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DISCLAIMER

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INTERIM ACTION PROPOSED PLAN
METALLURGICAL LABORATORY HAZARDOUS WASTE MANAGEMENT FACILITY CLOSURE
SAVANNAH RIVER SITE
DEPARTMENT OF ENERGY
AIKEN COUNTY, SOUTH CAROLINA

Prepared By:

WESTINGHOUSE SAVANNAH RIVER COMPANY

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FACILITY CLOSURE
SAVANNAH RIVER SITE, AIKEN, SOUTH CAROLINA

CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Date: _____ Signature: _____

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Manager, Environmental Restoration
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Savannah River Site

Date: _____ Signature: _____

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Assistant Manager, Environmental
Restoration and Waste Management DOE
Savannah River Site

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INTRODUCTION

This proposed plan describes the interim action selected to address potential contamination associated with the Metallurgical Laboratory Hazardous Waste Management Facility (HWMF) located at the Savannah River Site (SRS), Aiken, South Carolina. The plan calls for closing this facility by: dewatering the basin; excavating contaminated soils and placing these materials inside the basin; and installing a low permeability soil cap system over the basin. Potential groundwater contamination in the vicinity of the Metallurgical Laboratory HWMF is currently being addressed as part of the on-going A/M Area Groundwater Corrective Action Program.

The purpose of an Interim Action Proposed Plan is to meet the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) requirements and provide the public an opportunity to participate in the selection of a remedial action. However, some cleanup actions were started at SRS under the Resource Conservation and Recovery Act (RCRA) before the site came under the jurisdiction of CERCLA. Public involvement opportunities were offered at that time in accordance with RCRA. The Metallurgical Laboratory HWMF is one of the facilities in which the closure process began under RCRA. Now, this plan is being submitted to integrate RCRA and CERCLA program requirements.

During preparation of this RCRA Closure Plan for the Metallurgical Laboratory HWMF, several alternatives were considered. This plan gives an explanation of the alternatives and why one is preferred. Alternatives were evaluated based on degree of environmental protection, engineering and operation feasibility and cost effectiveness.

PUBLIC INVOLVEMENT

A 30-day public comment period will begin (date) for the Interim Action Proposed Plan for the Metallurgical Laboratory Basin Closure.

Written comments should be sent no later than (date) to:

SRS Remedial Project Manager
U. S. EPA, Region IV
345 Courtland Street
Atlanta, Ga. 30365
(404) 347-0506

The alternative chosen must be protective of health and the environment, appropriate and cost effective. The Department of Energy (DOE), in consultation with the South Carolina Department of Health and Environmental Control (SCDHEC) and the Environmental Protection Agency (EPA), will select the interim action following a public comment period and review and consideration of submitted comments.

COMMUNITY INVOLVEMENT

This document summarizes information which can be found in greater detail in the administrative record file and is available to the public. The administrative record file, which contains the information upon which the selection of the response action is made is available at the EPA Region IV office or through the following:

Freedom of Information Public
Document Room
University of South Carolina
Aiken
171 University Parkway
Aiken, South Carolina 29801
(803)641-3320

Thomas Cooper Library
University of South Carolina
Columbia, South Carolina 29208
(803)777-4866

This plan and other information about SRS cleanup are available through the following repositories:

Reese Library
Augusta College
2500 Walton Way
Augusta, Georgia 30910
(404)737-1744

Asa H. Gordon Library
Savannah State College
Tompkins Road
Savannah, Georgia 31404
(912)356-2183

The DOE, EPA and the State of South Carolina encourage the public to review these documents in order to gain a more comprehensive understanding of the Metallurgical Laboratory HWMF.

The public is notified about public comment periods through mailing of the SRS Environmental Bulletin, a newsletter sent to Georgia, and through notices in the *Aiken Standard*, *State* and *Augusta Chronicle/Herald* newspapers.

The comment period may include, at the request of any citizen, a public meeting. At the meeting the proposed interim action would be discussed, questions about it would be answered and written and oral comments accepted.

To request a public meeting or to obtain more information about this plan contact:

Mark Musolf
Environmental Outreach
Westinghouse Savannah River Company
1359 Silver Bluff Road, Suite A-5
Aiken, South Carolina 29803
(803) 644-4057

Linda McClain
Environmental Restoration Division
Department of Energy
P. O. Box A
Aiken, South Carolina 29802
(803) 725-8161

SITE DESCRIPTION AND BACKGROUND

The Savannah River Site occupies approximately 300 square miles adjacent to the Savannah River, principally in Aiken and Barnwell Counties of South Carolina (Figure 1). The site is approximately 25 miles southeast of Augusta, Georgia and 20 miles south of Aiken, South Carolina. The average population density in the counties surrounding SRS ranges from 23-560 people per square mile with the largest concentration in the Augusta, Ga. metropolitan area. Based on 1980 census data (1990 data not available), the population within a 50-mile radius (80 km) of SRS is approximately 555,100.

The SRS is owned and operated by the DOE. Management and operating services are provided by the Westinghouse Savannah River Company (WSRC). The SRS produces tritium, plutonium, and other special nuclear materials for national

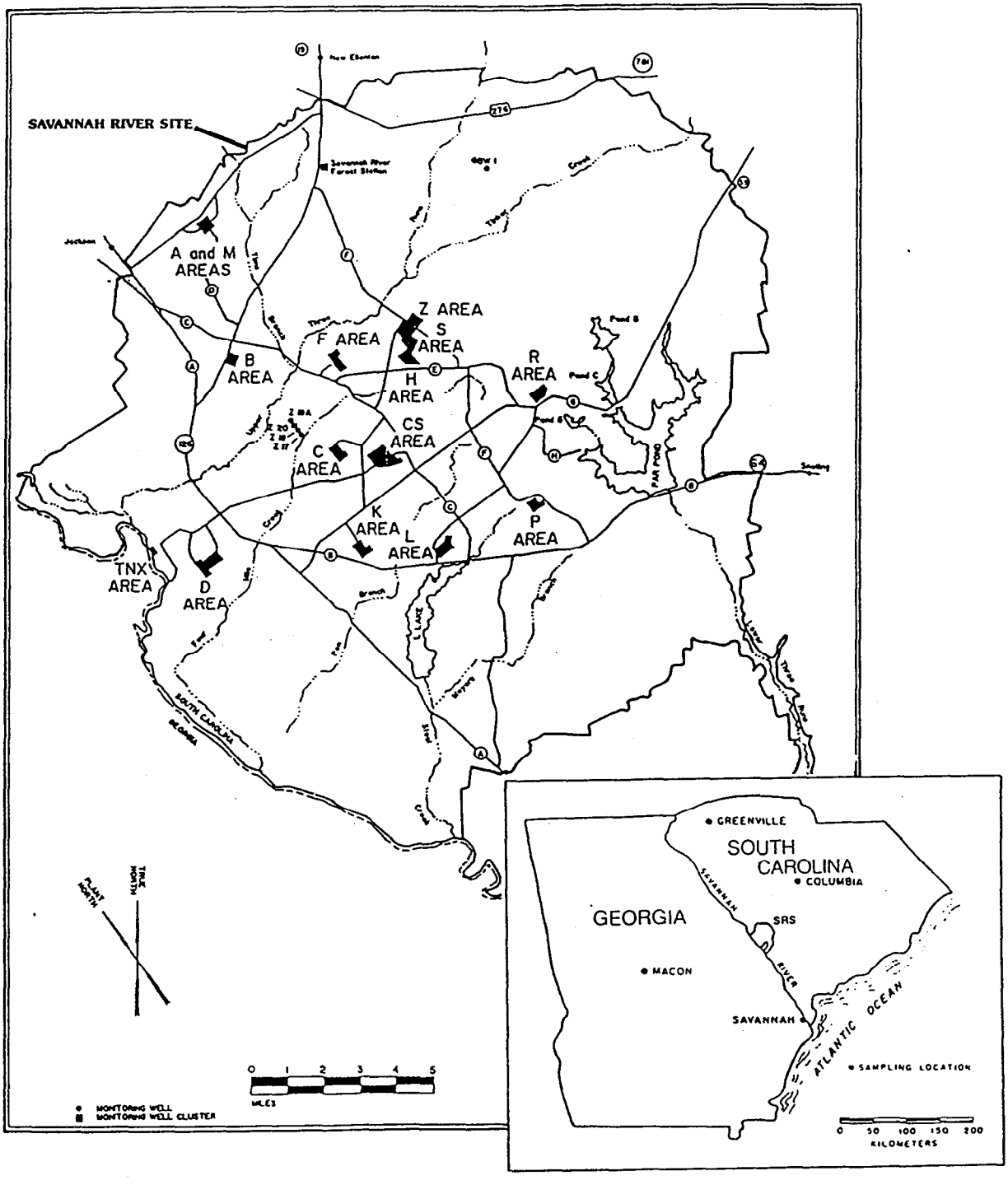

Figure 1. Location of the Savannah River Site (SRS)
(Source: Savannah River Environmental Report for 1990)

defense. The site also provides nuclear materials for the space program, as well as medical, industrial, and research efforts.

The Metallurgical Laboratory Hazardous Waste Management Facility (HWMF) is located in the northwest portion of the SRS (Figure 2). The HWMF consists of an unlined manmade basin (basin dimensions: 100 ft by 40 ft by 6 ft), an abandoned portion of the influent process sewer line and a Carolina bay. Discharges from the Savannah River Laboratory (SRL) Equipment Engineering Division Metallurgical Laboratory (Building No. 723-A) flowed to the basin via an 8-inch diameter vitrified clay process sewer buried approximately 6 feet underground.

The Equipment Engineering Division Metallurgical Laboratory (Building No. 723-A) was used for corrosion testing of stainless steels and nickel-based alloys. This testing required degreasing and cleaning metal parts, etching sample identification information on the parts and photographing the samples. During testing, effluent was discharged at approximately 1,000 gallons per day (gpd) throughout the operating period of the basin (1956 through November 8, 1985). During periods of heavy rainfall, wastewater and surface water runoff overtopped a drainage outfall at the Metallurgical Laboratory basin and were discharged to an adjacent Carolina bay (Figure 2).

The release of hazardous wastes to the Metallurgical Laboratory HWMF was discontinued in 1983. Since 1983, hazardous wastes from the Laboratory have been stored at a storage facility on site awaiting final treatment and disposal in accordance with SCDHEC regulations. Discharges to the basin during the period from 1983 to November 8, 1985 consisted of nonhazardous effluent. All flow to the Metallurgical Laboratory HWMF basin was terminated on November 8, 1985, when the process sewer was plugged to prevent further use of the basin. The Metallurgical Laboratory effluent was re-routed to a National Pollutant Discharge Elimination System (NPDES) outfall at the SRS.

A June 1988 Consent Decree mandated that the Metallurgical Laboratory HWMF and associated Carolina bay were subject to Subtitle C of RCRA. The Carolina bay received overflow wastewater and surface water runoff from the basin from 1956 to 1983. The Metallurgical Laboratory HWMF will be closed under interim status regulations (SCDHEC R.61-79.265) and permitted as a hazardous waste management facility by a Post Closure Care Part B Permit (SCDHEC R.61-79.264). Prior to the Consent Decree, the Carolina bay was not classified as part of the Metallurgical Laboratory HWMF, and was not considered in the remedial alternatives proposed for closure of the unit in this Proposed Plan.

A RCRA closure plan for the Metallurgical Laboratory HWMF was submitted to, and approved by, SCDHEC in June 1991. The intent of the closure plan was to ensure the Metallurgical Laboratory HWMF will be closed in a manner that controls, minimizes or eliminates, to the extent necessary to prevent threats to human health and the environment, post-closure escape of hazardous waste, hazardous waste constituents, leachate, contaminated rainfall or waste decomposition products to the ground, surface waters or atmosphere.

To meet these objectives, the preferred alternative for closure of the Metallurgical Laboratory HWMF is the following: dewatering the basin; excavation of the process sewer line and associated contaminated sediments and soils and placement of these materials inside the basin; and installation of

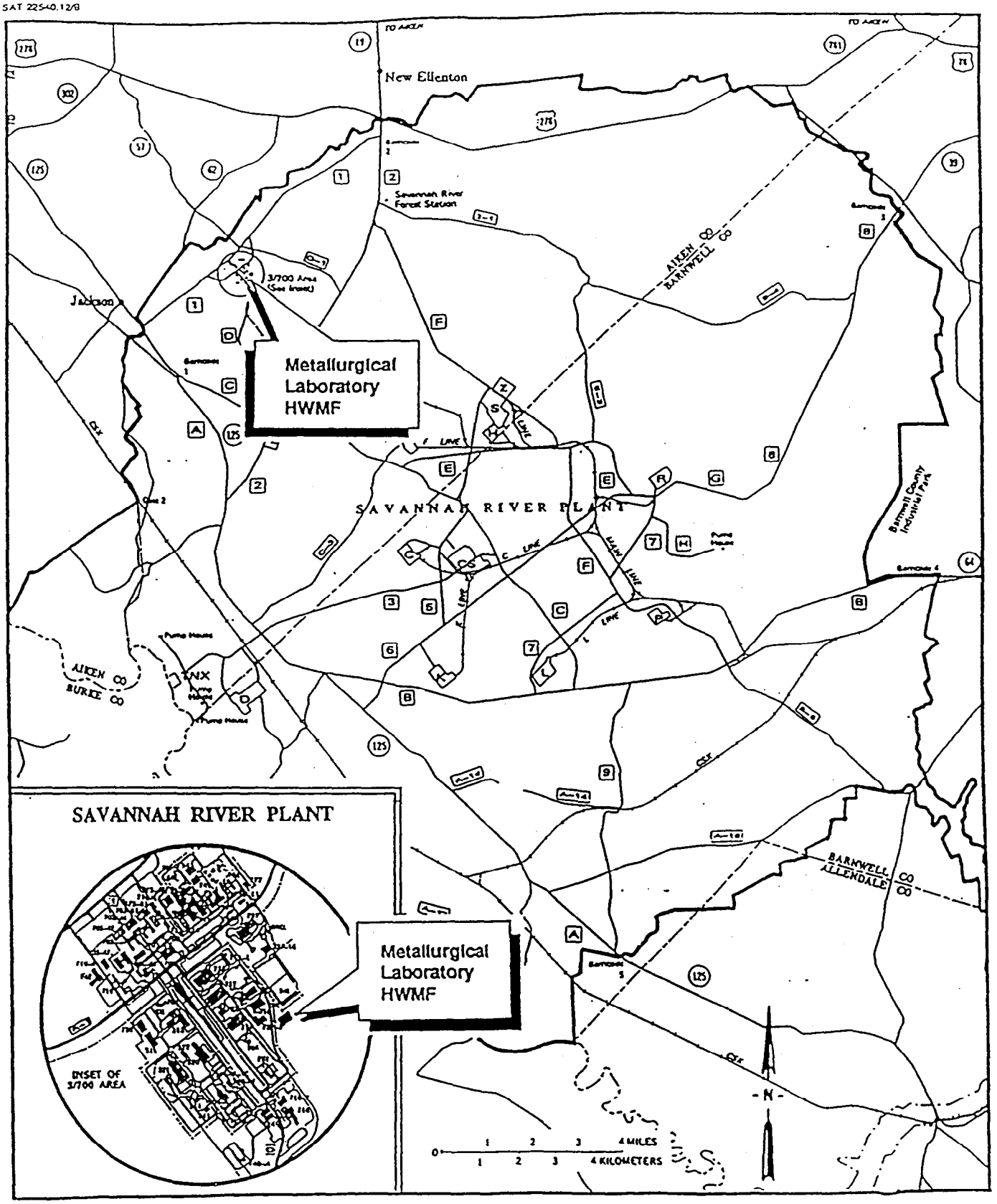

Figure 2. General Location of the Metallurgical Laboratory HWMF
(Source: Metallurgical Laboratory HWMF Closure Plan, 1991)

a low permeability soil cap system over the basin (Figure 3; for more explanation see the section "Summary of Alternatives - Alternative 4").

Furthermore, a RCRA Groundwater Quality Assessment Plan to further characterize the nature and extent of contamination at the Metallurgical Laboratory HWMF was submitted to, and approved by SCDHEC in June 1991. It includes installation of eight additional wells to monitor groundwater quality in three aquifer zones at the unit.

A revised RCRA post closure permit application is being prepared for submittal to SCDHEC and EPA. It proposes to address groundwater contamination associated with the Metallurgical Laboratory HWMF as part of the on-going A/M Area groundwater remediation program. This permit application will be submitted in December 1991.

CHARACTERIZATION WORK

Various sampling activities have been conducted at the Metallurgical Laboratory HWMF since its discontinued use in November 1985. Fifty-six samples were collected in and around the basin, and 14 samples were collected at joints in the process sewer line in the Metallurgical Laboratory Basin and immediately adjacent to the process sewer line. Seven soil borings were taken. Soil and sludge samples to a depth of 20 feet were collected at 3 locations within the basin and analyzed. Soil outside the basin was collected to a depth of 25 feet at 4 locations. The samples were analyzed for organic solvents and inorganic compounds and metals. Hazardous metals were detected. However, the results of the Extraction Procedure Toxicity Test (EP test) for process sewer line and basin soils showed the concentrations of metals were all substantially below the EP concentration criteria.

Four water table wells were installed in 1988 to characterize groundwater quality. The wells have been monitored quarterly since the fourth quarter of 1988. The chemical constituents which have been measured at levels above the primary drinking water standards in the downgradient wells are the trichloroethylene, tetrachloroethylene and radium.

Eight new wells are being installed in accordance with the RCRA Groundwater Quality Assessment Plan. The new wells will be installed in clusters (groups of two or more) to monitor for migration of contaminants.

SUMMARY OF UNIT RISKS

A program is underway to assess the potential risks to human health and the environment posed by the Metallurgical Laboratory HWMF. Results of the risk assessment will include a characterization of the contaminated media, identification of chemicals of concern and baseline exposure scenarios. In addition, the current and potential human health and ecological risks will be evaluated.

Risk assessment work conducted in 1985 to evaluate the closure options for the Metallurgical Laboratory HWMF indicated that contamination was present in groundwater, basin surface water, soil, and basin sediments. The contaminants that were evaluated for these media include: radium, chromium, lead, mercury; 1,1,1-tetrachloroethane, tetrachloromethane, tetrachloroethylene, and trichloroethylene.

The predominant pathways for human exposure are through surface, subsurface and atmospheric transport of contamination. The relative risk to

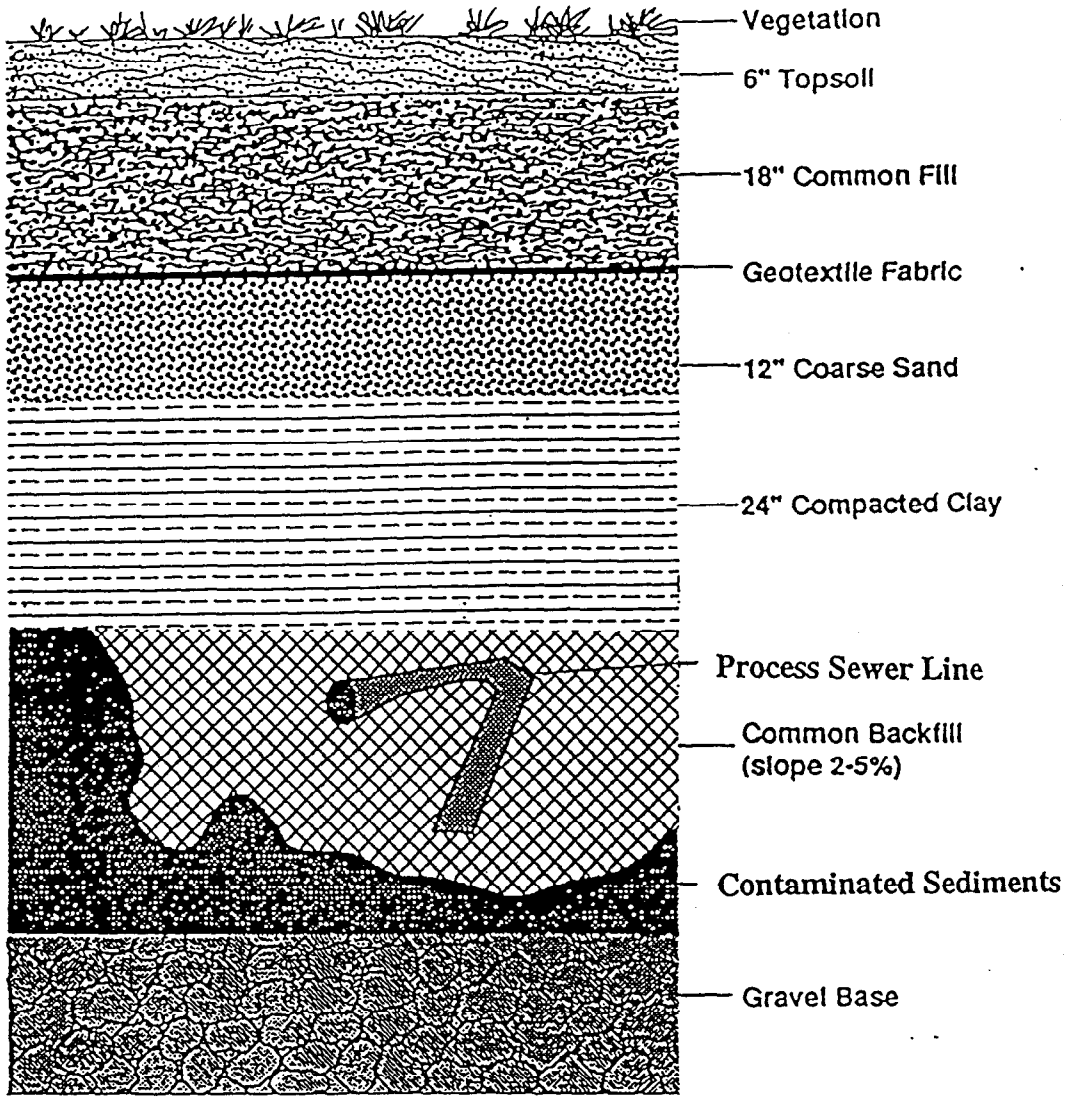

Figure 3. Proposed Low Permeability Soil Cap Cross Section
(Source: Metallurgical Laboratory HWMF Closure Plan, 1991)

human health and the environment for all alternatives is low. However, the potential for human exposure does exist. Additional analyses of the contamination associated with the Carolina bay and the influent process sewer line are being considered as part of a baseline risk assessment to be conducted in the future. This will result in a complete characterization of the unit.

SUMMARY OF ALTERNATIVES

Alternatives for the closure of the Metallurgical Laboratory HWMF were considered and evaluated. The options considered for the HWMF are presented below:

Alternative 1: No Action

Alternative 2: No Waste Removal and Closure

Alternative 3: Waste Removal and Closure

Alternative 4: No Waste Removal from basin, excavation of process sewer line and associated contaminated sediments which are placed in basin, basin closure, and characterization of the Carolina bay

Because Alternatives 2, 3 and 4 call for either the treatment, storage, and/or removal of hazardous wastes, these alternatives must be in compliance with Applicable or Relevant and Appropriate Requirements (ARARs). RCRA and South Carolina hazardous waste management regulations are applicable for treatment, storage, and/or disposal of removed sediment. In addition, the Clean Water Act standards governing discharges represent ARARs. There are no ARARs to be met for Alternative 1.

Alternative 1: No Action

The "no action option" would involve continued groundwater monitoring quarterly for 1 year, then annually for 29 years. Site maintenance (trimming of vegetation) would be continued for the entire 30-year period.

The CERCLA program requires that a "no action" alternative be evaluated at every unit to establish a baseline for comparison. Under this alternative, EPA would take no further action at this time to prevent exposure to the sediment contamination.

Alternative 1
Capital Cost: $-0-
Operation and Maintenance (O&M) Costs: $20,000 per year
Months to Implement: -0-

Alternative 2: No Waste Removal and Closure

The no waste removal and closure option would involve batch neutralization (a process that results in a solution which is neutral: neither an acid or base) of the basin water, release of the water to Tims Branch through a NPDES outfall, backfilling of the basin, and continuation of groundwater monitoring.

Batch neutralization is necessary because the basin water is known to be acidic (nitric acid wastes) A cost-effective method for neutralization of the basin water has been determined based on titration studies on the basin water. Based on neutralization testing results, treatment of basin water might be effected with either hydrated lime or limestone. Following neutralization of the basin water, it would be discharged to Tims Branch Creek.

Following release of the water to Tims Branch Creek, the basin will be backfilled with soil and a low-permeability soil cap would be installed. The basin will be backfilled with clean fill (coarse sand) material. The basin will be covered with a soil cap system consisting of a low permeability barrier layer (compacted clay), an internal drainage layer (coarse sand), a geotextile fabric, and a cover soil layer (common fill and topsoil) as shown in Figure 3. The soil cap will be revegetated with native grass that will minimize erosion and enhance the effectiveness of the cap system. SRS will maintain the cap and conduct groundwater monitoring as required during the 30-year post-closure care period.

Groundwater monitoring will be continued quarterly for one year, then annually for 29 years. Unit maintenance will be continued for the entire 30-year period.

These activities would minimize the potential for contaminants to migrate from waste in the basin bottom and sediments below the basin into the groundwater.

Alternative 2
Capital Cost: $1,000,000
Operation and Maintenance (O&M) Costs: $20,000 per year
Months to Implement: -7- 4

Alternative 3: Waste Removal and Closure

The "waste removal and closure option" for the Metallurgical Laboratory HWMF would involve batch neutralization of the basin water, release of the neutralized water through a NPDES outfall to Tims Branch Creek, removal of basin sediment extending from the bottom of the basin, backfill of the basin, and continuation of groundwater monitoring. This waste removal option would excavate nearly all remaining waste source materials. Some of the more mobile materials (e. g. nitrates) may have already migrated away from the basin during its operating period.

Sediment collected from the bottom of the basin would be excavated and sent to a waste storage/disposal facility. The basin would then be backfilled with soil and regraded to original land contours. Groundwater monitoring would be continued quarterly for one year, then annually for 29 years. Unit maintenance would be continued for the entire 30 year period.

Alternative 3
Capital Cost:$1,000,000
Operation and Maintenance (O&M) Costs: $20,000 per year
Months to Implement: -4- 7

Alternative 4: No waste removal, excavation of process sewer line and associated contaminated sediments, basin closure, and characterization of Carolina Bay.

Alternative 4 is a modification of Alternative 2. It includes characterization of the Carolina bay as part of the 1987 Consent Decree. It specifies closing the basin without removal of the waste from the basin.

This option includes excavation of the process sewer line, excavation of contaminated sediments associated with the sewer line, and characterization of the Carolina bay. It proposes that the process sewer line and associated contaminated sediments be excavated and placed inside the basin prior to installation of a low permeability cap (see Figure 3). The reason for this approach is that

it would contain the contaminated sediments and soils in a relatively small area beneath the cap of the basin. In addition, the emplacement of a low permeability soil cap would minimize the migration of contaminants into the groundwater.

Characterization of the Carolina bay is on-going. Field work was completed in July, 1991. Presently, SRS is compiling and reviewing the results of sample analyses. A plan to address the Carolina bay sediments will be prepared after assessment of the sample analyses is complete.

Alternative 4
Capital Cost:$1,400,000
Operation and Maintenance (O&M) Costs:$20,000 per year
Months to Implement:-7-

Alternative 4 is the preferred alternative by SRS.

EVALUATION OF ALTERNATIVES

This section evaluates the performance of the four alternatives with respect to each of the nine CERCLA criteria, which are defined in Table 1.

Overall Protection

All of the alternatives, with the exception of the "no action" alternative, would provide protection of human health and the environment by reducing risk through engineering controls, or institutional controls.

Alternative 1, the "no action" alternative, is not protective of, and offers no reduction in risk to, human health and the environment. It allows continued transport of organic and inorganic contaminants within the basin sediments to groundwater beneath the basin.

Alternative 2 provides protection by isolating contaminated sediments within the basin beneath a low permeability closure cap. The closure cap minimizes the potential for contaminants to enter the groundwater and prevents direct contact by environmental receptors (e.g vegetation: plant and tree roots) with contaminated sediments in the basin. However, this alternative continues to allow transport of organic and inorganic contaminants from contaminated sediments associated with the sewer line to the groundwater.

Alternative 3 removes contaminated sediments within the basin, preventing any possible future contact with the groundwater or environmental receptors. Because Alternative 3 does not address process sewer line contaminated sediments, the transport of organic and inorganic constituents from contaminated sediments associated with the sewer line to the groundwater will continue.

Alternative 4 isolates contaminated sediments within the basin, the process sewer line and associated contaminated sediments beneath a low permeability closure cap. This option will minimize the migration into the groundwater of hazardous constituents from contaminated sediments, both in the basin and associated with the sewer line.

Table 1. CERCLA Evaluation Criteria

Overall Protection of Human Health and Environment - addresses whether a remedy provides adequate protection and describes how risks posed through each pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

Long Term Effectiveness and Permanence - refers to the magnitude of residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time once cleanup goals have been met.

Short-Term Effectiveness - refers to the speed with which the remedy achieves protection, as well as the potential of the remedy to create adverse effects on human health and the environment that may result during the construction and implementation period.

Reduction of Toxicity, Mobility, or Volume Through Treatment - is the anticipated performance of the treatment technologies that may be used in a remedy.

Implementability - is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement the chosen solution.

Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) - addresses whether a remedy will meet all of the ARARs of other federal and state environmental statutes.

Cost - includes capital and operation and maintenance costs.

State Acceptance - indicates whether, based on its review of the proposed interim action, the state concurs with, opposes, or has no comment on the preferred alternative.

Community Acceptance - will be assessed in the Record of Decision following a review of the public comments received on the proposed interim action.

Long-Term Effectiveness and Permanence:
Alternative 3 does not provide a long term remedy for the basin because residual contaminantion will remain in the process sewer line and associated soils. A 30 year cap maintenance period will apply to Alternatives 2, 3, and 4.

Short-Term Effectiveness:
Presently, a baseline risk assessment is underway and not complete. At this time, it does not appear possible to fully evaluate the risks posed by remediation versus those posed by the unit itself.

Reduction of Toxicity, Mobility or Volume Through Treatment:
Contaminant movement will be reduced by containing contaminated soils and sediments in a relatively small area beneath the basin and by installation of a low permeability soil cap as indicated in Alternatives 2, 3 and 4. Groundwater contamination will be addressed through the on-going A/M Area Groundwater Corrective Action Program.

Implementability:
All alternatives for the unit are easily implemented. There should not be any problems in securing equipment and materials for the low permeability soil cap system, excavation of process sewer line and contaminated sediments, and redirection of process effluent from entering the Carolina bay. Groundwater contamination is currently being addressed through the on-going A/M Area Groundwater Corrective Action Program.

Compliance with Applicable or Relevant and Appropriate Requirements (ARARs):
There are no ARARs to be met for Alternative 1. Resource Conservation and Recovery Act and South Carolina hazardous waste management regulations are applicable for treatment, storage, and/or disposal of removed sediment. In addition, the Clean Water Act standards governing discharges represent ARARs. Therefore, ARARs are to be met for Alternatives 2, 3 and 4.

Cost:
The estimated costs for Alternatives 2 and 3 are $1,600,000 each. Estimated cost for Alternative 4 is $2,000,000.

State Acceptance:
SCDHEC has reviewed the closure plan and concurs with the preferred alternative which is Alternative 4. A decision to grant final approval will be made after review of detailed plans and public comments.

Community Acceptance:
Community acceptance of the preferred alternative will be evaluated after the public comment period and will be described in the Interim Record of Decision (ROD) for the Metallurgical Laboratory HWMF.

SUMMARY OF THE PREFERRED ALTERNATIVE

The preferred alternative for the Metallurgical Laboratory HWMF is Alternative 4: No Waste Removal (excavation of the process sewer line) and closure; characterization of the Carolina bay.

Based on current information Alternative 4 provides the best balance with respect to the nine criteria EPA uses to evaluate alternatives. Although the interim action will not fully remediate the unit, the action will virtually contain the contaminated sediments and soils in a relatively small area beneath the cap of the basin, treat and dispose of basin soils and liquids, and minimize migration of contaminants into the groundwater, while the investigation of soil, sediment and groundwater contamination is completed and a final remedy for the unit is selected.

GLOSSARY

Administrative Record: An Official compilation of documents, data, reports, and other information that is considered important to the status of and decisions made relative to a Superfund site. The record is placed in the information repository to allow public access to the material.

ARARs: Applicable or Relevant and Appropriate Requirements. Refers to the federal and state requirements that a selected remedy will attain. These requirements may vary from site to site.

Aquifer: An underground formation composed of materials such as sand, soil, or gravel that can store and supply groundwater to wells and springs.

Baseline Risk Assessment: An analysis of the potential adverse health effects (current or future) caused by hazardous substance releases from a site in the absence of any actions to control or mitigation of these releases.

Batch Neutralization: A one time process where the neutralizing material is mixed with the material to be neutralized until the resulting solution is neutral (neither an acid or base).

Carolina bay: A type of shallow depression commonly found on the coastal plains of the Carolinas. Carolina bays are typically circular or oval. Some are wet or marshy, while others are dry.

Characterization: The compilation of all available data about waste units to determine the rate and extent of contaminant migration resulting from the waste site, and the concentration of any contaminants that may be present.

Chlorocarbon: A compound of carbon and chlorine, or carbon, hydrogen, and chlorine, such as carbon tetrachloride, chloroform, tetrachloroethylene, etc.

Contamination: The deposition of unwanted chemical and/or radioactive material at a site.

Corrective Action: An order EPA issues requiring remedial procedures under RCRA Section 3008(h) at a facility when there has been a release of hazardous waste or constituents into the environment. Corrective action may be required beyond the facility boundary and can be required regardless of when the waste was placed at the facility.

Effluent: A liquid or gaseous waste discharge to the environment.

EP Test (Extraction Procedure Toxicity Test): A test designed to identify waste likely to leach hazardous concentrations of particular toxic constituents into the groundwater as a result of improper management. It is a characteristic test of hazardous waste.

EP Concentration Criteria: Established concentrations of selected organic and inorganic compounds, which are considered toxic to human health and the environment.

Exposure: Contact of an organism with a chemical or physical agent. Exposure is quantified as the amount of the agent available at the exchange boundaries of the organism (e.g. skin, lungs, digestive tract) and available for absorption.

Geotextile liner: A long-lasting fabric intended

for burial; used for scientific or research purposes.

Groundwater: Water found beneath the earth's surface that fills pores between materials such as sand, soil, or gravel. In aquifers, groundwater occurs in such sufficient quantities that it can be used for drinking water, irrigation, and other purposes.

Hydrate: A compound formed by the chemical combination of water and some other substance in a definite molecular ratio.

Hypalon: A type of impermeable manmade material.

HWMF: Acronym for Hazardous Waste Management Facility.

Information Repository: A file containing current information, technical reports and reference documents regarding a Superfund site. The information repository is usually located in a public building that is convenient for local residents, such as a public school, city hall, or a library.

Interim Action: An event or series of events done prior to or concurrent with a RI/FS as information is made sufficient to support a remedy selection.

Interim Record of Decision (ROD): A legal document prepared by the EPA that describes the interim remedial actions selected for a Superfund site, why the remedial actions were chosen as opposed to others, how much they will cost, and how the public responded to the actions selected.

Low Permeability Soil Cap: A covering designed to limit the infiltration of surface water to the area beneath it.

Monitoring Wells: Wells drilled at specific locations on and/or off a site, where groundwater can be sampled at selected depths and studied to determine such things as the direction in which groundwater flows and the types and amounts of contaminants present in groundwater.

National Pollutant Discharge Elimination System (NPDES) Program: A national program for issuing, monitoring, and enforcing permits for direct discharges to waterways, wetlands, etc..

National Priorities List (NPL): EPA's (top priority) list of hazardous waste sites in the country that are eligible to receive federal money for response under Superfund.

Operable Unit: An action taken as only one part of an overall site cleanup. A number of operable units can be used in the course of a cleanup.

Operation and Maintenance (O&M): Activities conducted at a site after a response action occurs to ensure that the cleanup and/or systems are functioning properly.

Organic Compounds: Generally taken to be synthetic compounds of carbon, hydrogen, oxygen and sometimes chlorine, which are of manmade origin or production.

Outfall: The end of a drain or pipe that carries wastewater or other effluents into a ditch, pond, stream, or river.

Parts per Billion: A unit of measure of concentration equivalent to the weight/volume ratio expressed as ug/L or ng/L.

Parts per Million: A unit of measure of concentration equivalent to the weight/volume ratio expressed as mg/L.

Permeability: The property or capacity of a porous rock, sediment, or soil for transmitting a fluid; it is a measure of the relative ease of fluid flow under unequal pressure.

Plutonium (Pu): A heavy (atomic mass = 244.06) silvery metal with 15 isotopes that is produced by the neutron irradiation of natural uranium. The isotope Pu-239 is the most important isotope, used both in nuclear weapons and commercial nuclear-power applications.

Post: Identify; locate; to station in a given place. In this instance, to locate, sample, and identify as safe or unsafe for public use.

Primary Drinking Water Standards: Standards established by the EPA to protect human health and ensure the quality of drinking water.

Priority Pollutant Metals: A series of chemical constituents considered by EPA to be hazardous to human health and the environment.

Process Water: Water which is an integral part of the system process as opposed to cooling water, for example, which is segregated from the process.

Prototype: The first thing of its kind; an original or model.

Radionuclide: An unstable nuclide capable of spontaneous transformation into other nuclides by changing its nuclear configuration or energy level. This transformation is accompanied by the emission of photons or particles.

Radium (Total Radium): A radioactive shining white metallic element that occurs principally as an isotope with mass number 226, formed from uranium 238, having a half-life of 1620 years, and emitting alpha particles and gamma rays to form radon. It is used chiefly in luminous materials, in medicine, especially in the treatment of cancer, and in radiography.

Resource Conservation and Recovery Act (RCRA): Resource Conservation and Recovery Act of 1976. What is commonly referred to as RCRA, is an amendment to the first piece of federal solid waste called the Solid Waste Disposal Act of 1965. RCRA was amended in 1980 and most recently on November 8, 1984 by HSWA.

RCRA Part B Permit Application: The second part of the permit application that includes detailed and highly technical information concerning the treatment, storage and disposal (TSD) in question. There is no standard form for the Part B; instead the facility must submit information based on the regulatory requirements.

Recharge Network: A system designed by which treated groundwater is re-introduced into an aquifer.

Record of Decision (ROD): A legal document prepared by the EPA that describes the final remedial actions selected for a Superfund site, why the remedial actions were chosen and not others, how much they will cost, and how the public responded to the actions selected.

Remedial Design: An engineering phase when technical drawings and specifications are developed for the subsequent remedial action at a site on the National Priorities List.

Responsiveness Summary: A summary of oral and/or written public comments received by EPA during a comment period.

Sludge: Mud, mire, or ooze covering the ground or forming a deposit at the bottom of bodies of water.

Solvent: A liquid substance capable of dissolving or dispersing one or more other substances.

Superfund: The common name used for the Comprehensive Environmental Response, Compensation, and Liability Act, also referred to as the Trust Fund. The superfund program was established to help fund cleanup of hazardous waste sites. It also allows for legal action to force those responsible for the sites to clean them up.

Titration: A procedure by which a solution of known concentration is added to a solution of unknown concentration until the chemical reaction between the two solutions is complete. Calculations are then performed to determine the unknown concentration.

Tritium (H-3): The hydrogen isotope with one proton and two neutrons in the nucleus. It emits a low-energy beta particle (0.0186 MeV max) and has a half-life of 12.5 years.

TSDs: Acronym for treatment, storage, or disposal facility.

Vadose Zone: The zone containing water under pressure less than that of the atmosphere, including soil water, intermediate vadose water, and capillary water. This zone is limited above by land surface and below by the surface of the zone of saturation, that is, the water table.

ACRONYMS

ARARs: Applicable or Relevant and Appropriate Requirements

CERCLA: Comprehensive Environmental Response, Compensation and Liability Act

CFR: Code of Federal Regulations

DOE: Department of Energy

EPA: Environmental Protection Agency

EP Test: Extraction Procedure Toxicity Test

GPD: Gallons Per Day

HWMF: Hazardous Waste Management Facility

NPDES: National Pollutant Discharge Elimination System

RCRA: Resource Conservation and Recovery Act

ROD: Record of Decision

SCDHEC: South Carolina Department of Health and Environmental Control

SRL: Savannah River Laboratory

SRS: Savannah River Site

WSRC: Westinghouse Savannah River Company

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