows:

- ***Overall Protection of Human Health and the Environment***
- ***Compliance with ARARs***
- ***Long-Term Effectiveness and Permanence***
- ***Reduction of Toxicity, Mobility, or Volume***
- ***Short-Term Effectiveness***
- ***Implementability***
- ***Cost***
- ***State Acceptance***
- ***Community Acceptance***

In selecting the preferred alternative, the above criteria are used to evaluate the alternatives developed. Seven of the criteria were used to evaluate all the alternatives, based on human health and environmental protection, cost, feasibility, and implementability issues. Comparative evaluations of all the remedial action alternatives against these seven criteria are detailed in the IAPP (WSRC 1999) and briefly summarized in Tables 4, 5 and 6. The preferred alternative was further evaluated based on the final two criteria: state acceptance and community acceptance.

Comparative Alternative Analysis

Alternative BA-3, Excavation/Disposal of Ballast Area soil, will be protective of human health and the environment by removing and treating PCB and pesticide contaminated soil. Alternative BA-2 was not selected as the preferred alternative because it did not meet PCB ARARs. Alternative BA-3 meets interim remedial goals.

Alternative VZ-2, In Situ SVE and Asphalt Cover, will be protective of human health and the environment by removing VOC contamination from the vadose zone. Alternative VZ-2 was selected as the preferred alternative because is effectively prevents leaching of contamination to the groundwater.

Alternative GWHS-2, Air Sparging with SVE, will be protective of human health and the environment by removing VOC contamination from the groundwater hot spot. Alternative GWHS-3 was not selected as the preferred alternative because it was not as efficient in removing VOC contamination.

State Acceptance

State of South Carolina and US EPA concurrence with the proposed interim action, detailed in Section IX, has been received. The alternatives are effective in protecting human health, are readily implementable, and are reasonably priced for the benefit received.

Community Acceptance

Community acceptance of the preferred alternative is assessed by giving the public an opportunity to comment on the IAPP during the March 15, 1999 to April 13, 1999 public comment period. The IAPP was also presented to the SRS Citizen Advisory Board in an open public meeting on March 22 and 23, 1999. No negative comments were received from the public. Public comments concerning the proposed remedy are addressed in the Responsiveness Summary of this IROD.

TABLE 4. SUMMARY OF THE BALLAST AREA ALTERNATIVE SCREENING

Corrective Measure/Remedial Action Alternatives for the Ballast Area Surface Soils (includes Pits Area Perimeter Surface Soils)			
Criterion	**Alternative BA-1 No Action**	**Alternative BA-2 Install RCRA Cap**	**Alternative BA-3 Excavation/Disposal**
Overall Protectiveness			
Human Health	Not protective of future industrial worker	Protective	Protective
Environment	Not protective	Protective	Protective
Control of Source Release	No control; bio-uptake to food web; leaching to groundwater would continue	Moderate control; bio-uptake would be reduced by greater root zone	High control; bio-uptake eliminated by removing source
Effectiveness in Meeting Remedial Action Objectives			
Prevent Direct Soil Contact of Future Industrial Workers to pesticides and PCBs in soil	Not effective	Effective, dependent on maintenance of cap	Effective, contamted soil would be removed
Prevent Exposure of Terrestrial Predators to Soils and Through Bio-uptake Above an Ecological Hazard Quotient of Unity	Not effective	Effective, dependent on maintenance of cap	Effective, contaminated soil would be removed
Effectiveness in Meeting Remediation Goals	Goals not met	Goals not met	Goals met
Compliance With ARARs			
Chemical-specific	40CFR 761 – TSCA, Disposal of PCBs High Occupancy would not be met	40CFR 761 – TSCA, Disposal of PCBs High Occupancy would not be met	Meets ARARs, TSCA, Disposal of PCBs High Occupancy will be met without further conditions.
Location-specific	Not applicable	Not applicable	Not applicable
Action-specific	No action-specific ARARs	Meets ARARs SC Fugitive Particulate regulations apply to dust emissions; NESHAPs; RCRA requirements under 40CFR 264 for capping and 40 CFR 268 for land disposal restrictions.	Meets ARARs, TSCA regulations apply to treatment of PCB-contaminted soil, FIFRA regulations apply to treatment of pesticide-contaminated soil; RCRA regulations for hazardous waste generation, characterization, transportation, treatment, storage, and disposal apply to the off-site disposal of wastes (including land disposal restrictions); Decontamination fluids above health based values will be subject to RCRA Subtitle C requirements, Decontamination fluids below health based values will be disposed of on-unit.

TABLE 4. SUMMARY OF THE BALLAST AREA ALTERNATIVE SCREENING (CONTINUED)

Corrective Measure/Remedial Action Alternatives for the Ballast Area Surface Soils (includes Pits Area Perimeter Surface Soils)			
Criterion	**Alternative BA-1 No Action**	**Alternative BA-2 Install RCRA Cap**	**Alternative BA-3 Excavation/Disposal**
Long-Term Effectiveness and Permanence			
Magnitude of residual risks	Ballast Area would be a continued source of risk to the environment; residual risks to future industrial worker	Residual risks reduced over current conditions as long as cap remains intact	Residual risks to future resident significantly reduced. Residual risks would be minimized by Land Use Controls as necessary that will be addressed under a final ROD.
Adequacy of controls	Not adequately protective of future worker or environment	Adequate as long as institutional controls and cap maintenance are continued	Adequate
Permanence	Not permanent	Permanent cap as long as controls are maintained; leaves contaminated soil on site	Permanent
Reduction of Toxicity, Mobility, or Volume			
Treatment process used and materials treated	No treatment	No treatment	PCB and Pesticide contaminated soil will be treated (incinerated)
Degree of expected reduction in toxicity, mobility, or volume	Not Applicable	Capping would reduce contaminant mobility in soil as long as cap integrity is maintained	Excavation would remove soil contamination
Amount of hazardous materials destroyed or treated	Not Applicable	None; would minimize bio-uptake in Ballast Area	Would treat 1300 yd^3 of Ballast Area soil and destroy 8.8 kg of contaminants
Degree to which treatment is irreversible	Not Applicable	No treatment; cap could be removed in future to reverse this action	Contaminant removal and treatment are irreversible
Types and quantities of residuals remaining after treatment	Not Applicable	Sampling derived waste (minor volumes)	Sampling derived waste (minor volumes)
Short-term effectiveness			
Risks to workers	Exceeds human health (future industrial worker) RGs	Moderate; potential risk due to inhalation or direct contact during cap placement; OSHA and applicable work safety and health regulations will be followed	Moderate; potential risk due to inhalation or direct contact during soil excavation; disturbance and handling of contaminated soil; OSHA and applicable work safety and health regulations will be followed
Risk to community	None	Negligible; no public areas near unit	Minimal; off-site transport of contaminated soil
Risk to environment	Exceeds environment RGs	Negligible; potential risk due to soil erosion during cap placement	Moderate; potential risk due to soil erosion during Ballast Area excavation; spills during off-site transport and disposal of soils
Time to achieve remedial action objectives	0 months	3 months	4 months

TABLE 4. SUMMARY OF THE BALLAST AREA ALTERNATIVE SCREENING (CONTINUED)

Corrective Measure/Remedial Action Alternatives for the Ballast Area Surface Soils (includes Pits Area Perimeter Surface Soils)			
Criterion	**Alternative BA-1 No Action**	**Alternative BA-2 Install RCRA Cap**	**Alternative BA-3 Excavation/Disposal**
Implementability			
Availability of materials, equipment, contractors	Not applicable	Readily available	Readily available
Ability to construct and operate the technology	Not applicable	Difficult to construct	Well demonstrated and commonly used technologies
Ability to obtain permits/approvals from other agencies	Readily implementable; 5-year remedy reviews required	Readily implementable; 5-year remedy reviews required	Implementable; off-site disposal facility already permitted
Ability to monitor effectiveness of remedy	Not applicable	Readily implementable; surface water and biota monitoring required	Implementable; soil screening required during excavation
Ease of undertaking additional actions (if required)	Easy	Not compatible; capping would preclude future soil removal or treatment (AS/SVE)	Compatible
Time to implement	0 months	3 months	4 months
Cost			
Present Worth Capital Cost	$0	$3,212,000	$2,866,000
Present Worth O&M Cost	$50,000	$261,000	$0
Total Present Worth Cost	$50,000	$3,473,000	$2,866,000

TABLE 5. SUMMARY OF THE VADOSE ZONE ALTERNATIVE SCREENING

	Corrective Measure/Remedial Action Alternatives for the Pits Area Subsurface Soils	
Criterion	**Alternative VZ-1 No Action**	**Alternative VZ-2 In Situ Soil Vapor Extraction and Asphalt Cover**
Overall Protectiveness		
Human Health	Not protective of leaching to groundwater	Protective
Environment	Not protective of leaching to groundwater	Protective
Effectiveness in Meeting Remedial Action Objectives		
Prevent Leaching to groundwater	Not effective	Effective; contaminants in soils would be removed
Effectiveness in Meeting Remediation Goals	Goals not met	At end of Interim Action VOCs in soil reduced 100-fold
Compliance With ARARs		
Chemical-specific	None	Meets ARARs. SC Air Pollution Regulations and Standards, applied to Construction and Operating Permit, Visible Emissions, and Ambient and Toxic Air Pollutant Requirements
Location-specific	None	Meets ARARs. Measures required to prevent impact to neighboring wetlands (Pen Branch)
Action-specific	None	Meets ARARs. SC Toxic Air Pollutant regulations apply to air emissions; SC Fugitive Particulate regulations apply to dust emissions; SC Construction and Operating permits apply to well construction; RCRA LDRs for all PPE and treatment residues contaminated above health based levels
Long-Term Effectiveness and Permanence		
Magnitude of residual risks	CMP Pits waste unit would be a continued source of contamination to the environment; residual risks to future resident as result of groundwater ingestion	Residual risks reduced over current conditions; soil contamination reduced 100-fold.
Adequacy of controls	Not adequately protective of future resident or environment	Adequate as long as institutional controls are continued
Permanence	Not permanent	Not permanent
Reduction of Toxicity, Mobility, or Volume		
Treatment process used and materials treated	None	In situ SVE of Pits Area Soils; system enhancements such as barometric pumping and methane injection
Degree of expected reduction in toxicity, mobility, or volume	None	SVE would reduce volume (mass) of contaminants in Pits Area soil, significantly reduce mobility to groundwater and reduce discharge to air through treatment, asphalt cover will reduce mobility
Amount of hazardous materials destroyed or treated	None	Would treat 9,900 yd^3 of Pits Area soil and reduce volume (mass) by 14,240 kg
Degree to which treatment is irreversible	No treatment	Contaminant removal and treatment are irreversible
Types and quantities of residuals remaining after treatment	None	SVE air emissions (300 scfm); condensate (1 gpd); soil cuttings (30 yd^3)

Table 5. Summary of the Vadose Zone alternative screening (Continued)

	Corrective Measure/Remedial Action Alternatives for the Pits Area Subsurface Soils	
Criterion	**Alternative VZ-1 No Action**	**Alternative VZ-2 In Situ Soil Vapor Extraction and Asphalt Cover**
Short-term effectiveness		
Risks to workers	None	Minimal; potential risk due to inhalation or direct contact during extractiopoint installation; potential vapor inhalation during SVE system operation; OSHA and applicable work safety and health regulations will be followed
Risk to community	None	Negligible; no public areas near unit
Risk to environment	None	Minimal; potential risk during direct push installation of AS and SVE points; permitted air emissions
Time to achieve remedial action objectives	0 months	72 months
Implementabilty		
Availability of materials, equipment, contractors	Not applicable	Readily available
Ability to construct and operate the technology	Not applicable	Straightforward, commonly used technologies
Ability to obtain permits/approvals from other agencies	Readily implementable; 5-year remedy reviews required	Implementable; air emissions permit required; 5-year remedy reviews required
Ability to monitor effectiveness of remedy	Not applicable	Readily implementable; groundwater monitoring required; air quality monitoring of SVE emissions required
Ease of undertaking additional actions (if required)	Not incompatible	Not incompatible; SVE wells would penetrate existing cap requiring placement of an asphalt cover over the site
Time to implement	0 months	12 months construct/test
Cost		
Present Worth Capital Cost	$0	$674,000
Present Worth O&M Cost	$50,000	$469,000
Total Present Worth Cost	$50,000	$1,143,000

TABLE 6. SUMMARY OF THE GROUNDWATER HOT SPOT ALTERNATIVE SCREENING

	Corrective Measure/Remedial Action Alternatives for the Pits Area Groundwater Hot Spot		
Criterion	**Alternative GWHS-1 No Action**	**Alternative GWHS-2 Air Sparging with SVE**	**Alternative GWHS-3 Pump & Treat**
Overall Protectiveness			
Human Health	Not protective of groundwater migration from source area toward Pen Branch	Protective	Protective
Environment	Not protective	Protective	Protective
Effectiveness in Meeting Remedial Action Objectives			
Prevent migration in groundwater	Not effective	Moderately effective; contaminants in groundwater hot spot removed	Moderately effective; contaminated groundwater hot spot would be removed and hydraulically contained
Reduce toxicity, mobility, or volume of COCs through treatment	Not effective	Effective; 99.5% contaminants in groundwater hot spot would be removed	Effective; 99.5% contaminants in groundwater hot spot would be removed and treated
Effectiveness in Meeting Remediation Goals	Goals not met	Effective in reducing VOC concentration	Effective in reducing VOC concentration if formation permeabilities are relatively high
Compliance With ARARs			
Chemical-specific	Would not meet MCLs	Would not meet MCLs during Interim Action, would require Interim Measures waiver	Would not meet MCLs during Interim Action, would require Interim Measures waiver
Location-specific	Not applicable	Meets ARARs. Measures required to prevent impact to neighboring wetlands (Pen Branch)	Meets ARARs. Measures required to prevent impact to neighboring wetlands (Pen Branch)
Action-specific	No action-specific ARARs	SC Toxic Air Pollutant regulations apply to air emissions; SC Fugitive Particulate regulations apply to dust emissions; SC Construction and Operating permits apply to well construction; LDRs for all PPE and treatment residues found to be above health based levels	NPDES regulations apply to discharge of effluent from the groundwater treatment system; plus the same action-specific ARARs as Alternative GWHS-2 apply
Long-Term Effectiveness and Permanence			
Magnitude of residual risks	Groundwater plume would be a continued source of contaminant migration to Pen Branch; residual risks to future resident as a result of groundwater ingestion	Residual risks reduced; groundwater contamination reduced 100-fold	Residual risks reduced; groundwater contamination reduced 100-fold
Adequacy of controls	Not adequately protective of future resident or environment	Not adequately protective of future resident or environment	Not adequately protective of future resident or environment
Permanence	Not permanent	Permanently removes contaminants in groundwater	Permanently removes contaminants in groundwater
Reduction of Toxicity, Mobility, or Volume			
Treatment process used and materials treated	No active treatment	In situ AS of groundwater; no offgas treatment required.	Extraction of groundwater with air stripping/carbon adsorption.
Degree of expected reduction in toxicity, mobility, or volume	None	Air sparging would reduce volume (mass) of contaminants in groundwater hot spot	Pumping with treatment by air stripping/carbon adsorption would reduce volume (mass) of contaminants in groundwater hot spot

Table 6. Summary of the Groundwater Hot Spot alternative screening (Continued)

	Corrective Measure/Remedial Action Alternatives for the Pits Area Groundwater Hot Spot		
Criterion	Alternative GW-1 No Action	Alternative GWHS-2 Air Sparging with SVE	Alternative GWHS-3 Pump & Treat
Reduction of Toxicity, Mobility, or Volume (continued)			
Amount of hazardous materials destroyed or treated	None	Would treat 10 million gal of groundwater insitu and reduce volume (mass) by 130 kg	Would treat 18 million gal of groundwater per year, reduce volume (mass) by 130 kg
Degree to which treatment is irreversible	No treatment	Contaminant removal and treatment are irreversible	Contaminant removal and treatment are irreversible
Types and quantities of residuals remaining after treatment	None	Air emissions (450 scfm); condensate (2.5 gpd); soil cuttings (162 yd^3); purge water (1,000 gal)	Soil cuttings (172 yd^3); purge water (1,000 gal); treated effluent (48,000 gpd); spent carbon (52 lb/yr)
Short-term effectiveness			
Risks to workers	None	Minimal; potential risk from installation of AS and SVE points using direct push technology; potential vapor inhalation during sparging system operation; OSHA and applicable work safety and health regulations will be followed	Minimal; potential risk due to inhalation or direct contact during well drilling; potential vapor inhalation during air stripping system operation; OSHA and applicable work safety and health regulations will be followed
Risk to community	None	Negligible; no public areas near unit; off-site transport of spent carbon	Negligible; no public areas near unit; off-site transport of spent carbon
Risk to environment	None	Minimal; potential risk during injection/extraction point installation; permitted air emissions	Moderate; potential risk during well drilling; permitted air emissions on site (sparging offgas and air stripping); permitted effluent discharges to Pen Branch
Time to achieve remedial action objectives	0 months	72 months	209 months (based upon relatively high formation permeabilities)
Implementabilty			
Availability of materials, equipment, contractors	Not applicable	Readily available	Readily available
Ability to construct and operate the technology	Not applicable	Straightforward, commonly used technologies	Well demonstrated and commonly used technologies; pump testing needed for groundwater extraction design
Ability to obtain permits/approvals from other agencies	Readily implementable; 5-year remedy reviews required	Implementable; air emissions permit required; 5-year remedy reviews required	Implementable; air emissions permit and NPDES discharge permit required; 5-year remedy reviews required
Ability to monitor effectiveness of remedy	Not applicable	Readily implementable; groundwater monitoring required; air quality monitoring of sparging offgas emissions required	Implementable; groundwater monitoring required; water quality monitoring of air stripping effluent
Ease of undertaking additional actions (if required)	Not incompatible	Not incompatible; some AS wells would penetrate existing cap	Not incompatible; future groundwater actions may require abandonment of extraction/ treatment system; some wells would penetrate existing cap
Time to implement	0 months	12 months construct/test	5 months construct

Table 6. Summary of the Groundwater Hot Spot alternative screening (Continued)

	Corrective Measure/Remedial Action Alternatives for the Pits Area Groundwater Hot Spot		
Criterion	**Alternative GW-1 No Action**	**Alternative GWHS-2 Air Sparging with SVE**	**Alternative GWHS-3 Pump & Treat**
Cost			
Present Worth Capital Cost	$0	$2,432,000	$3,121,000
Present Worth O&M Cost	$50,000	$786,000	$1,190,000
Total Present Worth Cost	$50,000	$3,218,000	$4,311,000

IX. THE SELECTED INTERIM REMEDY

The recommended RGs are protective of human health and the environment and are based upon the long-term strategy for the CMP Pits area. Although the CMP Pits area is located outside of the Industrial Use Zone (defined by Figure 3-3 of the FFA Implementation Plan), it is anticipated that the CMP Pits area will be a limited use area with restrictions similar to an industrial use zone due to the expected final RAOs to maintain the existing conditions at the CMP Pits (i.e., previous actions included source removal and placement of a cover over residual contamination). Unrestricted residential land use of the CMP Pits area would result in an unnecessary increase in human health risk due to excavation in the vadose zone and disturbance of the existing protective cap and drainage systems previously placed over the disposal pits. Restricting land use and institutional controls are expected to be a portion of the final remedy to provide continued protection to human health and the environment from exposure to contaminants and to prevent destruction of the previous remedial action. Although, this area has not been designated a future industrial use area, its proximity to other industrial areas and its location at the site interior at considerable distance from any site boundaries further supports consideration of future industrial use of this area. The evaluated alternatives and estimated present worth costs for the ballast area, vadose zone and groundwater hot spot are listed in Table 7. This IROD recommends the following remedial actions:

Ballast Area: Excavate the Ballast Area Soils, Dispose Off Site, and Backfill to Grade

SRS proposes to remove Aroclor-1248 and pesticide contaminated soils. Contaminated soil in the ballast area with concentrations greater than the RGs listed in Table 2 will be removed and disposed of in an approved facility (e.g., Deepark, Texas or Port Arthur, Texas). Contaminated soil removed will be considered listed waste and subject to RCRA Land Disposal Restrictions. As such, the contaminated soil will go to a RCRA Subtitle C facility and treated prior to disposal in accordance with Land Disposal Restrictions. After soil removal, the area will be sampled and samples analyzed for the COCs to confirm that the COC concentrations meet the RGs. After confirmation, the excavated area will be backfilled to grade. Estimated present worth costs associated with Alternative BA-3 are $2,866,000.

TABLE 7. SOIL AND GROUNDWATER INTERIM ACTION ALTERNATIVES AND COSTS

	ALTERNATIVES	COST*
	Ballast Area	
BA-1	No Action	$50,000
BA-2	Install RCRA Cap over the Ballast Area	$3,473,000
BA-3	**Remove the Ballast Area Soils, Dispose Off Site, and Backfill to Grade ****	**$2,866,000**
	Vadose Zone	
VZ-1	No Action	$50,000
VZ-2	**Conduct Soil Vapor Extraction and Install Asphalt Cover ****	**$1,143,000**
	Groundwater Hot Spot	
GWHS-1	No Action	$50,000
GWHS-2	**Conduct Air Sparging in Groundwater with Soil Vapor Extraction****	**$3,218,000**
GWHS-3	Remove Groundwater and Treat Using Air Stripping/Carbon Adsorption	$4,311,000
	TOTAL COST OF PREFERRED ALTERNATIVES	**$7,227,000**

***Five year capital, operations and maintenance period**
****Preferred alternative**

The recommended RG for heptachlor is therefore based upon the industrial scenario and is protective of the industrial worker ($1x10^{-6}$ risk). The RG for Aroclor-1248 is an action level based upon promulgated clean up standards (40CFR Part 761 Disposal of PCB; Final Rule) and which is also protective of the industrial worker. The RGs for dieldrin, endrin, p,p'-DDD, p,p'-DDE, and p,p'-DDT are based upon ecological risks.

Consistent with US EPA's Contained-In Policy, listed decontamination fluids containing constituents exceeding health based values will be managed as a hazardous waste (WSRC 1994b). Under this alternative, the decontamination fluids are expected to be below health based values and thus will no longer be subject to RCRA Subtitle C hazardous waste regulations. The decontamination fluids found to be below health based values will be disposed of on unit. Any decontamination fluids found to be above health based values will be sent to either the M-1 Air Stripper or the Effluent Treatment Facility at the SRS, depending on the constituents found in the fluids. Both of these facilities are CERCLA Offsite Rule Approved.

Vadose Zone: Conduct Soil Vapor Extraction in Subsurface Soils and Install Asphalt Cover to Provide Infiltration Control

An early remedial action is warranted to eliminate the continued release of VOCs to the groundwater. Figure 11 illustrates the proposed interim remedial action for the vadose zone and groundwater hot spot. The vadose zone will be treated via nested SVE points in the contamination area within and adjacent to the original chemical pits 18.3G and 18.1G. Nests of extraction points will consist of three to four individual extraction points with overlapping 10 to 20 foot screen intervals. Screen intervals will be positioned in such a fashion as to concentrate in the areas of probable highest permeability (i.e., stratigraphic intervals consisting principally of sand). Vadose zone extraction points are expected to have an area of influence of over 50 feet in diameter. Therefore, coverage in the vicinity of the 18.3G and 18. 1G pit boundaries is significant, which provides a high degree of certainty that the extraction system will be efficient and effective.

An asphalt cover will be installed over the vegetative layer of the existing cap. The cover will provide infiltration control in the area of the vadose zone extraction system, considering that the existing cap will be penetrated by injection and extraction points. The installation of the asphalt cover is consistent with the interim remedial action objectives. Estimated present worth costs associated with Alternative VZ-2 are $1,143,000.

Consistent with US EPA's Contained-In Policy, listed decontamination fluids and purge water containing constituents exceeding health based values will be managed as a hazardous waste (WSRC 1994b). Under this alternative, the decontamination fluids are expected to be below health based values and thus will no longer be subject to RCRA Subtitle C hazardous waste regulations. The decontamination fluids and purge water found to be below health based values will be disposed of on unit. Any decontamination fluids or purge water found to be above health based values will be sent to either the M-1 Air Stripper or the Effluent Treatment Facility at the SRS, depending on the constituents found in the fluids. Both of these facilities are CERCLA Offsite Rule Approved.

Groundwater Hot Spot - Alternative GWHS-2: Conduct Air Sparging in Groundwater Hot Spot with Soil Vapor Extraction

The groundwater hot spot treatment consists of two AS areas in the water table (Fields A and B), coupled with SVE in the vadose zone just above the water table. AS/SVE in the groundwater hot spot will volatilize the contaminants in the groundwater and remove them from the soil vapor phase. The air sparging within the water table aquifer reduces VOC concentrations by promoting the volatilization of the VOCs from the water. SVE is required to remove the vapors from the vadose zone prior to condensation of the vapors. AS in conjunction with SVE increases the volatility of the VOCs in the vadose zone and ventilates the vadose zone to facilitate removal of volatilized VOCs.

The air sparging points are expected to have an effective radius of approximately 15 feet. The local spacing of air sparging points and SVE points on Figure 11 is consistent with the anticipated effective area. The overall arrangement of AS/SVE fields is consistent with the demonstrated migration paths of the hot spot VOCs from the source area to the distal portions of the groundwater plume, and the highest known concentrations of VOCs. The large number of injection and extraction points will have a rapid and significant impact on the concentrations of VOCs within the water table in the vicinity of the pits and downgradient. In addition, the number and position of the points is appropriate for an interim action, considering that some points may be determined not to be as effective as others, and additional points may be added as needed based upon system operating performance. This alternative will not meet the MCLs because it is an interim action intended to only address the highly contaminated portion of the groundwater plume, therefore an ARAR waiver under §300.430(f)(1)(ii)(C)(*1*) will be required. Estimated present worth costs associated with Alternative GWHS-2 are $3,218,000.

Consistent with US EPA's Contained-In Policy, listed decontamination fluids and purge water containing constituents exceeding health based values will be managed as a hazardous waste (WSRC 1994b). Under this alternative, the decontamination fluids are expected to be below health based values and thus will no longer be subject to RCRA Subtitle C hazardous waste regulations. The decontamination fluids and purge water found to be below health based values will be disposed of on unit. Any decontamination fluids or purge water found to be above health based values will be sent to either the M-1 Air Stripper or the Effluent Treatment Facility at the SRS, depending on the constituents found in the fluids. Both of these facilities are CERCLA Offsite Rule Approved.

Performance Monitoring

Performance monitoring of the Air Sparging/Soil Vapor (AS/SVE) interim action treatment system for the vadose zone and groundwater hot spot will be performed monthly during startup and quarterly during normal operations. The information obtained during performance monitoring will be evaluated and reported annually.

Performance reviews will be conducted during the interim action to make modifications to design parameters, well locations, injection processes, etc. Data gathered from the installation of additional monitoring wells at the CMP Pits will also be used to assist in the remediation process refinement. It is anticipated that the AS/SVE system will operate to remediate the vadose zone and groundwater hot spot until the system has completed the remediation or reached the point of diminishing returns.

The point of diminishing returns is the point at which the effectiveness of active remediation is equivalent to the effectiveness of passive remediation. Remediation effectiveness will be determined by evaluating the (1) soil gas concentration, (2) rate of mass removal, (3) system response following restart, and (4) cost of operation. An assessment of these combined criteria will be used to recommend ceasing operations. A monthly extraction load of $1/10^{th}$ of the initial startup monthly extraction load is considered an indication that the system is approaching the point of diminishing returns. System modifications would consist of active and passive enhancements to the Interim Action system.

The Vadose Zone/Sparging interim RAOs will be evaluated by monitoring the groundwater contamination at the performance monitoring wells below the vadose zone and beyond the 1000 µg/l contour as indicated on Figure 11. The effectiveness of the AS/SVE will be used to develop a final remedy.

Land Use Controls

Residual contamination at the ballast area following the removal action cannot be quantified with the data currently available. Additionally, the ballast area will also be impacted by the AS/SVE equipment being installed for the interim action for the groundwater hot spot. Therefore, Land Use Control decisions will be deferred and documented in the final ROD. The removal action at the ballast area will include mapping of residual contamination to clearly define areas requiring Land Use Controls.

X. STATUTORY DETERMINATIONS

Based on the CMP Pits RCRA Facility Investigation/Remedial Investigation (RFI/RI) report and the baseline risk assessment (BRA), the CMP Pits OU poses a risk to human health and the environment.

This interim action is protective of human health and the environment, complies with Federal and State applicable or relevant and appropriate requirements for this limited-scope action, and is cost-effective. Although this interim action is not intended to fully address the statutory mandate for permanence and treatment to the maximum extent practicable, this interim action utilizes treatment and thus is in furtherance of that statutory mandate. Because this action does not constitute the final remedy for the CMP Pits OU, the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element, although partially addressed in this remedy, will be addressed by the final response action. Subsequent actions are planned to address fully the threats posed by the conditions at the CMP Pits OU. Because this remedy will result in hazardous substances remaining on site above health-based levels, a review will be conducted to ensure that the remedy continues to provide adequate protection of human health and the environment within five years after. commencement of the remedial action. Because this is an interim action ROD, review of this site and of this remedy will be continuing as final remedial alternatives for the CMP Pits OU are developed.

XI. EXPLANATION OF SIGNIFICANT CHANGES

The IAPP provided for involvement with the community through a document review process and a public comment period. The IAPP was presented to the SRS Citizen Advisory Board in an open public meeting on March 22 and 23, 1999. No significant changes to the selected remedy resulted from the public comments. Comments received during the 30-day public comment period March 15 – April 13, 1999 are addressed in Appendix A of this IROD.

Ballast Area RGs allow residual contamination to remain above the 10^{-6} residential risk level. It is expected that residual contamination remaining at the ballast area after the removal action will require Land Use Controls. With the data currently available, the area requiring Land Use Controls cannot be clearly defined. Therefore, the removal action at the ballast area will include mapping of contamination to clearly define areas of residual contamination requiring Land Use Controls. Land Use Control decisions will be deferred and documented in the Final ROD.

XII. RESPONSIVENESS SUMMARY

The Responsiveness Summary is included as Appendix A of this document.

XIII. POST-IROD DOCUMENT SCHEDULE

An interim action implementation schedule is illustrated in Figure 13. A signed IROD is scheduled for August 16, 1999. The interim Corrective Measures Implementation/Remedial Design/Remedial Design Report/Remedial Action Work Plan will be submitted on May 10, 1999. Construction of the interim action is scheduled to begin by December 10, 1999.

Functional and startup testing will be performed during the AS/SVE system construction/startup. AS/SVE system optimization (3-4 months) will be performed during the initial phase of operation and prior to measuring system performance. System optimization is required to establish baseline parameters (i.e., removal rates, etc.) and develop operating procedures.

Concurrent with the interim action, a final action is scheduled. A detailed alternative screening process will be conducted for the final action in the CMS/FS. The CMS/FS will be scoped after the extent of the distal portion of the plume is known and is planned to be submitted on 3/31/00. A Statement of Basis/Proposed Plan is planned to be submitted on 11/3/00. Upon approval of the SB/PP, the public comment period will commence and the final ROD will be submitted within fourteen days after the completion of the public comment period.

This schedule is consistent with the approved operable unit strategy for the CMP Pits. It provides the shortest path forward to a final ROD for this unit as agreed to by the three parties. The extent of the distal plume is currently being characterized as indicated in the schedule. A decision document will be developed based on the characterization results and a decision meeting between the three parties is scheduled for September 1999. At this time, it will be determined if a final action can be determined for the distal plume or whether or not additional information is needed, such as the effectiveness of source control at the unit. If necessary, the operable unit strategy would be revised as a result of this decision meeting.

Figure 13. Integrated Interim and Final Action Implementation Schedule

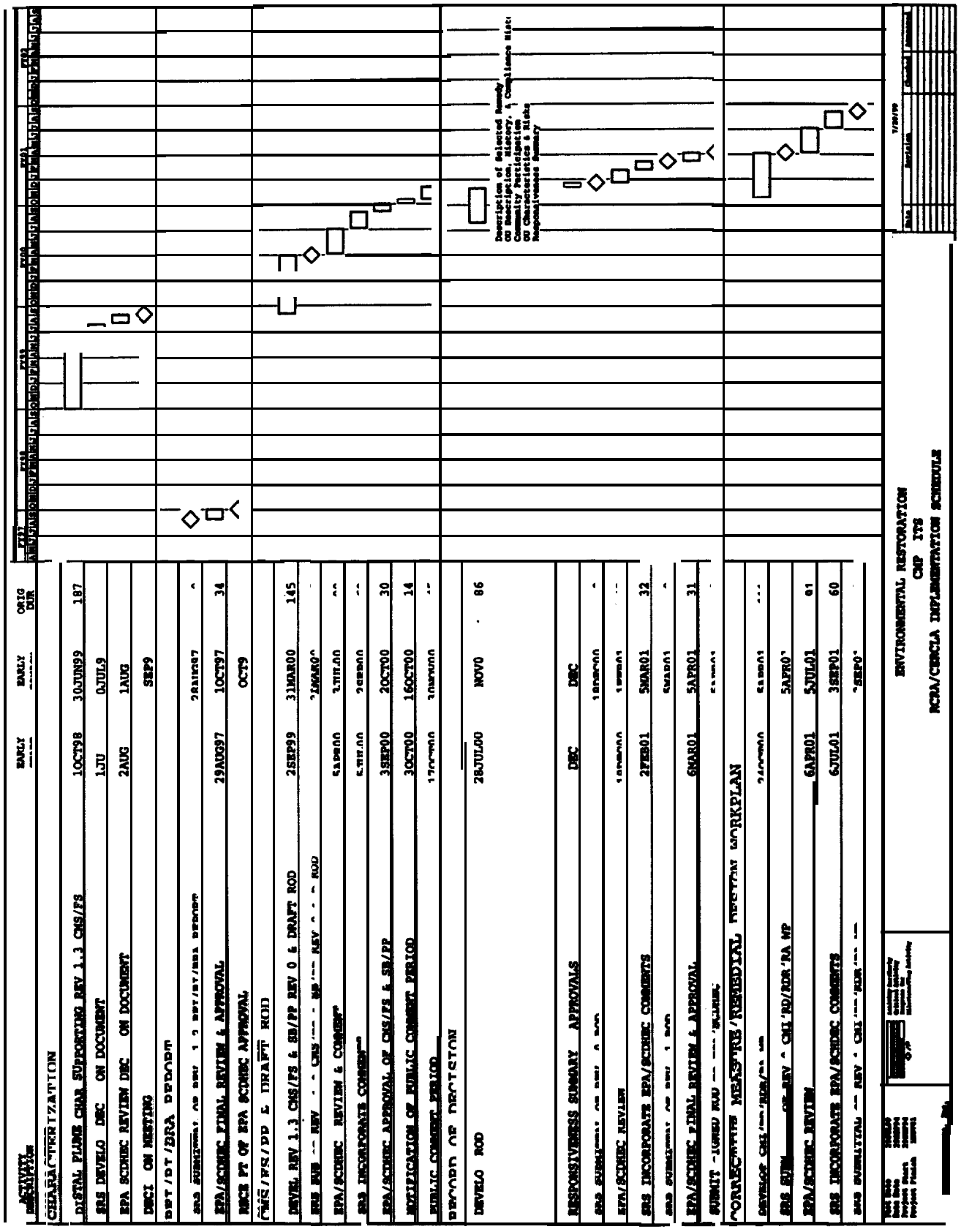


Figure 13. Integrated Interim and Final Action Implementation Schedule (continued)

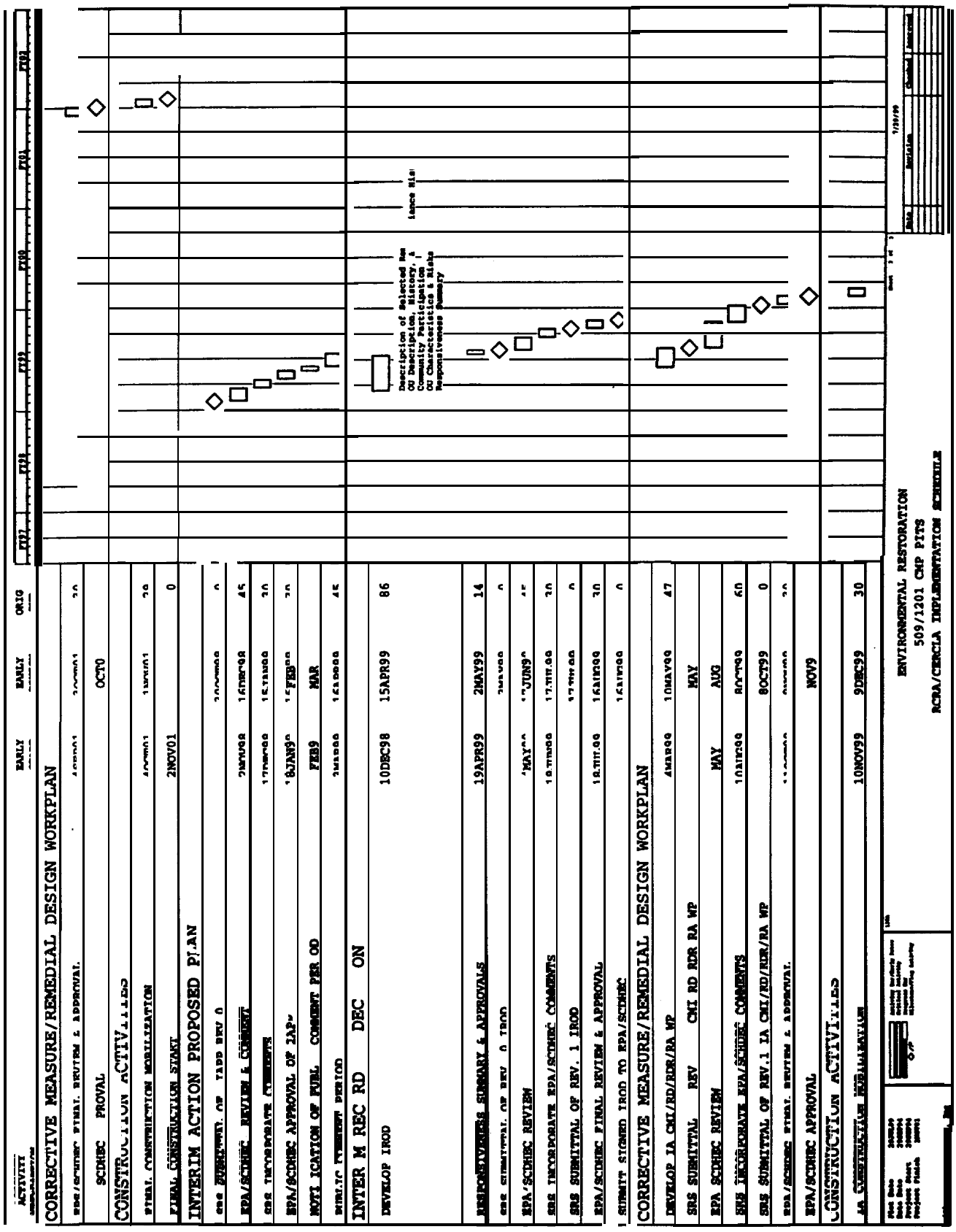
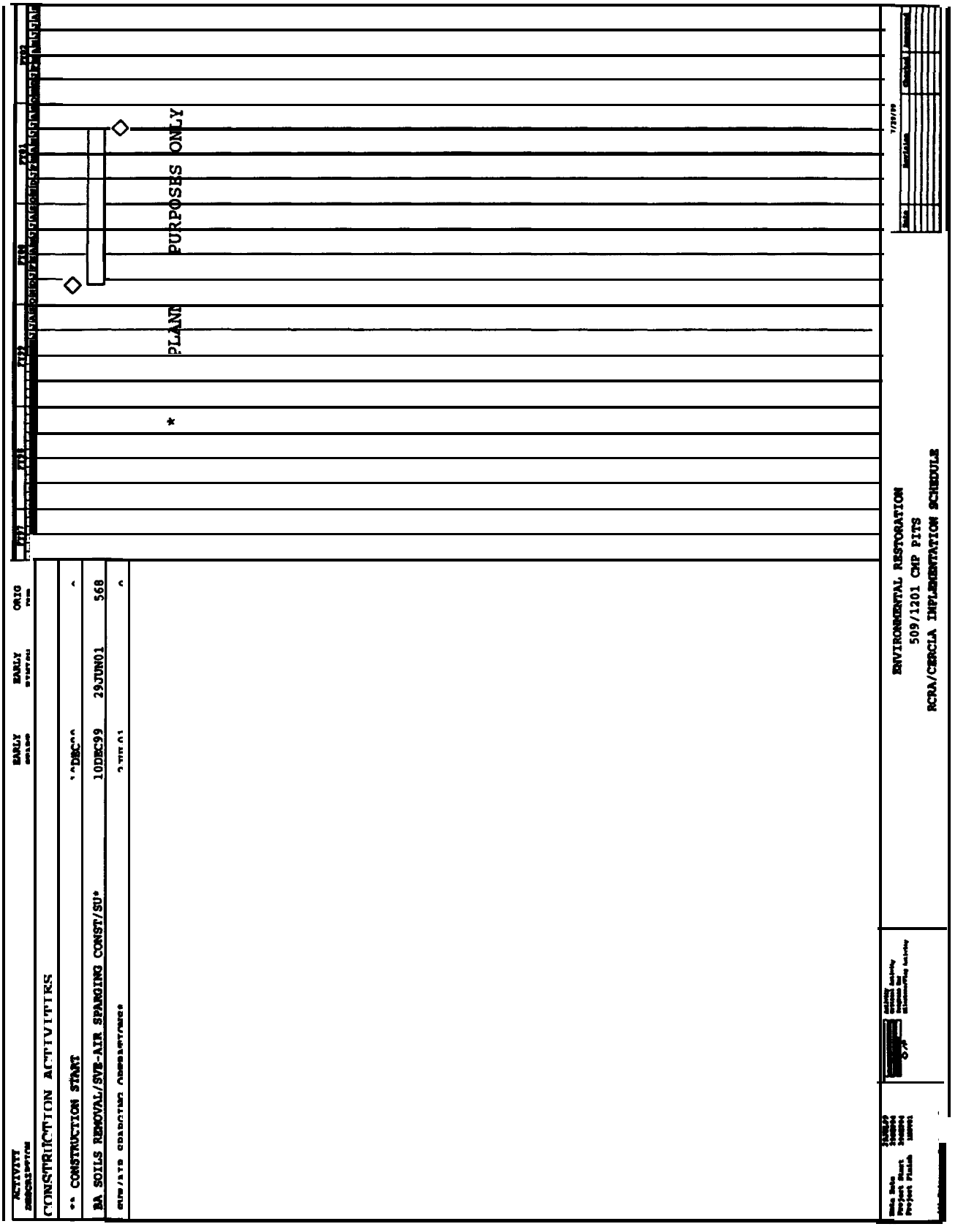


Figure 13. Integrated Interim and Final Action Implementation Schedule (continued)



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APPENDIX A

RESPONSIVENESS SUMMARY

Responsiveness Summary

The 30-day public comment period began on 3/15/99 and ended 4/13/99. The IAPP was presented to the SRS Citizen Advisory Board in an open public meeting on March 22 and 23, 1999. A *responsiveness summary* was prepared to address comments received during the public comment period. Specific comments and responses are found below. The comments are italicized and the responses are bolded. CAB recommendations are also included.

CAB Subcommittee Comments

Comment 1: *The subcommittee questioned the use of an asphalt cap as part of the remediation.*

Response 1: **This approach would provide infiltration control after the Soil Vapor Extraction (SVE) units were installed through the existing membrane and is less expensive than other alternatives.**

CAB Recommendation

1. *The SRS Citizens Advisory Board supports the proposed actions as a reasonable choice among the alternatives. We are particularly pleased with the following aspects of the proposed plans:*

- The Agencies are showing the flexibility to use Institutional control even though the CMP area is not a part of the industrial zones on the SRS land use maps. The CMP site is in the central area of SRS, distance from any heavy industrial areas, but is clearly an area to be protected from future residents.

- The plan provides for annual reviews of progress; this has not always been specified in remedial action plans.

- The plan actually defines "a point of diminishing returns" for the soil vapor extraction system (i.e., when the removal rate reduces to 10 percent of the initial contaminate removal rate). Thus, a criteria is established for deciding when it is cost effective to discontinue operation of the system

- Construction is scheduled to start in late 1999.

The proposed plan is the least expensive of the alternatives, except for the no action alternative.

2. *We also recommend that the three agencies develop a plan to implement similar criteria to establish the point of diminishing return to determine when a remediation can be completed for all of the sites at SRS that are undergoing remediation or will be remediated, and to present this response to the CAB by September, 1999.*

3. *We are concerned that remediation costs are escalating rapidly. We recommend that SRS provide to the CAB annually an estimate of future remediation costs for five out years including an estimate of the maximum remediation costs for operable units with Records of Decision and when the maximum can be expected to occur as well as a plan to minimize these costs over the five out years. We ask that the first presentation of this plan occur in January 2000.*

Response: **Thank you for submitting the subject recommendation regarding the CMP Pits. The interim action will be implemented, as described in the Proposed Plan, consistent with your recommendation. Also, the criteria for establishing the point of diminishing returns and the estimate for remediation costs will be presented September 1999 and January 2000, respectively.**

APPENDIX B

OFF-SITE RULE ACCEPTABILITY DETERMINATION FOR CERCLA REMOVAL AND REMEDIAL ACTIONS

1. Is waste being sent to a receiving unit that is **NOT** in the area extent of contamination of the operable unit or in the very near proximity of the operable unit? (***YES*** or NO) If **NO**, then off-site rule does not apply. If **YES**, then continue acceptability determination for receiving unit by answering question number 2 below.

2. Is the receiving unit part of a RCRA Subtitle C Facility? (YES or ***NO***) If **NO**, then answer question number 4 below. If **YES**, does the RCRA Subtitle C Facility have a land disposal unit? (YES or NO) If **NO**, then answer question number 3 below. If **YES**, then answer the following:

   Has the receiving unit released any hazardous waste, constituent of substance? (YES or NO) If **YES**, then receiving unit fails acceptability determination. If **NO**, then answer the following:

   Does the receiving unit meet the minimum technology requirements under RCRA Section 3004(O)? (YES or NO) If **NO**, then receiving unit fails acceptability determination. If **YES**, then answer the following:

   Are all Facility units that have released hazardous waste, constituents or substances being addressed through and in compliance with a legally binding agreement or order? (YES or NO) If **NO**, Facility fails acceptability determination. If **YES**, then Facility and receiving unit meet acceptability determination criteria and can receive CERCLA off-site wastes.

3. Has the receiving unit released any hazardous waste, constituent or substance? (YES or ***NO***) If **YES**, then receiving unit fails acceptability determination. If **NO**, then answer the following:

   Are all Facility units with environmentally significant releases of hazardous waste, constituents of substances being addressed through corrective action? (***YES*** or NO) If **NO**, Facility fails acceptability determination. If **YES**, then Facility and receiving unit meet acceptability determination criteria and can receive CERCLA off-site waste.

   > Contaminated decontamination fluids and purge water above Health Based Levels found in the ID W Management Plan will be sent to the F/H Effluent Treatment facility or the M-1 Air Stripper.

4. Are all Facility units with environmentally significant releases of hazardous waste, constituents or substances being addressed through corrective action? (***YES*** or NO) if **NO**, then Facility fails acceptability determination. If **YES**, then Facility and receiving unit meet acceptability determination criteria and can receive CERCLA off-site waste.