Thirty-Year Solid Waste Generation Forecast by Treatability Group

by

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Westinghouse Savannah River Company
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Thirty-Year Solid Waste Generation Forecast by Treatability Group^(U)

Solid Waste Environmental Impact Statement Team

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Contents

Executive Summary 1

Terms and Definitions 3

Acronyms 3

Waste Category Terms and Definitions 4

Low-Level Waste 4

Mixed Waste 4

Hazardous Waste 4

Transuranic Waste 4

Treatability Group Terms and Definitions 4

Low-level Waste Treatability Groups 4

Mixed Waste Treatability Groups 5

Hazardous Waste Treatability Groups 7

Transuranic Waste Treatability Groups 7

Waste Stream Terms and Definitions 8

Low-Level Waste Streams 8

Mixed Waste Streams 9

Hazardous Waste Streams 10

Transuranic Waste Streams 11

Background 13

Uncertainties and Assumptions 15

Uncertainties 15

Assumptions 15

Waste Forecasts 15

Waste Generation Rates 15

Polychlorinated Biphenyl Wastes 15

Radiologically Contaminated Waste Oils 15

Mixed Waste Generation Volumes 15

Radioactive Materials Dispositions 16

Land Use (Long Term) 16

Low Activity Waste Generation 16

Decontamination and Decommissioning 16

Startup/Shutdown 16

Remediation 16

Remediation (Unknown) 16

Operations 30-Year Forecast by Treatability Group 17

Low-Level Waste 17

Job Control Waste 17

Long Lived 17

Tritiated 17

Soils 17

Bulk 17

Mixed Waste 17

Composite Filters 18

Inorganic Debris 18

Soil 18

Aqueous Liquids 18

Organic Debris 18

Heterogeneous Debris 18

Land Disposal Restrictions Compliance 18

Lead 18

Organic Liquids 18

Organic Sludge 18

Consolidated Incineration Facility Ash 18

Polychlorinated Biphenyls 18

Hazardous Waste 19

Polychlorinated Biphenyls 19

Heterogeneous Debris 19

Aqueous/Organic Liquids 19

Inorganic Debris 19

Soil 19

Lead 19

Organic Debris 19

TRU/TRU Mixed Waste 20

Low Activity Waste Requiring No Processing 20

Low Activity Waste Requiring Processing 20

High Activity Waste Requiring Processing 20

**Decontamination and Decommissioning 30-Year Forecast by
Treatability Group 25**

Assumptions 25

Average Total Waste Volume (D&D Activities) 25

Decontamination and Decommissioning to Greenfield 25

Contamination Due to Decontamination and Decommissioning 25

Average Total Waste Volume (to Foundation) 25

Average Total Waste Volume (Cutting) 25

Average Total Waste Volume (Removal Activities) 25

Data Manipulation 25

Waste Volume Generation Forecasts 25

Low-Level Waste (Taken to Foundation) 25

Mixed Waste (Taken to Foundation) 26

Hazardous Waste (Taken to Foundation) 26

Transuranic Waste (Taken to Foundation) 26

Low-Level Waste (Gutted) 26

Mixed Waste (Gutted) 26

Hazardous Waste (Gutted) 26

Transuranic Waste (Gutted) 26

Waste Volumes Combined (Taken to Foundation and Guttled) 26
Decontamination and Decommissioning 30-Year Summary Tables
26

Environmental Restoration 30-Year Forecast by Treatability
Group 31

Assumptions 31

Data Manipulation 31

Environmental Restoration 30-Year Summary Tables 31

Operations, Decontamination and Decommissioning, and En-
vironmental Restoration Summary Forecast By Treatability
Group 37

References 43

Appendix A 45

List of Tables

Table 1.	Low-level Waste Operations Generation Forecast by Treatability Group 21
Table 2.	Mixed Waste Operations Generation Forecast by Treatability Group 22
Table 3.	Hazardous Waste Operations Generation Forecast by Treatability Group 23
Table 4.	Transuranic Waste Operations Generation Forecast by Treatability Group 24
Table 5.	Low-level Waste D&D Forecast by Treatability Group 27
Table 6.	Mixed Waste D&D Forecast by Treatability Group 28
Table 7.	Hazardous Waste D&D Forecast by Treatability Group 29
Table 8.	Transuranic Waste D&D Forecast by Treatability Group 30
Table 9.	Low-level Waste Environmental Restoration Forecast by Treatability Group 32
Table 10.	Mixed Waste Environmental Restoration Forecast by Treatability Group 33
Table 11.	Hazardous Waste Environmental Restoration by Treatability Group 34
Table 12.	Transuranic Waste Environmental Restoration Forecast by Treatability Group 35
Table 13.	Low-level Waste Summary Forecast by Treatability Group 38

Table 14.	Mixed Waste Summary Forecast by Treatability Group 39
Table 15.	Hazardous Waste Summary Forecast by Treatability Group 40
Table 16.	Transuanic Waste Summary Forecast by Treatability Group 41

Executive Summary

This report is the second phase (Phase II) of the *Thirty-Year Solid Waste Generation Forecast for Facilities at SRS* at the Savannah River Site (SRS). Phase I of the forecast, *Thirty-Year Solid Waste Generation Forecast for Facilities at SRS (U)* (Reference 4), forecasts the yearly quantities of low-level waste (LLW), hazardous, mixed, and transuranic (TRU) wastes to be generated over the next 30 years by operations, decontamination and decommissioning, (D&D) and environmental restoration (ER) activities at SRS. This Phase II report also includes existing waste inventories that were not addressed in the Phase I report. Existing inventories include waste streams from continuing operations and stored wastes from discontinued operations.

The solid wastes stored or generated at SRS must be treated and disposed of in accordance with federal, state, and local laws and regulations. To evaluate, select, and

justify the use of promising treatment technologies and evaluate the potential impacts to the environment, the generic waste categories described in the Phase I report must be divided into smaller classifications with similar physical, chemical, and radiological characteristics. These classifications, defined as treatability groups, can be used in the Waste Management Environmental Impact Statement (WMEIS) process to evaluate treatment options.

This report provides a 30-year forecast by waste treatability group for operations, D&D, and ER activities. In addition, a 30-year forecast of waste streams has been provided for operations in Appendix A.

This Phase II report supports the in-depth options analysis for the WMEIS.

Terms and Definitions

Acronyms

AEA	Atomic Energy Act	MWIR	Mixed Waste Inventory Report
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act	NPDES	National Pollutant Discharge Elimination System
CFR	Code of Federal Regulations	PCB	Polychlorinated Biphenyls
CIF	Consolidated Incineration Facility	PuFF	Plutonium Fuel Fabrication
D&D	Decontamination and Decommissioning	RBOF	Receiving Basin for Offsite Fuels
DOE	Department of Energy	RCA	Radiologically Controlled Area
DSTP	Draft Site Treatment Plan	RCRA	Resource Conservation and Recovery Act
DWPF	Defense Waste Processing Facility	RH	Remote Handled
EAV	E-Area Vaults	RRF	Resin Regeneration Facility
EIS	Environmental Impact Statement	SCDHEC	South Carolina Department of Health and Environmental Control
EPA	Environmental Protection Agency	SCHWMR	South Carolina Hazardous Waste Management Regulations
ER	Environmental Restoration	SED	Separations Equipment Demonstration
ETF	Effluent Treatment Facility	SRS	Savannah River Site
FPTUR	Filter Paper Take Up Rolls	SRTC	Savannah River Technology Center
FB	F-Area Button	SWMD	Solid Waste Management Department
HEPA	High Efficiency Particulate Air	TC	Toxicity Characteristic
HB	H-Area Button	TCM	Toxic Cleanup Material
HW	Hazardous Waste	TRU	Transuranic
ILW	Intermediate Level Waste	TSCA	Toxic Substance Controls Act
IDW	Investigation Derived Waste	TTA	Thenoyl Trifluoroacetone
ITP	In-Tank Precipitation	WIPP	Waste Isolation Pilot Plant
LAW	Low Activity Waste	WIPPWAC	Waste Isolation Pilot Plant Waste Acceptance Criteria
LDR	Land Disposal Restrictions	WMEIS	Waste Management Environmental Impact Statement
LHLW	Liquid High-Level Waste	WSRC	Westinghouse Savannah River Company
LLW	Low-Level Waste		
MW	Mixed Waste		

Waste Category Terms and Definitions

Low-Level Waste

Waste that contains added radioactive isotopes and is not classified as high-level waste, transuranic waste, spent nuclear fuel, or Atomic Energy Act (AEA) 11e(2) byproduct material as defined in Department of Energy (DOE) Order 5820.2A (Reference 10). Within this report, all references to low-level waste (LLW) include low activity waste (LAW) and intermediate-level waste (ILW).

Low activity waste (LAW) is defined at SRS as solid beta-gamma emitting waste that radiates less than 200 mrad/hr or 200 mrem/hr at 5 cm from the unshielded container. (Examples of LAW are protective clothing, small equipment, plastic sheeting, gloves, soil, and suspect contaminated materials that were used within a radiologically contaminated area [RCA] and cannot be proven to be non-contaminated).

Intermediate-level waste (ILW) is a term specific to SRS for the higher activity fraction of low-level waste that contains beta-gamma emitters that produce a radiation dose rate equal to or greater than 200 mR/hr (or 200 mrad/hr or 200 mrem/hr) at 5 centimeters from an unshielded container (Reference 10). Intermediate-level waste can also contain less than 10 nCi/g of transuranics. Any wastes with greater amounts of transuranics (10-100 nCi/g) are managed as TRU wastes.

Intermediate-level beta-gamma waste is typically contaminated equipment from the canyons or from Waste Management facilities, spent lithium-aluminum targets from Tritium operations, jumpers from F-Area and H-Area Tank Farm operations, reactor scrap, and irradiated reactor hardware that does not contain fuel.

Mixed Waste

Mixed waste (MW) is waste that is hazardous (as described by the South Carolina Hazardous Waste Management Regulation [SCHWMR] R.61-79.261.3) and radioactive. On May 1, 1987, the Department of Energy (DOE) issued a final interpretive byproduct material rule to clarify DOE's obligations under the Resource Conservation and Recovery Act (RCRA). The effect of the rule is that all DOE radioactive waste that is hazardous under the Resource Conservation and Recovery Act definition will be subject to regulation under both RCRA and AEA, with the hazardous components of the waste under the jurisdiction of the Environmental Protection Agency (EPA).

In the past, MW consisted primarily of tritiated mercury, tritiated oil, and scintillation fluids. Typical MW at SRS now includes radiologically contaminated lead, mercury, and cadmium.

Hazardous Waste

Hazardous waste (HW) is solid waste regulated by the Resource Conservation and Recovery Act and defined by SCHWMR as hazardous waste (Public Law 94-580) of 1976. Several EPA regulations (40 CFR 260 - 268 and others) implement RCRA. The South Carolina Department of Health and Environmental Control (SCDHEC) is authorized by EPA to administer RCRA, with the exception of the land disposal regulations (LDRs), via the SCHWMR.

Hazardous wastes are either "characteristic" or "listed". Hazardous waste is either ignitable, corrosive, reactive, toxic, or some combination.

Transuranic Waste

Without regard to source or form, transuranic (TRU) waste is waste contaminated with alpha-emitting transuranic radionuclides with half-lives greater than 20 years, and at concentrations greater than 100 nCi/g of waste matrix at the time of assay. The mass of the waste container and shielding will not be used in determining the TRU concentration. The limit was changed from 10 nCi/g to 100 nCi/g with DOE Order 5820.1 (dated September 30, 1992, implemented by SR Order 5820.1, dated March 24, 1983). However, SRS continues to manage waste containing between 10 and 100 nCi/g of transuranics as TRU waste until site-specific radiological performance assessments can be completed that will provide disposal limits for transuranic isotopes. TRU waste is primarily job control waste but may also include high efficiency particulate air (HEPA) filters, resins, and sludges.

Treatability Group Terms and Definitions

All wastes in a treatability group (a group/combination of characteristics such as physical, chemical, and/or radiological that describe a logical waste grouping) will be evaluated collectively when assessing the viability of various treatment technologies during the in-depth options analysis phase of the WMEIS.

Low-Level Waste Treatability Groups

The following treatability groups are a subset of the LLW category described and forecasted in the *Thirty-Year Solid Waste Generation Forecast for Facilities at SRS*. Treatability groups are mutually exclusive. Summing all wastes

within low-level treatability groups will equal the total volume in the LLW category.

Tritiated

Operating, construction, and laboratory waste contaminated with tritium, in quantities equal to or greater than 10 Ci per container. Some examples include large and small metal equipment, protective clothing, gloves, etc. The special handling requirements for tritiated wastes make this a single treatability group regardless of physical, chemical, or other radiological characteristics.

Long-lived

Any low-level, non-tritiated (less than 10 Ci of tritium per container) wastefrom with large curie quantities of long-lived nuclides (greater than 100-year half-life). The definition of large curie quantities is any value that exceeds the performance assessment restrictions of currently available disposal facilities. For example, spent deionizer resins containing large quantities of carbon-14 (half-life of 5730 years) are currently not suitable for shallow land disposal due to performance assessment criteria, and are considered long-lived waste.

Bulk

Large metal equipment, wood debris, metal debris, etc. that cannot be packaged in 55-gallon drums or radiologically contaminated B-25 boxes and do not meet the LLW treatability group definitions established above.

Soils

Soils and construction debris (e.g., asphalt, concrete, rock, rubble, metal debris, etc.) that have, or are suspected to have, radiological contamination and do not meet the LLW treatability group definitions established above.

Job Control Waste

Operating, construction, and laboratory waste that meets the DOE definition for LLW (e.g., small equipment, protective clothing, analytical waste, plastic sheeting, gloves, glass, metal, plastic, paper, wood, etc.) and does not meet the definition of any other LLW treatability group.

Mixed Waste Treatability Groups

The following treatability groups are a subset of the MW category described and forecasted in the *Thirty-Year Solid Waste Generation Forecast for Facilities at SRS*. Treatability groups are mutually exclusive. Summing all wastes

within the mixed treatability groups will equal the total volume in the MW category.

Land Disposal Restrictions

Materials that will meet the disposal criteria in the LDRs defined by EPA in 40 CFR 268 or have an approved variance in their final, packaged form as received at the Solid Waste Disposal Facility (SWDF).

Current

Mixed waste streams that do not meet LDRs for which there is a current inventory, but no future generation is anticipated. This is not a true treatability group because of the many varied types of waste that fall into this category. This grouping was created for this effort, the WMEIS, because the waste streams included are currently in storage, have been evaluated in the Draft Site Treatment Plan for treatment, and will no longer be generated at SRS. Thus, treatment capacity and in-depth options analysis for future generation is not required. The treatments identified by the Draft Site Treatment Plan will be used.

Ash Consolidated Incineration Facility

Radiologically contaminated ash generated by the incineration of mixed wastes at the Consolidated Incineration Facility (CIF). These do not meet any of the mixed waste treatability group definitions established above. This ash is hazardous by application of the "derived-from" rule in SCHWMR R.61-79.261.3 and may also be characteristically hazardous for metals as defined in SCHWMR R.61-79.261.3.

Polychlorinated Biphenyls

Radiologically contaminated wastes that are also contaminated with polychlorinated biphenyls (PCB). Polychlorinated biphenyls wastes consist of rags, wipes, mops, cleanup materials, spill response cleanup materials, protective clothing, plastic, wood, glass, small pieces of metal equipment, and soils and construction debris contaminated with greater than 50 ppm PCBs. Wastes generated as a result of PCB cleanup or PCB decontamination activities will be handled as PCB waste. These materials do not meet any of the mixed waste treatability group definitions established above. Although this is a Toxic Substance Controls Act (TSCA) waste and not a RCRA waste, it is included under mixed waste because of the similar regulatory requirements.

Heterogeneous Debris

Radiologically contaminated materials that meet the definition of debris in the Debris Rule regulations, SCHWMM R.61-79.268.2, which are comprised of various organic and inorganic materials such as small pieces of equipment contaminated with characteristic, listed, or some combination of RCRA hazardous constituents as defined in SCHWMM R.61-79.261.3, and do not meet any of the MW treatability group definitions established above.

Organic Debris

Radiologically contaminated materials that meet the definition of debris in the Debris Rule regulations, SCHWMM R.61-79.268.2, comprised primarily of organic materials such as rags, mops, and like items contaminated with characteristic, listed, or some combination of RCRA hazardous constituents as defined in SCHWMM R.61-79.261.3. They do not meet any of the MW treatability group definitions established above.

Inorganic Debris

Radiologically contaminated materials that meet the definition of debris in the Debris Rule regulations, SCHWMM R.61-79.268.2, are comprised primarily of inorganic materials contaminated with characteristic, listed, or some combination of RCRA hazardous constituents as defined in SCHWMM R.61-79.261.3, and do not meet any of the MW treatability group definitions established above.

Concerning heterogeneous debris, organic debris, and inorganic debris, the EPA states a "prohibited hazardous debris is defined generally as solid material (that is not a processed waste) having a particle size of 60 mm or larger and that is intended for land disposal that exhibits a prohibited characteristic of hazardous waste or that is contaminated with a prohibited hazardous waste".

Organic Sludge

Radiologically contaminated materials that do not meet the definition of debris in the Debris Rule regulations, SCHWMM R.61-79.268.2, are comprised primarily of organic sludges contaminated with characteristic, listed, or some combination of RCRA hazardous constituents as defined in SCHWMM R.61-79.261.3, and do not meet any of the MW treatability group definitions established above.

Organic Liquids

A radiologically contaminated, pumpable, liquid waste, usually flammable, contaminated with characteristic, listed, or some combination of RCRA hazardous constituents as defined in SCHWMM R.61-79.261.3. These include oil, antifreeze, and like items that may contain metals, suspended solids, and dissolved solids that do not meet the mixed waste treatability group definitions established above. All radiological oils are included in this group, both hazardous and nonhazardous.

Approximately half of the radiological oils will not require permitted storage; however, it is anticipated that all radiological oils will be treated in the same facility.

Aqueous Liquids

A radiologically contaminated, pumpable, liquid waste comprised primarily of water that may be contaminated with characteristic, listed, or some combination of RCRA hazardous constituents as defined in SCHWMM R.61-79.261.3. This material may contain suspended solids, ionic compounds, dissolved solids, metals, and low concentrations of organic compounds and do not meet any of the MW treatability group definitions established above.

Lead

Radiologically contaminated lead or lead-bearing wastes that are characteristically hazardous for lead as defined in SCHWMM R.61-79.261.3, such as lead bricks, sheets, slag, lead-lined gloves, lead-lined aprons, lead waste from smelter operations, and other solid waste forms that do not meet any of the MW treatability group definitions established above.

Composite Filters

Various types of failed/spent radiologically contaminated filters that may also be contaminated with characteristic, listed, or some combination of RCRA hazardous constituents as defined in SCHWMM R.61-79.261.3 that do not meet any of the MW treatability group definitions established above.

Soil

Radiologically contaminated soils and construction debris including wood, concrete, asphalt, rubble, etc. that are also contaminated with characteristic, listed, or some combination of RCRA hazardous constituents as defined in SCHWMM R.61-79.261.3 and do not meet any of the MW treatability group definitions established above.

Hazardous Waste Treatability Groups

The following treatability groups are a subset of the hazardous waste category described and forecasted in the *Thirty-Year Solid Waste Generation Forecast for Facilities at SRS*. Treatability groups are mutually exclusive. Summing all wastes within the hazardous treatability groups will equal the total volume in the HW category.

Current

Hazardous waste streams for which there is a current inventory, but no future generation is anticipated. This is not a true treatability group because of the many varied types of waste with different characteristics that fall into this category. This grouping was created for this effort because the waste streams in this category are in storage, have existing onsite or offsite treatment available, and will no longer be generated at SRS; therefore no future treatment capacity or option analysis is required.

Polychlorinated Biphenyls

Materials contaminated with PCBs that do not meet the definition of current waste. PCB wastes consist of rags, wipes, mops, cleanup materials, spill response cleanup materials, protective clothing, plastic, wood, glass, small pieces of metal equipment and soils and construction debris contaminated with greater than 50 ppm PCBs. Waste generated as a result of the cleanup of PCB decontamination activities will be handled as PCB wastes. Although this is a TSCA waste and not a RCRA waste, it is included under MW because of the similar regulatory requirements.

Heterogeneous Debris

Materials that may meet the definition of debris in the Debris Rule regulations 57 FR 37194, SCHWMR R.61-79.268.2, are comprised of various organic and inorganic materials contaminated with characteristic, listed, or some combination of RCRA hazardous constituents as defined in SCHWMR R.61-79.261.3, and do not meet any of the HW treatability group definitions established above.

Organic Debris

Materials that meet the definition of debris in the Debris Rule regulations, SCHWMR R.61-79.268.2, comprised primarily of organic materials contaminated with characteristic, listed, or some combination of RCRA hazardous constituents as defined in SCHWMR R.61-79.261.3 and are wastes that do not meet any of the HW treatability group definitions established above.

Inorganic Debris

Materials that may meet the definition of debris in the Debris Rule regulations, SCHWMR R.61-79.268.2, are comprised primarily of inorganic materials contaminated with characteristic, listed, or some combination of RCRA hazardous constituents as defined in SCHWMR R.61-79.261.3, and do not meet any of the HW treatability group definitions established above.

Concerning heterogeneous debris, organic debris, and inorganic debris, the EPA states a "prohibited hazardous debris is defined generally as solid material (that is not a processed waste) having a particle size of 60 mm or larger and that is intended for land disposal that exhibits a prohibited characteristic of hazardous waste or that is contaminated with a prohibited hazardous waste".

Aqueous/Organic Liquid

A pumpable liquid waste, contaminated with characteristic, listed, or some combination of RCRA hazardous constituents as defined in SCHWMR R.61-79.261.3. These liquids may contain metals, suspended solids, or dissolved solids and are wastes that do not meet any of the hazardous waste treatability group definitions established above.

Lead

Predominantly lead or lead-bearing wastes that are characteristically hazardous for lead as defined in SCHWMR R.61-79.261.3 such as lead bricks, sheets, slag, lead-lined gloves, lead-lined aprons, lead waste from smelter operations, and other solid wasteforms that do not meet any of the HW treatability group definitions established above.

Soil

Soils and construction debris including wood, concrete, asphalt, rubble, and like items contaminated with characteristic, listed, or some combination of RCRA hazardous constituents as defined in SCHWMR R.61-79.261.3 and other RCRA hazardous materials that do not meet the definition of any other HW treatability group.

Transuranic Waste Treatability Groups

The following treatability groups are a subset of the TRU waste category described and forecasted in the *Thirty-Year Solid Waste Generation Forecast for Facilities at SRS*. Treatability groups are mutually exclusive. Summing all wastes within the TRU treatability groups will equal the total volume in the TRU waste category.

Low Activity Waste-Not Requiring Processing

Non-RCRA hazardous job control waste from plutonium processing facilities suspected of containing TRU isotopes between 10 and 100 nCi/gm. This material is managed as TRU waste and will require assay analysis to determine the actual isotopic concentrations prior to reclassification as low-level waste or treatment to meet the Waste Isolation Pilot Plant Waste Acceptance Criteria (WIPPWAC).

Low Activity Waste-Requiring Processing

Job control waste from Pu processing facilities, containing > 10 nCi/g and < 0.5 Ci/package of TRU isotopes that may also be contaminated with characteristic, listed, or some combination of RCRA hazardous constituents as defined in SCHWMMR R.61-79.260. This group also includes non-RCRA hazardous job control waste from plutonium processing facilities suspected of containing TRU isotopes >100 nCi/gm but less than 0.5 Ci/package.

Some of the RCRA hazardous material is managed as TRU waste and will require assay analysis to determine the actual isotopic concentrations. All RCRA hazardous waste that contains <100 nCi/g will require LDR treatment to meet the disposal requirements for mixed waste disposal facilities other than WIPP.

All (both RCRA the hazardous and non-RCRA hazardous) >100 nCi/gm but less than 0.5 Ci/package waste will require further characterization and processing to meet Waste Isolation Pilot Plant Waste Acceptance Criteria (WIPPWAC).

High Activity Waste-Requiring Processing

All (both RCRA the hazardous and non-RCRA hazardous) greater than 0.5 Ci/package waste requiring further characterization and processing to meet WIPPWAC requirements. Any wastes that can be reclassified as less than 100 nCi/g during processing will require treatment to LDR requirements for disposal as mixed waste or to LLW criteria for onsite disposal.

Waste Stream Terms and Definitions

The following waste stream definitions describe the current waste inventories and postulated future wastes generated by normal operations. There is insufficient data to describe waste from future D&D and ER activities in any more detail than the treatability group.

Low-Level Waste Streams

Spent Deionizer Resin

Resin from reactor deionizers.

Tritiated Intermediate Activity Job Control Waste

Job control wastes that have beta-gamma emitters producing a radiation dose rate equal to or greater than 200 mR/hr (or 200 mrad/hr or 200 mrem/hr) at 5 cm from an unshielded container that also contains less than 10 nCi of tritium per gram.

Low Activity Job Control Waste

Job control waste radiating less than 200 mR/hr (200 mrad/hr or 200 mrem/hr) at 5 cm from an unshielded container.

Intermediate Activity Job Control Waste

Job control waste containing beta-gamma emitters that produce a radiation dose rate equal to or greater than 200 mR/hr (or 200 mrad/hr or 200 mrem/hr) at 5 cm from an unshielded container.

Shipments from Offsite

Job control waste being produced from naval reactors and shipped to SRS for disposal. This waste has already been compacted and does not require additional treatment.

Low Activity Equipment

Large contaminated (radiating less than 200 mR/hr, 200 mrad/hr or 200 mrem/hr at 5 cm from an unshielded container) metal equipment that is too large to be packaged in B-25 boxes.

Naval Hardware

Large reactor components/equipment from the Naval Reactors program.

Low Activity Soil

Soils radiating less than 200 mR/hr (200 mrad/hr or 200 mrem/hr) at 5 cm from an unshielded container.

Suspect Soil

Soils from an RCA that may or may not be contaminated.

Mixed Waste Streams

Current

Mixed waste streams that do not meet LDRs for which there is a current inventory, but no future generation is anticipated. This is not a true treatability group because of the many varied types of waste that fall into this category. This grouping was created for this effort, the WMEIS, because the waste streams that are included in this group are currently in storage, have been evaluated in the DSTP for treatment, and will no longer be generated at SRS, thus treatment capacity and in-depth options analysis for future generation is not required. The treatments identified in the Draft Site Treatment Plan will be used for these streams.

Polychlorinated Biphenyls

Radiologically contaminated wastes that are also contaminated with PCBs. PCB wastes consist of rags, wipes, mops, cleanup materials, spill response cleanup materials, protective clothing, plastic, wood, glass, small pieces of metal equipment and soils and construction debris contaminated with greater than 50 ppm PCBs. Waste generated as a result of PCB cleanup of PCB decontamination activities will be handled as PCB waste. Although this is a TSCA waste and not a RCRA waste, it is included under MW because of the similar regulatory requirements.

Filters

Various types of failed/spent filters, radiologically contaminated, that may also be contaminated with characteristic, listed, or some combination of RCRA hazardous constituents.

Glass Debris

Glass waste, which includes laboratory waste such as test tubes, etc., that is radiologically contaminated and may be contaminated with characteristic, listed, or some combination of RCRA hazardous constituents as defined in SCHWMR R.61-79.261.3.

Mercury-Contaminated Equipment

Equipment and pieces of equipment that are radiologically contaminated and characteristically hazardous for mercury as defined in SCHWMR R.61-79.261.3.

Soils—Environmental Restoration Solids and Mud

Radiologically contaminated soil and mud generated from ER activities. This waste may be contaminated with char-

acteristic, listed, or some combination of RCRA hazardous constituents as defined in SCHWMR R.61-79.261.3.

Aqueous Liquids

Miscellaneous aqueous liquid waste generated across the Site that may be contaminated with characteristic, listed, or some combination of RCRA hazardous constituents as defined in SCHWMR R.61-79.261.3. The largest portion of this waste stream is made up of ER wastes—purge and rinsate waters.

Consolidated Incineration Facility Blowdown

A byproduct of the incinerator's air pollution control system, this is an aqueous, radiologically contaminated, chloride liquid that is considered RCRA hazardous by application of the derived-from rule in SCHWMR R.61-79.261.3 and may also be characteristic hazardous for metals as defined in SCHWMR R.61-79.261.3.

Toxic Cleanup Materials

Radiologically contaminated materials comprised of debris such as rags, mops, protective clothing, and plastic huts that may be contaminated with characteristic, listed, or some combination of RCRA hazardous constituents as defined in SCHWMR R.61-79.261.3.

Radiologically Contaminated Solvents

Radiologically contaminated materials comprised primarily of debris such as rags that are contaminated with RCRA-listed solvents and other RCRA hazardous constituents.

Organic Sludge

Radiologically contaminated materials—that do not meet the definition of debris in the Debris Rule regulations, SCHWMR R.61-79.268.2, and are comprised primarily of organic sludges contaminated with characteristic, listed, or some combination of RCRA hazardous constituents as defined in SCHWMR R.61-79.261.3.

Heterogeneous Debris

Radiologically contaminated materials that meet the definition of debris in the Debris Rule regulations, SCHWMR R.61-79.268.2, are comprised of various organic and inorganic materials such as batteries, small pieces of equipment, and protective equipment contaminated with characteristic, listed, or some combination of RCRA haz-

ardous constituents as defined in SCHWMR R.61-79.261.3.

Gold Traps

Used gold traps from the Tritium facility that are considered RCRA hazardous as defined in SCHWMR R.61-79.261.3 due to the presence of mercury. The mercury is amalgamated on the gold traps. Interpretation received from EPA verifies that the amalgamated mercury meets the treatment standard, therefore, when packaged, the waste may be disposed of in a RCRA-permitted disposal facility.

In-Tank Precipitation Filters

Failed filters from ITP that are considered RCRA hazardous as defined in SCHWMR R.61-79.261.3 because of the presence of benzene and possibly metals. Following in situ oxalic acid washing and subsequent placement into an engineered box under the authority of a treatability variance approved by EPA, the filters meet the alternate treatment for LDR and may be disposed of in a RCRA-permitted disposal facility.

M-Area Glass

Stabilized material from the M-Area vendor vitrification process. This radiologically contaminated material will meet the EPA LDRs in 40 CFR 268 and may be disposed of in a RCRA-permitted disposal facility.

Lead

Radiologically contaminated lead and lead pieces used primarily for shielding purposes. This waste is considered characteristically hazardous for lead as defined in SCHWMR R.61-79.261.3.

Defense Waste Processing Facility (DWPF) Benzene

A radiologically contaminated, liquid, organic waste generated during DWPF operations that is considered characteristically hazardous for benzene as defined in SCHWMR R.61-79.261.3.

Paints and Thinners

Radiologically contaminated solids and sludges from paints and thinners generated across the Site that may be contaminated with characteristic, listed, or some combination of RCRA hazardous constituents as defined in SCHWMR R.61-79.261.3.

Radioactive Oils

Radiologically contaminated oils that may also be contaminated with characteristic, listed, or some combination of RCRA hazardous constituents as defined in SCHWMR R.61-79.261.3. This stream also includes radiologically contaminated oils that are not considered RCRA hazardous by SCDHEC. This consolidation is for treatment anticipated to be similar. Approximately half of the radiological oils will not require RCRA-permitted storage.

Freon/Oil/Organic Liquid

Radiologically contaminated freon and oil generated across the Site from refrigeration and cooling units that may be contaminated with characteristic, listed, or some combination of RCRA hazardous constituents as defined in SCHWMR R.61-79.261.3. This waste stream includes other miscellaneous organic liquids that do not meet the other organic liquid waste stream definitions.

Consolidated Incineration Facility Ash

This waste stream consists of radiologically contaminated ash generated by the incineration of mixed wastes at the consolidated incineration facility. This ash is hazardous by application of the derived-from rule in SCHWMR R.61-79.261.3 and may also be characteristic hazardous for metals as defined in SCHWMR R.61-79.261.3.

Hazardous Waste Streams

Current

Hazardous waste streams for which there is a current inventory, but no future generation is anticipated. This is not a true treatability group because of the varied types of waste with different characteristics that fall into this category. This grouping was created for this effort because the waste streams in this category are in storage, have existing onsite or offsite treatment available, and will no longer be generated at SRS; therefore, no future treatment capacity or option analysis is required.

Polychlorinated Biphenyls

Wastes contaminated with PCBs. PCB wastes consist of rags, wipes, mops, cleanup materials, spill response cleanup materials, protective clothing, plastic, wood, glass, small pieces of metal equipment, and soils and construction debris contaminated with greater than 50 ppm PCBs. Waste generated as a result of PCB cleanup of PCB decontamination activities will be handled as PCB waste. Although this is a TSCA waste and not a RCRA waste, it

is included under hazardous waste because of the similar regulatory requirements.

Miscellaneous TC Wastes—Solid

Solid wastes contaminated with characteristic RCRA hazardous constituents as defined in SCHWMR R.61-79.261.3.

Batteries-used batteries considered characteristically hazardous as defined in SCHWMR R.61-79.261.3 that may be acidic or alkaline and may contain lead, mercury, and cadmium.

Miscellaneous Toxicity Characteristic (TC) Wastes—
Liquid-liquid wastes contaminated with characteristic RCRA hazardous constituents as defined in SCHWMR R.61-79.261.3.

Miscellaneous Solvents-miscellaneous organic solvents contaminated with characteristic, listed, or some combination of RCRA hazardous constituents as defined in SCHWMR R.61-79.261.3.

Ignitable and Miscellaneous TC-miscellaneous and ignitable organic or aqueous liquids contaminated with characteristic, listed, or some combination of RCRA hazardous constituents as defined in SCHWMR R.61-79.261.3.

Spent Varnish and Paint-used or spent varnish and paint considered characteristic, listed, or some combination of RCRA hazardous waste as defined in SCHWMR R.61-79.261.3.

Low Mercury Wastes (glass)-glass waste such as used light bulbs that may be considered characteristically hazardous for mercury as defined in SCHWMR R.61-79.261.3.

Contaminated Soil-soils contaminated with characteristic, listed, or some combination of RCRA hazardous constituents as defined in SCHWMR R.61-79.261.3.

Lead Smelter and Soil Waste

Lead-bearing wastes and lead contaminated soils that are considered characteristically hazardous for lead as defined in SCHWMR R.61-79.261.3.

Halogenated Solvents (Toxic Cleanup Materials)

Toxic cleanup materials that may be contaminated with characteristic, listed or some combination of RCRA hazardous

constituents as defined in SCHWMR R.61-79.261.3.

Transuranic Waste Streams

< 100 nCi/gm Waste Being Managed as TRU

Miscellaneous, non-RCRA hazardous waste such as job control waste, protective clothing, cloth, paper, rubber, swipes, rags, booties, glassware, small metal objects and pieces of equipment, wood, plastic, etc. from TRU-generating facilities. This waste is contaminated with TRU isotopes in quantities suspected to be < 100 nCi/gm.

< 100 nCi/gm Mixed Waste Being Managed as TRU

Miscellaneous waste such as job control waste, protective clothing, cloth, paper, rubber, swipes, rags, booties, glassware, small metal objects and pieces of equipment, wood, or plastic from TRU-generating facilities. This waste is contaminated with TRU isotopes in quantities suspected to be <100 nCi/gm and that may also be hazardous as defined in SCHWMR R.61-79.261.3 because of the presence of listed or characteristic materials or because of application of the derived from rule in SCHWMR R.61-79.261.3. (See Reference 8, Waste Streams SR-W025 and SR-W033 for more information.)

> 100 nCi/gm & < 0.5 Ci TRU Waste

Miscellaneous non-RCRA waste such as job control waste including protective clothing, cloth, paper, rubber, swipes, rags, booties, glassware, small metal objects, and pieces of equipment, wood, and plastic from TRU-generating facilities. This waste is contaminated with TRU isotopes in quantities between 100 nCi/gm and < 0.5 Ci/package.

> 100 nCi/gm & < 0.5 Ci TRU Mixed Waste

Miscellaneous waste such as job control waste, including protective clothing, cloth, paper, rubber, swipes, rags, booties, glassware, small metal objects, and pieces of equipment, wood, and plastic from TRU-generating facilities. This waste is contaminated with TRU isotopes in quantities suspected to be between 100 nCi/gm and < 0.5 Ci/package that may also be RCRA hazardous as defined in SCHWMR R.61-79.260 because of the presence of listed or characteristic materials or because of application of the derived from rule defined in SCHWMR R.61-79.261.3. (See Reference 8, Waste Streams SR-W026 and SR-W027 for more information.)

≥ 0.5 Ci TRU Waste

Miscellaneous non-RCRA waste such as job control waste including protective clothing, cloth, paper, rubber, swipes, rags, booties, glassware, small metal objects, and pieces of equipment, wood, or plastic from TRU-generating facilities. This waste is suspected to be contaminated with TRU isotopes in quantities greater than or equal to 0.5 Ci/package.

≥ 0.5 Ci TRU Mixed Waste

Miscellaneous waste such as job control waste including protective clothing, cloth, paper, rubber, swipes, rags, booties, glassware, small metal objects, and pieces of equipment, wood, plastic, etc. from TRU-generating facilities. This waste is suspected to be contaminated with TRU isotopes in quantities greater than or equal to 0.5 Ci/package that may also be RCRA hazardous as defined in SCHWMR R.61-79.261.3 because of the presence of listed or characteristic materials or because of application of the derived from rule defined in SCHWMR R.61-79.261.3. (See Reference 8, Waste Streams SR-W026 and SR-W027 for more information.)

Bulky Equipment and Miscellaneous Items

Miscellaneous RCRA waste including large pieces of equipment, pumps, duct work, gloveboxes, and filters that consists primarily of metal, wood, plastic, and glass from TRU-generating facilities. This TRU-contaminated waste is not packaged in 55-gallon drums.

Mixed Waste Bulky Equipment

Miscellaneous, non-RCRA waste including large pieces of equipment, pumps, duct work, gloveboxes, and filters that

consists primarily of metal, wood, plastic and glass from TRU-generating facilities. This TRU-contaminated waste is not packaged in 55-gallon drums. It may also be RCRA hazardous as defined in SCHWMR R.61-79.261.3 because of the presence of listed or characteristic materials or the application of the derived-from rule defined in SCHWMR R.61-79.261.3. (See Reference 8, Waste Streams SR-W026 and SR-W027 for more information.)

Remote Handled (RH) TRU Waste

Miscellaneous, non-RCRA waste including filters, equipment, pumps, duct work, and gloveboxes consisting primarily of metal, wood, plastic, and glass and job control waste including protective clothing, cloth, paper, rubber, swipes, rags, booties, glassware, small metal objects, and pieces of equipment, wood, and plastic from TRU-generating facilities. This waste is contaminated with TRU isotopes and has a radiation dose rate of greater than 200 mrem/hr as defined in the WIPPWAC.

Remote Handled (RH) Mixed TRU Waste-miscellaneous waste including filters, equipment, pumps, duct work, or gloveboxes consisting primarily of metal, wood, plastic and glass and job control waste including protective clothing, cloth, paper, rubber, swipes, rags, booties, glassware, small metal objects, and pieces of equipment, wood, and plastic from TRU-generating facilities. This waste is contaminated with TRU isotopes and has a radiation dose rate of greater than 200 mrem/hr as defined in the WIPPWAC and may be RCRA hazardous as defined in SCHWMR R.61-79.261.3 because of the presence of listed or characteristic materials or because of application of the derived-from rule defined in SCHWMR R.61-79.261.3.

Background

This report is Phase II of the *Thirty-Year Solid Waste Generation Forecast for Facilities at SRS*. Phase I of the forecast, *Thirty-Year Solid Waste Generation Forecast for Facilities at SRS (U)* (Reference 4), forecasts the yearly quantities of LLW, hazardous, mixed, and TRU wastes generated over the next 30 years by operations, D&D, and ER activities at SRS.

The solid wastes stored or generated at SRS must be treated and disposed of in accordance with federal, state, and local laws and regulations. To evaluate, select, and justify the use of promising treatment technologies and to evaluate the potential impacts to the environment, the generic waste categories described in the Phase I report must be divided into smaller classifications with similar physical, chemical, and radiological characteristics. These classifications, defined as treatability groups, can be used in the WMEIS process to evaluate treatment options. The methodology used to categorize the SRS Solid Waste streams into treatability groups is based on the premise

that the key information necessary for identifying like treatments can be discerned from the radiological, physical, and chemical properties of the wastes and their contaminants.

For waste streams placed into the treatability groups by the Draft Site Treatment Plan Program, the DSTP treatability groupings are generally used. For hazardous wastes, treatability groups are consistent with the DSTP treatability groups for mixed waste streams.

This report provides a 30-year forecast by waste treatability group for operations, D&D, and ER activities. Current inventories of waste are also reported. A 30-year forecast by waste stream is provided for operations in Appendix A.

The remainder of this report documents the assumptions and decision-making process used in generating the 30-year waste forecast by treatability group.

Uncertainties and Assumptions

Uncertainties

- The effect that future waste certification and treatment requirements will have on waste generation
- The effect of higher waste generation because of more rigid compliance, disciplines, operation, etc., than in the past
- The effect of delays in funding facility shutdowns, transition, D&D, and remediation
- The effect of unspecified requirements for shutdowns, transitions, D&D, and remediation
- The effect of using contractors rather than SRS workers
- The effect of SRS experience base expansion on out-year ER and D&D
- The effect of new technology development for D&D and ER
- The effect of future changes to the Site mission
- The effect of regulatory and legal requirements that are new or changing.

Assumptions

Waste Forecasts

All waste forecasts assume an effective facility waste minimization program in accordance with the Site Waste Minimization Plan during the next 30 years (Reference 12). There will not be any radical technological developments that will result in a significant decrease of waste generated.

Waste Generation Rates

Projected waste generation rates for the expected case are based on current regulatory and DOE requirements, available technologies, and waste certification requirements.

Polychlorinated Biphenyl Wastes

For the purposes of this report, nonradioactive PCB wastes will be treated as hazardous waste. Radiologically contaminated PCB wastes will be treated as mixed waste.

Radiologically Contaminated Waste Oils

For the purposes of this report, all radiologically contaminated waste oils are included in the mixed waste forecast volumes because it is anticipated that all radiologically contaminated oils will be disposed of in the same manner.

Mixed Waste Generation Volumes

The mixed waste generation volumes in this forecast include all mixed wastes targeted for management by the Solid Waste Management Department and waste generated by routine environmental restoration activities. This volume differs from the data in Mixed Waste Inventory Report (MWIR) because MWIR does not currently include waste generated from routine environmental restoration activities.

Wastes included in this report, which are not included in the MWIR, include the following:

- ER wastes such as soils, rinsate water, purge water, and personal protective equipment. These wastes are included in this report for two reasons: (1) Although a portion of these wastes are treated in existing facilities, they are radiologically contaminated wastes that contain low levels of hazardous constituents. (2) In a conservative approach, regulations and the final approved Investigative Derived Waste (IDW) Plan, which is currently with the state regulators for review, could require these wastes to be handled as MW.
- Glass debris generated from within RCAs. This includes wastes generated within labs.
- Heterogeneous debris that encompasses the future generation of a large variety of wastes (including ER wastes identified above) currently unspecified in contaminants or form. It is expected that these wastes, when further characterized, can be treated in a similar manner as those wastes under other categories of inorganic and organic wastes.

Wastes included in the MWIR that are not included in this report include Savannah River Technology Center (SRTC) low and high activity liquid wastes that are stored and treated in SRTC wastewater treatment tanks. These wastes were never intended to be handled at SWMD facilities and are addressed solely in the Draft Site Treatment Plan. It is assumed that the storage tanks, which are located in F Canyon, will remain operational past F-Canyon shutdown until other storage facilities can be provided.

Radioactive Materials Dispositions

Key guidance assumptions for the radioactive materials dispositions are:

- SRS will continue to be government-owned and contractor-operated and will provide land for DOE-related activities with adequate isolation from population centers.
- Surplus Defense Programs (DP) facilities will be deactivated and undergo D&D.
- The Site will continue to support environmental ecological research, balanced forest management, and historical and archeological programs.

Land Use (Long Term)

For long-range planning of land use, it is assumed that the central site area is to be used for continued Defense Program activities and for the disposal and monitoring of waste materials that remain on site. This will exclude the use of the surface, subsurface, and groundwater in the central industrial area from unrestricted use in the future. The central industrial area is centered on the Separations and Solid Waste Complex Areas and extends to the reactor areas. The remaining site boundary surface and subsurface soil regions (SRTC, 300 Area, 400 Area, TNX, the Reactors, and other miscellaneous areas) at the plant perimeter will be remediated as necessary to allow unrestricted use. The specific level of cleanup of the surface, subsurface, and groundwater in these perimeter areas will be determined through processes established through RCRA.

Low Activity Waste Generation

Low activity waste generation figures do not reflect compaction prior to disposal.

Decisions regarding the regulatory requirements/handling of ER wastes will require less than 20% of the waste generated from environmental restoration activities (soils and mud) to be handled as RCRA hazardous waste. All purged water from wells will be handled as RCRA hazardous waste. Monitoring well sampling volumes will be reduced by 50% of current volumes.

Decontamination and Decommissioning

In the 30-year period, the following facilities will not undergo D&D:

- Defense Waste Processing Facility (DWPF)
- Z-Area Saltstone Facility
- Effluent Treatment Facility (ETF)
- In-Tank Precipitation (ITP) Facility

- Savannah River Technology Center (except for Separations Equipment Demonstration facility)
- Replacement Tritium Facility
- Type III waste tanks
- New Special Recovery Facility of 221 FB-Line
- 484-D Powerhouse Facility, 483-1D Water Treatment Facility, and support buildings
- Consolidated Incineration Facility
- Analytical Labs (excluding 772-D)
- Burial Grounds Facilities

Startup/Shutdown

It is assumed that the following major facilities will start up or shut down during the following years:

Startup

FY 96	Defense Waste Processing Facility
	Consolidated Incineration Facility

Shutdown

FY 97	Reactors/D Area
FY 98	772-D Laboratory
	Reactor Materials
FY 99	TNX
FY 03	HB Line
	F Canyon
	FB Line
FY 05	RBOF/RRF
	H Canyon
FY 13	235-F PuFF and Thoria Line

Remediation

It is assumed that for all sites/facilities/spills identified in Appendices C and H of the FFA (Reference 13), some form of remediation will occur. Remediation may consist of in situ treatment, waste removal, or capping and site stabilization. For all ER remediation activities, the sites or facilities undergoing remediation will be cleaned up to the Applicable, Relevant, and Appropriate Requirements (ARARs).

Remediation (Unknown)

Upon further investigation, some of the sites, facilities, or spills identified in appendix of the FFA will require some form of remediation.

Operations 30-Year Forecast by Treatability Group

Low-Level Waste

The following treatability groups for low-level waste were established based on the radiological and physical characteristics of the waste. These groups identify treatment needs and/or disposal options. Under each treatability group is a listing of the applicable LLW streams.

Job Control Waste

- Low activity job control
- Intermediate activity job control
- Shipments from offsite

Long Lived

- Spent deionizer resins

Tritiated

- Tritiated intermediate activity job control

Soils

- Low activity soil
- Suspect soil

Bulk

- Low activity equipment
- Naval hardware

The present low-level waste current inventory consists only of naval components from the D & D of naval fuel vessels. The naval components are considered low activity waste; however, because of the carbon-14 content, more evaluation will be required to determine if it is correctly classified.

The low-level waste operations forecast volumes were obtained from information in Reference 4. Descriptions of the waste shown in Appendices A and B of Reference 4 were used to place the waste into treatability groups and waste streams. In addition to the assumptions made in Reference 4, the following assumption was made to place the forecasted waste volumes into treatability groups and waste streams:

- Appendix B of Reference 4 shows 60 m³ of suspect soil being generated in years 1995-1997. It was assumed that the LLW volumes shown for the subsequent years

also contains 60 m³ of suspect soil.

The forecast by the treatability group is found in Table 1. The waste stream forecast is found in Appendix A, Table A.1.

Mixed Waste

The MW treatability groups identified for the EIS are similar to those in the Mixed Waste Inventory Report. These groups are consistent with the DOE guidance on mixed waste treatability groups. This grouping was based on similar chemical and physical characteristics.

The SRS Mixed Waste Inventory Report (Reference 8) includes some liquid high-level waste (LHLW) and TRU waste streams. For the EIS, these waste streams are appropriately addressed for treatability groups in the LHLW and TRU waste categories.

The mixed waste annual generation, as shown on the *Mixed Waste 30-Year Forecast* tables, was compiled following the method described below. The current inventory was obtained from the Mixed Waste Inventory Report (MWIR), combining the individual waste stream volumes to obtain generation rates for the treatability groups identified in the attached table. These volumes include the inventory listed as of September 30, 1993. The particularly small volume of waste received at the mixed waste storage buildings since September 1993 is not accounted for in the current inventory.

Most of the future generation volumes were obtained from the *Thirty-Year Solid Waste Generation Forecast for Facilities at SRS* (Reference 4). These numbers were used rather than the future generation rates identified in the MWIR because they more accurately reflect the waste volumes and the breakdown of future mixed waste generation at SRS. For the first three-year period, 1995-1997, waste generators gave descriptions of the waste types and annual volumes anticipated to be generated. The descriptions and generation rates provided in Reference 4 were used to place the volumes into the already identified treatability groups.

Based on input from the Environmental Restoration Department, regulations will require less than 20% of the waste generated from environmental restoration activities (soils and mud) to be handled as RCRA hazardous waste.

All purged water from wells will be handled as RCRA hazardous waste. Monitoring well sampling volumes will be reduced by 50% of current volumes.

The following treatability groups for mixed waste were established based on the radiological and physical characteristics of the waste. These groups include waste with similar physical and chemical characteristics. Under each treatability group is a listing of the applicable mixed waste streams.

Composite Filters

- Filters

Inorganic Debris

- Glass debris
- Mercury-contaminated equipment

Soil

- Soils—Environmental Restoration solids and mud

Aqueous Liquids

- Aqueous liquids
- CIF blowdown

Organic Debris

- Toxic cleanup material
- Radiologically contaminated solvents

Heterogeneous Debris

- Heterogeneous debris

Land Disposal Restrictions Compliance

- Gold traps
- ITP filters
- M-Area glass

Lead

- Lead

Organic Liquids

- DWPF benzene
- Freon/oil/organic liquids
- Radioactive oils

Organic Sludge

- Organic sludge
- Paints and thinners

Consolidated Incineration Facility Ash

- CIF ash

Polychlorinated Biphenyls

- Radiologically contaminated PCBs

An additional treatability group identified in the tables as "Current" in the column headings is comprised of the total volume of wastes that have a current inventory onsite but are not anticipated to have any future generation. These wastes have been identified to accurately represent the current inventory of wastes on site; however, their individual characteristics and volumes are not identified here. The treatments identified in the Draft Site Treatment Plan will be used for all waste streams identified in this group. The following is a list of those waste streams identified in the MWIR that are included in this group:

- Filter paper take up rolls (FPTUR)
- Cadmium-coated HEPA filters
- Scintillation solution
- Spent methanol solution
- Uranium/chromium solution
- Aqueous mercury and lead
- Calcium Metal
- Waste sites/spill site soil
- Tank 3-1 clean out material
- Spent filter cartridges
- Mercury contaminated heavy water
- Nickel plating line solution
- Plating line sump material
- Safety/control rods
- Mark 15 filter paper
- M-Area sludge treatability samples
- M-Area high nickel plating line sludge
- Enriched uranium contaminated with lead
- M-Area plating line sludge from supernate treatment
- Silver-coated packing material
- Tri-butyl phosphate & N-paraffin
- Job waste containing solvent contaminated wipes
- Job waste with enriched uranium and solvent applicators
- Mark 15 filtercake
- Tetrabutyl titanate

Assumptions used in developing the future generation are as follows:

- Volumes of mixed waste for the outyears (1998–2024) were taken from questionnaires obtained from each waste generator onsite. The annual waste generation was changed according to responses received on the questionnaire. Specifically, each generator developed an average annual generation and identified changes to that average for future years.
- Where generators provided a total quantity of mixed waste generated and did not provide a percentage breakdown of the total into individual waste streams, the percentage breakdown provided in 1997 was used to break down the outyear totals into waste streams.

Based on the assumptions and the data contained in the Phase I report (Reference 4), a breakdown of the MW forecast by waste stream was obtained (Appendix A, Table A.2). These numbers were summed according to treatability groups to obtain a forecast by treatability group (Table 2).

Hazardous Waste

The HW treatability groups identified for the EIS are similar to those in the Mixed Waste Inventory Report. These treatability groups are consistent with the DOE guidance on mixed waste treatability groups. This grouping was based on similar chemical and physical characteristics.

The hazardous waste annual generation, as shown on the attached tables, was compiled following the method described below. The current inventory was obtained from the Hazardous Waste Building Inventory Database, combining the volumes for each hazardous waste index to obtain generation rates for the treatability groups identified in the attached table. These volumes are current as of May 1, 1994.

The future generation volumes were obtained from the *Thirty-Year Solid Waste Generation Forecast for Facilities at SRS* (Reference 4). These volumes best represent the waste volumes and the breakdown of future hazardous waste generation at SRS. For the 1995–1997 period, waste generators gave descriptions of the waste types and annual volumes anticipated to be generated. The descriptions and generation rates provided in the forecast were used to place the volumes into the already identified treatability groups.

The following treatability groups for hazardous waste were established based on the physical characteristics of the waste. These groups include waste with similar physi-

cal and chemical characteristics. Under each treatability group is a listing of the applicable hazardous waste streams.

Polychlorinated Biphenyls

- Nonradioactive PCBs

Heterogeneous Debris

- Miscellaneous TC wastes–solid
- Batteries

Aqueous/Organic Liquids

- Miscellaneous TC wastes–liquid
- Ignitable and miscellaneous TC
- Miscellaneous solvents
- Spent varnish and paint

Inorganic Debris

- Low mercury waste (glass)

Soil

- Contaminated soil

Lead

- Lead smelter and soil waste

Organic Debris

- Halogenated solvents (toxic cleanup material)

An additional treatability group identified in the tables as “Current” in the column headings is comprised of the total volume of the wastes that have a current inventory onsite but are not anticipated to have future generation. These wastes have been identified to accurately represent the current inventory of wastes onsite; however, their individual characteristics and volumes are not identified here. The following is a list of those hazardous waste indices that are included in this group:

- Miscellaneous excess lab chemicals
- Halogenated degreasing solvents
- Miscellaneous metals (excess raw materials)
- Reactive wastes
- Tear gas concentrate

Assumptions used in developing the future generation are as follows:

- Volumes of hazardous waste for the outyears (1998-2024) were taken from questionnaires obtained from each waste generator onsite. The annual waste generation was changed according to responses received on the questionnaire. Specifically, each generator developed an average annual generation and identified changes to that average for future years.
- Where generators only provided a total quantity of hazardous waste generated and did not provide a percentage breakdown of the total into individual waste streams, the percentage breakdown provided in 1997 was used to breakdown the outyear totals into waste streams.

Based on the assumptions and the data contained in the Phase I report (Reference 4), a breakdown of the hazardous waste forecast by waste stream was obtained (Appendix A, Table A.3). These numbers were summed according to treatability groups to obtain a forecast by treatability group (Table 3).

TRU/TRU Mixed Waste

The TRU/TRU mixed category was based on the transuranic contaminants. The treatment for TRU or TRU mixed wastes will be the same. The treatment options will be dependent on the level of radioactivity.

Activity levels and present storage methods for the following treatability groups were created for TRU waste, based on engineering judgment. Under each treatability group is a listing of the applicable TRU waste streams.

Low Activity Waste Requiring No Processing

- < 100 nCi/gm waste being managed as TRU

Low Activity Waste Requiring Processing

- < 100 nCi/gm mixed waste being managed as TRU
- > 100 nCi/gm & < 0.5 Ci TRU waste
- > 100 nCi/gm & < 0.5 Ci TRU mixed waste

High Activity Waste Requiring Processing

- > 0.5 Ci TRU waste
- > 0.5 Ci TRU mixed waste
- Bulky equipment and miscellaneous items
- Mixed waste bulky equipment
- Remote-handled TRU waste
- Remote-handled mixed TRU waste

The present TRU waste current inventory, as of December 31, 1993, and future estimated generation were divided into the listed waste streams identified above and shown on the attached tables in Appendix A. It is based on a compilation of the best available information from References 1 through 4, the computerized radioactive waste burial records analysis system, and technical discussions with the cognizant engineering manager for TRU.

The TRU waste forecasted generation as shown on the attached tables is based on a compilation of the best available information contained within Reference 4. In addition to the assumptions outlined within Reference 4, the following assumptions and data manipulations were made:

- One 55-gallon drum, with a polyethylene liner = 7 ft³ had an internal capacity = 0.1981 m³.
- There is no waste that is ≥ 0.5 Ci/package that is < 100 nCi/g.
- Values provided for 1995 through 1997 were averaged to obtain a yearly average generation rate in terms of TRU non-mixed (23% of the TRU waste generated per year), TRU bulky (60% of the TRU waste generated per year), and TRU mixed (17% of the TRU waste generated per year).
- Based on percentages from the current inventory for drummed waste, the following was determined:
 - Percentage of waste generated that is <100 nCi/gm is equal to 41%
 - Percentage of waste generated that is >100 nCi/gm and < 0.5 Ci/package is equal to 29.5%
 - Percentage of waste generated that is >0.5 Ci/package is equal to 29.5%.
- Items listed as other or different from a 55-gallon drum were summed to obtain the bulky equipment inventories.

Based on the above assumptions, the data from Reference 4 was taken and the assumption above was applied to obtain a breakdown of the forecast by waste stream (Appendix A, Table A-4). These numbers were summed according to the treatability groups to obtain a forecast by treatability group (Table 4).

Table 1. Low-level Waste Operations Generation Forecast by Treatability Group

Year	Long Lived	Tritiated	Bulk	Soils	Job Control Waste	Total
Current	0	0	1190	0	0	1190
1995	1	3	29	578	15255	15866
1996	1	3	29	621	15883	16537
1997	1	3	29	630	15911	16574
1998	1	3	29	287	14932	15252
1999	1	3	29	287	14728	15048
2000	1	3	29	287	16019	16339
2001	1	3	29	287	15805	16125
2002	1	3	29	287	15490	15810
2003	1	3	29	291	12956	13280
2004	1	3	29	291	10431	10755
2005	1	3	29	291	10493	10817
2006	1	3	29	291	9183	9507
2007	1	3	29	291	9183	9507
2008	1	3	29	291	9183	9507
2009	1	3	29	291	9183	9507
2010	1	3	29	291	9183	9507
2011	1	3	29	291	9183	9507
2012	1	3	29	291	9183	9507
2013	1	3	29	291	9183	9507
2014	1	3	29	291	9163	9487
2015	1	3	29	291	9163	9487
2016	1	3	29	291	9163	9487
2017	1	3	29	291	9163	9487
2018	1	3	29	291	9163	9487
2019	1	3	29	291	9163	9487
2020	1	3	29	291	9163	9487
2021	1	3	29	291	9163	9487
2022	1	3	29	291	9163	9487
2023	1	3	29	291	9163	9487
2024	1	3	29	291	9163	9487
Totals	30	90	2060	9666	332160	344006

Volume in Cubic Meters

Table 2. Mixed Waste Operations Generation Forecast by Treatability Group

Year	Current	PCB	Soil	Inorganic Debris	Heterogeneous Debris	Aqueous Liquids	Organic Liquids	Organic Sludge	Load	Composite Filters	LDR	Organic Debris	Ash (CIF)	Total
Current	3775	2	0	12	0.0	149	16	5.5	274	0	2	2	0	4237
1995	0	1	42	1	6.0	873	67	0.2	8	2.5	190	3	0	1192
1996	0	1	42	1	7.5	807	197	1.2	8	3.5	580	9	31	1689
1997	0	1	42	1	8.5	838	196	1.2	8	1	0	9	31	1135
1998	0	1	43	1	8.4	864	196	1.2	4	1	16	8	31	1175
1999	0	1	43	1	8.4	892	196	1.2	4	1	0	8	31	1187
2000	0	1	43	1	8.8	920	196	1.3	5	1	17	8	31	1233
2001	0	1	43	1	9.0	948	196	1.3	5	1	0	8	31	1244
2002	0	1	43	1	9.0	977	196	1.3	5	1	16	8	31	1289
2003	0	1	43	1	7.9	1005	195	1.1	4	1	0	8	31	1298
2004	0	1	43	1	7.2	1033	195	1.1	3	1	16	8	31	1340
2005	0	1	43	1	7.1	1061	195	1.1	3	1	0	8	31	1352
2006	0	1	43	1	6.8	1090	193	1.0	2	1	16	8	31	1393
2007	0	1	43	1	6.6	1118	193	1.0	2	1	0	8	31	1405
2008	0	1	43	1	6.8	1146	193	1.0	2	1	16	8	31	1449
2009	0	1	43	1	6.8	1174	193	1.0	2	1	0	8	31	1461
2010	0	1	43	1	6.8	1202	193	1.0	2	1	16	8	31	1505
2011	0	1	43	1	6.8	1231	193	1.0	2	1	0	8	31	1518
2012	0	1	43	1	6.6	1259	193	1.0	2	1	16	8	31	1562
2013	0	1	43	1	6.8	1287	193	1.0	2	1	0	8	31	1574
2014	0	1	43	1	6.8	1315	193	1.0	2	1	16	8	31	1618
2015	0	1	43	1	6.8	1343	193	1.0	2	1	0	8	31	1630
2016	0	1	43	1	6.8	1372	193	1.0	2	1	16	8	31	1675
2017	0	1	43	1	6.6	1400	193	1.0	2	1	0	8	31	1687
2018	0	1	43	1	6.6	1428	193	1.0	2	1	16	8	31	1731
2019	0	1	43	1	6.8	1456	193	1.0	2	1	0	8	31	1743
2020	0	1	43	1	6.6	1484	193	1.0	2	1	16	8	31	1787
2021	0	1	43	1	6.8	1513	193	1.0	2	1	0	8	31	1800
2022	0	1	43	1	6.6	1541	193	1.0	2	1	16	8	31	1844
2023	0	1	43	1	6.6	1572	193	1.0	2	1	0	8	31	1859
2024	0	1	43	1	6.6	1597	193	1.0	2	1	16	8	31	1900
Totals	3775	32	1275	42	213	35891	5708	37	387	34	1001	241	899	49514

Volume in Cubic Meters

Table 3. Hazardous Waste Operations Generation Forecast by Treatability Group

Year	Current	PCB	Inorganic Debris	Heterogeneous Debris	Soil	Aqueous/Org. Liquids	Organic Debris	Lead	Total
Current	58	0	11	82	1239	355	0	23	1768
1995	0	5	7	26	92	1174	1	11	1317
1996	0	5	7	26	92	810	1	11	953
1997	0	5	7	21	92	806	1	6	938
1998	0	5	4	20	92	868	1	6	996
1999	0	5	4	20	92	841	1	6	969
2000	0	5	4	16	92	844	1	2	964
2001	0	5	4	16	92	907	1	2	1027
2002	0	5	4	16	92	880	1	2	1000
2003	0	5	4	16	92	899	1	2	1019
2004	0	5	4	16	92	961	1	2	1081
2005	0	5	4	16	92	934	1	2	1054
2006	0	5	4	16	92	953	1	2	1073
2007	0	5	4	16	92	1015	1	2	1135
2008	0	5	4	16	92	989	1	2	1109
2009	0	5	4	16	92	1006	1	2	1126
2010	0	5	4	16	92	1069	1	2	1189
2011	0	5	4	16	92	1042	1	2	1162
2012	0	5	4	16	92	1060	1	2	1180
2013	0	5	4	16	92	1123	1	2	1243
2014	0	5	4	16	92	1096	1	2	1216
2015	0	5	4	16	92	1114	1	2	1234
2016	0	5	4	15	92	1178	1	2	1298
2017	0	5	4	15	92	1150	1	2	1269
2018	0	5	4	16	92	1183	1	2	1303
2019	0	5	4	15	92	1186	1	2	1305
2020	0	5	4	16	92	1204	1	2	1324
2021	0	5	4	16	92	1237	1	2	1357
2022	0	5	4	16	92	1240	1	2	1360
2023	0	5	4	15	92	1258	1	2	1377
2024	0	5	4	15	92	1288	1	2	1407
Totals	58	150	153	582	3997	31670	28	113	36751

Volume in Cubic Meters

Table 4. Transuranic Waste Operations Generation Forecast by Treatability Group

Year	Low Activity W/Processing	High Activity	Low Activity No Processing	Total
Current	4073	5910	70	10053
1995	133	439	78	650
1996	121	468	61	649
1997	124	595	61	780
1998	135	517	68	720
1999	135	517	68	720
2000	160	610	80	850
2001	175	668	88	931
2002	175	668	88	931
2003	109	419	55	583
2004	27	102	13	142
2005	27	102	13	142
2006	3	11	1	15
2007	3	11	1	15
2008	3	11	1	15
2009	3	11	1	15
2010	3	11	1	15
2011	3	11	1	15
2012	3	11	1	15
2013	3	11	1	15
2014	3	10	1	14
2015	3	10	1	14
2016	3	10	1	14
2017	3	10	1	14
2018	3	10	1	14
2019	3	10	1	14
2020	3	10	1	14
2021	3	10	1	14
2022	3	10	1	14
2023	3	10	1	14
2024	3	10	1	14
Totals	5444	11212	769	17425

Volume in Cubic Meters

Decontamination and Decommissioning 30-Year Forecast by Treatability Group

Assumptions

The following assumptions are in addition to those listed in the Phase I Report (Reference 4).

Average Total Waste Volume (D&D Activities)

The objective of this effort is to estimate the total volume of waste generated by the D&D program at SRS, not to estimate the waste generated by the D&D of a individual facility.

It is assumed that the average total waste volume generated during D&D activities taking a facility to greenfield is 1433.67 m³, based on information extrapolated from estimates of the first 53 facilities to undergo D&D in 1995-1999. This volume includes the quantity of sanitary waste generated as a result of the D&D. Greenfield involves removal of the facility, the foundation, and contaminated soil under the foundation.

Facility-specific waste generation volumes could be estimated by using the square footage data reported in the SFIA database. However, there is no D&D schedule for the remaining 605 facilities; and, therefore, no basis to allocate waste volumes to individual years.

Decontamination and Decommissioning to Greenfield

During D&D to greenfield, about 2 feet of soil under the building foundation will be removed. Of the soil removed, 15% will be contaminated and will be transported to a treatment, storage, and disposal (TSD) facility for disposition. The remaining 85% will not be contaminated and can be used as backfill.

Contamination Due to Decontamination and Decommissioning

If greater than 15% of the soil removed as a result of D&D is contaminated, remediation such as treatment, in situ, or capping will be conducted on location; and, therefore, the soil will not be removed to a TSD facility for disposition.

Average Total Waste Volume (to Foundation)

The average total waste volume generated from taking a building to its foundation is 716.84 m³. This volume

includes the quantity of sanitary waste generated as a result of the D&D. The sanitary waste stream from D&D activities is approximately 35% of the total waste generation. This total volume (716.84 m³) is estimated to be half of the waste generated during a D&D to greenfield. In this scenario, the building is removed but the building foundation and soil are not removed.

Average Total Waste Volume (Gutting)

The average total waste volume generated from gutting a building is 179.21 m³. This volume includes the quantity of sanitary waste generated as a result of the D&D. The sanitary waste stream from D&D activities is approximately 35% of the total waste generation. This total volume (179.21 m³) is estimated to be 25% of the waste generated during a D&D to foundation. Gutting a facility includes removing all materials, equipment, ductwork, process tanks and equipment, and decontaminating the remaining structure. The building structure will remain for other uses as required.

Average Total Waste Volume (Removal Activities)

The mixed waste generation volumes in this forecast include all mixed wastes targeted for management by the Solid Waste Management Department and waste generated by routine Environmental Restoration activities. This volume differs from the data in MWIR because MWIR does not currently include waste generated from routine Environmental Restoration activities.

Data Manipulation

Waste Volume Generation Forecasts

Waste volume generation forecasts for each waste category were divided into treatability groups on a fixed percentage basis. Distributing waste into treatability groups by percentages was based upon engineering assessment.

Low-Level Waste (Taken to Foundation)

The low-level waste category is divided into the following waste stream percentages when a facility is taken to its foundation: 3% long-lived, 5% tritiated, 10% bulk, 20% soils, 55% low activity job control waste, and 7% intermediate job control waste.

Mixed Waste (Taken to Foundation)

The mixed waste category is divided into the following waste stream percentages when a facility is taken to its foundation: 10% metal debris, 15% soils, 15% inorganic debris, 25% heterogeneous debris, 2% aqueous liquids, 2% organic liquids, 2% glass debris, 10% bulk, 3% inorganic sludge, 5% lead, 3% organic sludge, 2% composite filters, 1% paint chips and solids, and 5% sand, gravel, and rock.

Hazardous Waste (Taken to Foundation)

The hazardous waste category is divided into the following waste stream percentages when a facility is taken to its foundation: 10% metal debris, 15% inorganic debris, 2% glass debris, 25% heterogeneous debris, 15% soils, 5% sand, gravel, and rock, 2% aqueous liquids, 2% organic liquids, 10% bulk, 5% lead, 3% inorganic sludge, 3% organic sludge, 2% composite filters, and 1% paint chips and solids.

Transuranic Waste (Taken to Foundation)

The TRU waste category is divided into the following waste stream percentages when a facility is taken to its foundation: 15% low activity, 75% high activity, and 10% no processing.

Low-Level Waste (Gutted)

The low-level waste category is divided into the following waste stream percentages when a facility is gutted: 1% long-lived, 4% tritiated, 25% bulk, 0% soils, 60% low activity job control waste, and 10% intermediate job control waste.

Mixed Waste (Gutted)

The mixed waste category is divided into the following waste stream percentages when a facility is gutted: 20% metal debris, 0% soils, 15% inorganic debris, 25% heterogeneous debris, 2.5% aqueous liquids, 2.5% organic liquids, 5% glass debris, 10% bulk, 2.5% inorganic sludge, 5% lead, 2.5% organic sludge, 3% composite filters, 5% paint chips and solids, and 2% sand, gravel, and rock.

Hazardous Waste (Gutted)

The hazardous waste category is divided into the following waste stream percentages when a facility is gutted: 20% metal debris, 15% inorganic debris, 5% glass debris, 25% heterogeneous debris, 0% soils, 2% sand, gravel, and rock, 2.5% aqueous liquids, 2.5% organic liquids, 10% bulk, 5% lead, 2.5% inorganic sludge, 2.5% organic

sludge, 3% composite filters, and 5% paint chips and solids.

Transuranic Waste (Gutted)

The TRU waste category is divided into the following waste stream percentages when a facility is gutted: 15% low activity, 75% high activity, and 10% no processing.

Waste Volumes Combined (Taken to Foundation and Gutted)

The volume generated for each waste category was divided into the waste stream percentages for facilities taken to their foundation and were added to the volume generated for each waste category divided into the waste percentages for facilities to be gutted for each year. For example in the year 2000, the volume of mixed waste metal debris generated is calculated as follows: 349.46 m^3 (volume of mixed waste generated from gutting seven facilities) $\times 0.20 + 3404.99 \text{ m}^3$ (volume of mixed waste generated from taking 17 facilities to foundation) $\times 0.10 = 410.39 \text{ m}^3$ of mixed waste metal debris generated from D&D in the year 2000.

Decontamination and Decommissioning 30-Year Summary Tables

See Tables 5 through 8 for a summary of D&D waste generation by treatability group for each waste category over the next 30 years.

Table 5. Low-level Waste D&D Forecast by Treatability Group

Year	Long Lived	Tritiated	Bulk	Soils	Job Control Waste	Total
1995	62	103	205	410	1271	2050
1996	39	64	128	257	796	1284
1997	0	0	0	0	0	0
1998	6	10	21	41	128	206
1999	1	2	3	7	20	33
2000	119	208	482	767	2654	4229
2001	119	208	482	767	2654	4229
2002	119	208	482	767	2654	4229
2003	119	208	482	767	2654	4229
2004	128	222	511	824	2832	4516
2005	110	195	470	703	2510	3987
2006	119	208	482	767	2654	4229
2007	119	208	482	767	2654	4229
2008	119	208	482	767	2654	4229
2009	119	208	482	767	2654	4229
2010	128	222	511	824	2832	4516
2011	109	191	450	703	2454	3907
2012	120	211	502	767	2710	4310
2013	119	208	482	767	2654	4229
2014	119	208	482	767	2654	4229
2015	128	222	511	824	2832	4516
2016	119	208	482	767	2654	4229
2017	109	191	450	703	2454	3907
2018	119	208	482	767	2654	4229
2019	120	211	502	767	2710	4310
2020	119	208	482	767	2654	4229
2021	128	222	511	824	2832	4516
2022	119	208	482	767	2654	4229
2023	109	191	450	703	2454	3907
2024	119	209	496	760	2682	4265
Totals	3080	5370	12470	19854	68667	109441

Volume in Cubic Meters

Table 6. Hazardous Waste D&D Forecast by Treatability Group

Year	Metal Debris	Soil	Inorganic Debris	Heterogeneous Debris	Aqueous Liquids	Organic Liquids	Glass Debris	Bulk	Inorganic Sludges	Lead	Organic Sludges	Composite Filters	Paint Chips/Solids	Sand/Gravel/Rock	PCB's with Rad Contam	Total
1995	76	113	113	189	15	15	15	76	23	38	23	15	8	38	1	757
1996	65	98	98	163	13	13	13	65	20	33	20	13	7	33	0	652
1997	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	3	4	4	6	1	1	1	3	1	1	1	1	0	1	0	26
1999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	410	511	563	939	77	77	86	375	111	188	111	79	52	177	1	3755
2001	410	511	563	939	77	77	86	375	111	188	111	79	52	177	1	3755
2002	410	511	563	939	77	77	86	375	111	188	111	79	52	177	1	3755
2003	410	511	563	939	77	77	86	375	111	188	111	79	52	177	1	3755
2004	435	548	601	1001	82	82	91	401	118	200	118	84	54	190	1	4006
2005	396	468	531	885	73	73	83	354	104	177	104	75	52	164	1	3540
2006	410	511	563	939	77	77	86	375	111	188	111	79	52	177	1	3755
2007	410	511	563	939	77	77	86	375	111	188	111	79	52	177	1	3755
2008	410	511	563	939	77	77	86	375	111	188	111	79	52	177	1	3755
2009	410	511	563	939	77	77	86	375	111	188	111	79	52	177	1	3755
2010	435	548	601	1001	82	82	91	401	118	200	118	84	54	190	1	4006
2011	382	468	520	867	71	71	80	347	102	173	102	73	49	163	1	3469
2012	425	511	574	957	79	79	89	383	113	191	113	81	55	179	1	3827
2013	410	511	563	939	77	77	86	375	111	188	111	79	52	177	1	3755
2014	410	511	563	939	77	77	86	375	111	188	111	79	52	177	1	3755
2015	435	548	601	1001	82	82	91	401	118	200	118	84	54	190	1	4006
2016	410	511	563	939	77	77	86	375	111	188	111	79	52	177	1	3755
2017	382	468	520	867	71	71	80	347	102	173	102	73	49	163	1	3469
2018	410	511	563	939	77	77	86	375	111	188	111	79	52	177	1	3755
2019	425	511	574	957	79	79	89	383	113	191	113	81	55	179	1	3827
2020	410	511	563	939	77	77	86	375	111	188	111	79	52	177	1	3755
2021	435	548	601	1001	82	82	91	401	118	200	118	84	54	190	1	4006
2022	410	511	563	939	77	77	86	375	111	188	111	79	52	177	1	3755
2023	382	468	520	867	71	71	80	347	102	173	102	73	49	163	1	3469
2024	419	505	567	945	78	78	88	378	111	189	111	80	54	177	1	3782
Totals	10441	12957	14309	23848	1953	1953	2178	9539	2817	4770	2817	1998	1314	4499	23	95416

Volume in Cubic Meters

411

Table 7. Transuranic Waste D&D Forecast by Treatability Group

Year	Metal Debris	Inorganic Debris	Glass Debris	Heterogeneous Debris	Soil	Sand/Gravel/Rock	Aqueous Liquids	Organic Liquids	Bulk	Lead	Inorganic Sludges	Organic Sludges	Composite Filters	Paint Chips/Solids	PCBs	Total
1995	95	143	19	238	143	48	19	19	95	48	29	29	19	10	100	1051
1996	51	76	10	126	76	25	10	10	51	25	15	15	10	5	19	525
1997	169	254	34	423	254	85	34	34	169	85	51	51	34	17	0	1694
1998	19	28	4	47	28	9	4	4	19	9	6	6	4	2	27	216
1999	93	140	19	234	140	47	19	19	93	47	28	28	19	9	38	973
2000	112	153	23	256	139	48	21	21	102	51	30	30	21	14	83	1107
2001	112	153	23	256	139	48	21	21	102	51	30	30	21	14	83	1107
2002	112	153	23	256	139	48	21	21	102	51	30	30	21	14	83	1107
2003	112	153	23	256	139	48	21	21	102	51	30	30	21	14	83	1107
2004	115	159	24	265	145	50	22	22	106	53	31	31	22	14	87	1146
2005	110	150	23	250	134	47	20	20	100	50	29	29	21	14	83	1082
2006	112	153	23	256	139	48	21	21	102	51	30	30	21	14	83	1107
2007	117	158	25	263	139	49	22	22	105	53	31	31	22	15	87	1137
2008	112	153	23	256	139	48	21	21	102	51	30	30	21	14	83	1107
2009	112	153	23	256	139	48	21	21	102	51	30	30	21	14	83	1107
2010	105	143	22	238	128	45	20	20	95	48	28	28	20	13	83	1035
2011	109	149	23	248	134	47	20	20	99	50	29	29	21	14	80	1071
2012	113	155	24	258	139	48	21	21	103	52	30	30	22	14	87	1118
2013	112	153	23	256	139	48	21	21	102	51	30	30	21	14	83	1107
2014	117	158	25	263	139	49	22	22	105	53	31	31	22	15	87	1137
2015	115	159	24	265	145	50	22	22	106	53	31	31	22	14	87	1146
2016	112	153	23	256	139	48	21	21	102	51	30	30	21	14	83	1107
2017	109	149	23	248	134	47	20	20	99	50	29	29	21	14	80	1071
2018	112	153	23	256	139	48	21	21	102	51	30	30	21	14	83	1107
2019	113	155	24	258	139	48	21	21	103	52	30	30	22	14	87	1118
2020	101	137	21	229	123	43	19	19	92	46	27	27	19	13	80	996
2021	121	163	25	272	145	51	22	22	109	54	32	32	23	16	90	1176
2022	112	153	23	256	139	48	21	21	102	51	30	30	21	14	83	1107
2023	109	149	23	248	134	47	20	20	99	50	29	29	21	14	80	1071
2024	114	155	24	259	140	49	21	21	104	52	31	31	22	15	87	1123
Totals	3226	4466	670	7443	4093	1414	608	608	2977	1489	881	881	620	397	2287	32080

Volume in Cubic Meters

A. 11

Table 8. Low-level Waste Environmental Restoration Forecast by Treatability Group

Year	Low Activity W/Processing	High Activity	Low Activity No Processing	Total
1995	0	0	0	0
1996	83	414	55	552
1997	0	0	0	0
1998	6	28	4	37
1999	0	0	0	0
2000	20	99	13	133
2001	20	99	13	133
2002	20	99	13	133
2003	20	99	13	133
2004	31	153	20	204
2005	19	97	13	130
2006	20	99	13	133
2007	20	99	13	133
2008	20	99	13	133
2009	20	99	13	133
2010	31	153	20	204
2011	19	97	13	129
2012	20	100	13	134
2013	20	99	13	133
2014	20	99	13	133
2015	31	153	20	204
2016	20	99	13	133
2017	19	97	13	129
2018	20	99	13	133
2019	20	100	13	134
2020	20	99	13	133
2021	31	153	20	204
2022	20	99	13	133
2023	19	97	13	129
2024	33	164	22	219
Totals	640	3200	427	4266

Volume in Cubic Meters

Environmental Restoration 30-Year Forecast by Treatability Group

Assumptions

The following assumptions are in addition to those listed in the Phase I Report (Reference 4).

- All facilities identified in Appendices C and H of the FFA will undergo remediation to the ARAR levels agreed upon between DOE and the appropriate regulatory agency. Some waste generated through ER remediation will be removed from the cleanup site, while other waste generated during remediation will be treated, stabilized, and disposed at the site.
- The facilities identified in Appendices C and H of the FFA, and located within SRTC, 300 Area, 400 Area, TNX, and Reactor Areas (93 facilities), will generate waste that will need to be removed from the cleanup site. Of the facilities identified in Appendices C and H, and located within E Area, F Area, and H Area (20% of 36 or 7 facilities), 20% will generate waste that will need to be removed from the cleanup site. The remaining facilities located within E, F, and H Areas (29 facilities) may undergo some form of in situ remediation and be isolated. Accordingly, waste generated from the cleanup of these facilities will not be removed from the site.
- Of the facilities located within SRTC, 300 Area, 400 Area, TNX, and Reactor Areas and identified in Appendix G (30% of 143 or 43 facilities), 30% will generate waste that will need to be removed from the site.
- Of the spills identified in Appendix G, 50% (or 67 spills) will generate waste that will need to be removed from the site.
- For spills, about 10 m³ of waste would be generated by the cleanup.
- For the Burial Ground Complex and Mixed Waste Management Facility, the waste generated will be treated in place and/or the facility will be capped.

Data Manipulation

- Estimates of the amount of waste generated for each waste category were divided into treatability groups on a fixed percentage basis. The basis for the percentage waste distribution into treatability groups was based upon engineering assessment.
- The low-level waste category is divided into the following waste stream percentages when a site or spill is remediated: 1% long-lived, 5% tritiated, 0% bulk, 90%

soils, 3% low activity job control, waste, and 1% intermediate job control waste.

- The mixed waste category is divided into the following waste stream percentages when a site or spill is remediated: 3% metal debris, 75% soils, 1% inorganic debris, 2% heterogeneous debris, 1% aqueous liquids, 1% organic liquids, 1% glass debris, 1% bulk, 1% inorganic sludge, 1% lead, 1% organic sludge, 1% composite filters, 1% paint chips and solids, and 10% sand, gravel, and rock.
- The hazardous waste category is divided into the following waste stream percentages when a site or spill is remediated: 3% metal debris, 1% inorganic debris, 2% glass debris, 1% heterogeneous debris, 75% soils, 10% sand, gravel, and rock, 1% aqueous liquids, 1% organic liquids, 1% bulk, 1% lead, 1% inorganic sludge, 1% organic sludge, 1% composite filters, and 1% paint chips and solids.
- The TRU waste category is divided into the following waste stream percentages when a site or spill is remediated: 15% low activity, 75% high activity, and 10% no processing.
- For each year, the volume estimated for each waste category was divided into the waste stream percentages for site and spills remediated. For example in the year 2000, the volume of mixed waste metal debris generated is estimated as follows: 1230 m³ (volume of mixed waste generated from remediating nine sites or spills) × 0.03 = 36.90 m³ of mixed waste metal debris generated from ER activities in the year 2000.

Environmental Restoration 30-Year Summary Tables

See Tables 9 through 12 for a summary of ER waste generation by treatability group for each waste category over the next 30 years.

Table 9. Mixed Waste Environmental Restoration Forecast by Treatability Group

Year	Long Lived	Tritiated	Bulk	Soils	Job Control Waste	Total
1995	0	0	0	0	0	0
1996	0	0	0	0	0	0
1997	0	0	0	0	0	0
1998	0	0	0	0	0	0
1999	0	0	0	0	0	0
2000	0	0	0	0	0	0
2001	0	0	0	0	0	0
2002	0	0	0	0	0	0
2003	0	0	0	0	0	0
2004	16	79	1427	63	1585	1585
2005	16	79	1424	63	1583	1583
2006	16	79	1424	63	1583	1583
2007	16	79	1424	63	1583	1583
2008	16	79	1424	63	1583	1583
2009	16	79	1424	63	1583	1583
2010	16	79	1424	63	1583	1583
2011	16	79	1424	63	1583	1583
2012	16	79	1424	63	1583	1583
2013	16	79	1424	63	1583	1583
2014	16	79	1424	63	1583	1583
2015	16	79	1424	63	1583	1583
2016	16	79	1424	63	1583	1583
2017	16	79	1424	63	1583	1583
2018	0	0	2	0	2	2
2019	0	0	2	0	2	2
2020	0	0	2	0	2	2
2021	0	0	2	0	2	2
2022	0	0	2	0	2	2
2023	0	0	2	0	2	2
2024	0	0	2	0	2	2
Totals	222	1109	19958	888	22177	22177

Volume in Cubic Meters

Table 10. Hazardous Waste Environmental Restoration by Treatability Group

Year	Metal Debris	Soil	Inorganic Debris	Heterogeneous Debris	Aqueous Liquids	Organic Liquids	Glass Debris	Bulk	Inorganic Sludges	Lead	Organic Sludges	Composite Filters	Paint Chips/Solids	Sand/Gravel/Rock	Total
1995	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	6	150	2	4	2	2	2	2	2	2	2	2	2	20	200
1999	30	758	10	20	10	10	10	10	10	10	10	10	10	101	1011
2000	37	923	12	25	12	12	12	12	12	12	12	12	12	123	1230
2001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2003	720	18000	240	480	240	240	240	240	240	240	240	240	240	2400	24000
2004	119	2972	40	79	40	40	40	40	40	40	40	40	40	396	3963
2005	119	2967	40	79	40	40	40	40	40	40	40	40	40	396	3957
2006	119	2967	40	79	40	40	40	40	40	40	40	40	40	396	3957
2007	119	2967	40	79	40	40	40	40	40	40	40	40	40	396	3957
2008	119	2967	40	79	40	40	40	40	40	40	40	40	40	396	3957
2009	119	2967	40	79	40	40	40	40	40	40	40	40	40	396	3957
2010	119	2967	40	79	40	40	40	40	40	40	40	40	40	396	3957
2011	119	2967	40	79	40	40	40	40	40	40	40	40	40	396	3957
2012	119	2967	40	79	40	40	40	40	40	40	40	40	40	396	3957
2013	119	2967	40	79	40	40	40	40	40	40	40	40	40	396	3957
2014	119	2967	40	79	40	40	40	40	40	40	40	40	40	396	3957
2015	119	2967	40	79	40	40	40	40	40	40	40	40	40	396	3957
2016	119	2967	40	79	40	40	40	40	40	40	40	40	40	396	3957
2017	119	2967	40	79	40	40	40	40	40	40	40	40	40	396	3957
2018	0	5	0	0	0	0	0	0	0	0	0	0	0	1	6
2019	0	5	0	0	0	0	0	0	0	0	0	0	0	1	6
2020	0	5	0	0	0	0	0	0	0	0	0	0	0	1	6
2021	0	5	0	0	0	0	0	0	0	0	0	0	0	1	6
2022	0	5	0	0	0	0	0	0	0	0	0	0	0	1	6
2023	0	5	0	0	0	0	0	0	0	0	0	0	0	1	6
2024	0	5	0	0	0	0	0	0	0	0	0	0	0	1	6
Totals	2456	61410	819	1638	819	819	819	819	819	819	819	819	819	8188	81880

Volume In Cubic Meters

Table 11. Transuranic Waste Environmental Restoration Forecast by Treatability Group

Year	Metal Debris	Inorganic Debris	Glass Debris	Heterogeneous Debris	Soil	Sand/Gravel/Rock	Aqueous Liquids	Organic Liquids	Bulk	Lead	Inorganic Sludges	Organic Sludges	Composite Filters	Paint Chips/Solids	Total
1995	2	1	1	1	38	5	1	1	1	1	1	1	1	1	50
1996	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	189	63	128	63	4730	631	63	63	63	63	63	63	63	63	6306
1998	1165	388	777	388	29130	3884	388	388	388	388	388	388	388	388	38840
1999	943	314	629	314	23575	3143	314	314	314	314	314	314	314	314	31433
2000	122	41	81	41	3038	405	41	41	41	41	41	41	41	41	4050
2001	2176	725	1451	725	54404	7254	725	725	725	725	725	725	725	725	72538
2002	177	59	118	59	4425	590	59	59	59	59	59	59	59	59	5900
2003	162	54	108	54	4038	538	54	54	54	54	54	54	54	54	5384
2004	428	142	284	142	10642	1419	142	142	142	142	142	142	142	142	14189
2005	426	142	284	142	10641	1419	142	142	142	142	142	142	142	142	14188
2006	426	142	284	142	10641	1419	142	142	142	142	142	142	142	142	14188
2007	425	142	284	142	10633	1418	142	142	142	142	142	142	142	142	14178
2008	425	142	284	142	10633	1418	142	142	142	142	142	142	142	142	14178
2009	425	142	284	142	10633	1418	142	142	142	142	142	142	142	142	14178
2010	425	142	284	142	10633	1418	142	142	142	142	142	142	142	142	14178
2011	327	109	218	109	8164	1089	109	109	109	109	109	109	109	109	10885
2012	228	76	152	76	5695	759	76	76	76	76	76	76	76	76	7593
2013	228	76	152	76	5695	759	76	76	76	76	76	76	76	76	7593
2014	228	76	152	76	5695	759	76	76	76	76	76	76	76	76	7593
2015	228	76	152	76	5695	759	76	76	76	76	76	76	76	76	7593
2016	228	76	152	76	5695	759	76	76	76	76	76	76	76	76	7593
2017	228	76	152	76	5695	759	76	76	76	76	76	76	76	76	7593
2018	198	66	132	66	4954	661	66	66	66	66	66	66	66	66	6606
2019	198	66	132	66	4954	661	66	66	66	66	66	66	66	66	6606
2020	198	66	132	66	4954	661	66	66	66	66	66	66	66	66	6606
2021	198	66	132	66	4954	661	66	66	66	66	66	66	66	66	6606
2022	198	66	132	66	4954	661	66	66	66	66	66	66	66	66	6606
2023	198	66	132	66	4954	661	66	66	66	66	66	66	66	66	6606
2024	198	66	132	66	4954	661	66	66	66	66	66	66	66	66	6606
Totals	10994	3665	7329	3665	274846	36648	3665	3665	3665	3665	3665	3665	3665	3665	366461

Volume In Cubic Meters

Table 12. Low-level Waste Summary Forecast by Treatability Group

Year	Low Activity W/Processing	High Activity	Low Activity No Processing	Total
1995	0	0	0	0
1996	0	0	0	0
1997	0	0	0	0
1998	0	0	0	0
1999	0	0	0	0
2000	0	0	0	0
2001	0	0	0	0
2002	0	0	0	0
2003	0	0	0	0
2004	10	50	7	66
2005	10	49	7	66
2006	10	49	7	66
2007	10	49	7	66
2008	10	49	7	66
2009	10	49	7	66
2010	10	49	7	66
2011	10	49	7	66
2012	10	49	7	66
2013	10	49	7	66
2014	10	49	7	66
2015	10	49	7	66
2016	10	49	7	66
2017	10	49	7	66
2018	0	0	0	0
2019	0	0	0	0
2020	0	0	0	0
2021	0	0	0	0
2022	0	0	0	0
2023	0	0	0	0
2024	0	0	0	0
Totals	139	693	92	924

Volume in Cubic Meters

Operations, Decontamination and Decommissioning, and Environmental Restoration Summary Forecast By Treatability Group

See Tables 13 through 16 for a summary of operations, D&D, and ER waste generation by treatability group for each waste category over the next 30 years.

Table 13. Mixed Waste Summary Forecast by Treatability Group

Year	Long Lived	Tritiated	Bulk	Soils	Job Control Waste	Total
Current	0	0	1190	0	0	1190
1995	63	106	234	988	16526	17916
1996	40	67	157	878	16679	17821
1997	1	3	29	630	15911	16574
1998	7	13	50	328	15060	15458
1999	2	5	32	294	14748	15081
2000	120	211	511	1054	18673	20568
2001	120	211	511	1054	18459	20354
2002	120	211	511	1054	18144	20039
2003	120	211	511	1058	15610	17509
2004	144	304	540	2542	13326	16856
2005	127	277	499	2418	13067	16387
2006	136	290	511	2482	11900	15319
2007	136	290	511	2482	11900	15319
2008	136	290	511	2482	11900	15319
2009	136	290	511	2482	11900	15319
2010	144	304	540	2540	12078	15606
2011	126	274	479	2418	11700	14996
2012	137	293	531	2482	11957	15400
2013	136	290	511	2482	11900	15319
2014	136	290	511	2482	11880	15299
2015	144	304	540	2540	12058	15586
2016	136	290	511	2482	11880	15299
2017	126	274	479	2418	11680	14976
2018	120	211	511	1060	11817	13719
2019	121	214	531	1060	11873	13799
2020	120	211	511	1060	11817	13719
2021	129	225	540	1118	11995	14005
2022	120	211	511	1060	11817	13719
2023	110	195	479	996	11617	13396
2024	120	212	525	1053	11845	13755
Totals	3332	6569	14530	49478	401715	475624

Volume in Cubic Meters

Table 15. Transuranic Waste Summary Forecast by Treatability Group

Year	Current	PCB	Metal	Soil	Inorganic	Resuspension	Organic	Gas	Resuspension	Organic	Used	Inorganic	Resuspension	Organic	PCB	Resuspension	Organic	Total
1993	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
1994	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
1995	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
1996	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
1997	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
1998	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
1999	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
2000	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
2001	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
2002	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
2003	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
2004	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
2005	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
2006	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
2007	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
2008	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
2009	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
2010	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
2011	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
2012	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
2013	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
2014	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
2015	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
2016	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
2017	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
2018	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
2019	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
2020	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
2021	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
2022	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
2023	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
2024	0	0	0	0	1223	11	82	0	1223	11	0	23	58	28	20	10	53	1741
Total	58	2437	14220	242335	6283	11090	4223	4223	7993	8842	4545	5288	4545	4285	4082	31080	21	435272

Volumes in Cubic Meters

Table 16. Transuranic Waste Summary Forecast by Treatability Group

Year	Low Activity W/Processing	High Activity	Low Activity No Processing	Total
Current	4073	5910	70	10053
1995	133	439	78	650
1996	203	882	116	1201
1997	124	595	61	780
1998	141	545	72	757
1999	135	517	68	720
2000	179	710	93	983
2001	195	768	101	1064
2002	195	768	101	1064
2003	129	518	68	716
2004	67	305	40	412
2005	56	249	33	338
2006	33	160	21	214
2007	33	160	21	214
2008	33	160	21	214
2009	33	160	21	214
2010	43	213	28	285
2011	32	157	21	210
2012	33	160	21	214
2013	33	160	21	214
2014	32	159	21	213
2015	43	213	28	284
2016	32	159	21	213
2017	32	156	21	209
2018	23	110	15	147
2019	23	110	15	148
2020	23	110	15	147
2021	33	163	22	218
2022	23	110	15	147
2023	22	107	14	143
2024	35	174	23	233
Totals	6222	15105	1288	22615

Volume in Cubic Meters

References

1. *Savannah River Site FY 1994 Predecisional Draft Solid Waste Management Plan (U)*, Westinghouse Savannah River Company, WSRC-RP-93-1448, Revision 2.
2. *SRS Mixed Waste Inventory Report (U)*, Westinghouse Savannah River Company, electronic database.
3. *Savannah River Site Solid Waste Forecast-FY (94) (U)*, Westinghouse Savannah River Company, Report, WSRC-RP-94-206, February 1994.
4. *Thirty Year Solid Waste Generation Forecast for Facilities at SRS (U)*, Westinghouse Savannah River Company, WSRC-RP-94-532, Revision 4, July 29, 1994.
5. *Thirty-Year D&D Waste Generation Forecast for Facilities at SRS (U)*, Westinghouse Savannah River Company, WSRC-RP-94-496, Revision 0, May 3, 1994.
6. *Mission Need and Design Capacity Review (U)*, Westinghouse Savannah River Company, August 7, 1993.
7. *Waste Acceptance Criteria (U)*, Westinghouse Savannah River Company, Procedure Manual WSRC 1S.
8. *SRS Mixed Waste Inventory Report (U)*, Westinghouse Savannah River Company, electronic database.
9. *WSRC Information Manual (U)*, Westinghouse Savannah River Company, Information Manual, WSRC-IM-93-10, Rev. 0, February 25, 1993.
10. *South Carolina Hazardous Waste Management Regulations (SCHWMR) R.61-79*.
11. "Debris Rule Promulgation", Federal Register (57 FR 37194), August 18, 1992.
12. *Waste Minimization and Pollution Prevention Awareness Plan*, Department of Energy, Savannah River Site, December 22, 1993.
13. *Federal Facility Agreement Under Section 120 of CERCLA and Sections 3008(h) and 6001 of RCRA*, Administrative Docket No: 89-05-FF, 1992.

Appendix A

Table A.1. Mixed Waste Operations Generation by Waste Stream

Group	Long Lived	Tritiated	Bulk		Soils		Job Control Waste	
Year	Spent Deion. Resin	Tritiated Int. Act. Job Cntl.	Low Activity Equipment	Naval Hardware	Low Activity Suspect Soil	Activity from Offsite	Shipments	Intermediate Total
Current	0	0	0	1190	0	0	0	1190
1995	1	3	29	0	518	60	14244	591
1996	1	3	29	0	561	60	14822	641
1997	1	3	29	0	570	60	14757	734
1998	1	3	29	0	227	60	14182	330
1999	1	3	29	0	227	60	13979	329
2000	1	3	29	0	227	60	15266	333
2001	1	3	29	0	227	60	14969	416
2002	1	3	29	0	227	60	14657	413
2003	1	3	29	0	231	60	12124	412
2004	1	3	29	0	231	60	9959	52
2005	1	3	29	0	231	60	10021	52
2006	1	3	29	0	231	60	8721	42
2007	1	3	29	0	231	60	8721	42
2008	1	3	29	0	231	60	8721	42
2009	1	3	29	0	231	60	8721	42
2010	1	3	29	0	231	60	8721	42
2011	1	3	29	0	231	60	8721	42
2012	1	3	29	0	231	60	8721	42
2013	1	3	29	0	231	60	8721	42
2014	1	3	29	0	231	60	8701	42
2015	1	3	29	0	231	60	8701	42
2016	1	3	29	0	231	60	8701	42
2017	1	3	29	0	231	60	8701	42
2018	1	3	29	0	231	60	8701	42
2019	1	3	29	0	231	60	8701	42
2020	1	3	29	0	231	60	8701	42
2021	1	3	29	0	231	60	8701	42
2022	1	3	29	0	231	60	8701	42
2023	1	3	29	0	231	60	8701	42
2024	1	3	29	0	231	60	8701	42
Totals	30	90	870	1190	7866	1800	314459	5101
							12600	344006

Volume in Cubic Meters

Table A.3. Hazardous Waste Operations Generation by Waste Stream

Group	Current	PCB	Heterogeneous Debris		Aqueous/Organic Liquids				Inorganic Debris	Soil	Lead	Organic Debris	
Year	Current	PCB	Misc. TC	Batteries	Misc. TC	Ignitable & Misc. TC	Misc. Solvents	Spent Varnish and Paint	Low Mercury Wastes (glass)	Contaminated Soil	Lead Smelter and Soil Wast	Halogenated Solvents (TCM)	Total
Current	58	0	80	2	186	106	23	40	11	1239	23	0	1768
1995	0	5	20	6	1163	10	0	0	7	92	11	1	1317
1996	0	5	20	6	800	10	0	0	7	92	11	1	953
1997	0	5	15	6	803	3	0	0	7	92	6	1	938
1998	0	5	15	5	865	3	0	0	4	92	6	1	996
1999	0	5	15	5	838	3	0	0	4	92	6	1	969
2000	0	5	11	5	842	2	0	0	4	92	2	1	964
2001	0	5	11	5	905	2	0	0	4	92	2	1	1027
2002	0	5	11	5	878	2	0	0	4	92	2	1	1000
2003	0	5	11	5	896	2	0	0	4	92	2	1	1018
2004	0	5	11	5	960	2	0	0	4	92	2	1	1081
2005	0	5	11	5	932	2	0	0	4	92	2	1	1054
2006	0	5	11	5	950	2	0	0	4	92	2	1	1072
2007	0	5	11	5	1013	2	0	0	4	92	2	1	1135
2008	0	5	11	5	986	2	0	0	4	92	2	1	1108
2009	0	5	11	5	1004	2	0	0	4	92	2	1	1126
2010	0	5	11	5	1067	2	0	0	4	92	2	1	1189
2011	0	5	11	5	1040	2	0	0	4	92	2	1	1162
2012	0	5	11	5	1058	2	0	0	4	92	2	1	1180
2013	0	5	11	5	1121	2	0	0	4	92	2	1	1243
2014	0	5	11	5	1094	2	0	0	4	92	2	1	1216
2015	0	5	11	5	1112	2	0	0	4	92	2	1	1234
2016	0	5	10	5	1175	2	0	0	4	92	2	1	1297
2017	0	5	10	5	1148	2	0	0	4	92	2	1	1269
2018	0	5	11	5	1182	2	0	0	4	92	2	1	1303
2019	0	5	10	5	1184	2	0	0	4	92	2	1	1305
2020	0	5	11	5	1202	2	0	0	4	92	2	1	1324
2021	0	5	11	5	1235	2	0	0	4	92	2	1	1357
2022	0	5	11	5	1238	2	0	0	4	92	2	1	1360
2023	0	5	10	5	1256	2	0	0	4	92	2	1	1377
2024	0	5	10	5	1266	2	0	0	4	92	2	1	1407
Totals	58	150	428	155	31420	184	24	41	153	3997	113	28	36750

Volume in Cubic Meters

Table A.4.

Transuranic Waste Operations Generation by Waste Stream

Group	Low Activity No Processing	Low Activity W/ Processing				High Activity					Total
Year	< 100 nCi/gm	>or= 100nCi/gm & < 0.5 Ci	< 100 nCi/gm (Mixed)	>or= 100nCi/gm & < 0.5 Ci (Mxd)	>or = 0.5 Ci	Bulky Equip. and Misc.	>or= 0.5 Ci (Mixed)	Mixed Waste Bulky Equip.	Remote Handled TRU	Remote Handled Mixed	
Current	70	40	2344	1689	40	1290	1670	2818	25	67	10053
1995	78	56	45	32	56	350	32	0	0	0	650
1996	61	44	45	32	44	392	32	0	0	0	649
1997	61	44	46	33	44	518	33	0	0	0	780
1998	68	49	50	36	49	432	36	0	0	0	720
1999	68	49	50	36	49	432	36	0	0	0	720
2000	80	58	59	43	58	510	43	0	0	0	850
2001	88	63	65	47	63	559	47	0	0	0	931
2002	88	63	65	47	63	559	47	0	0	0	931
2003	55	40	41	29	40	350	29	0	0	0	583
2004	13	10	10	7	10	85	7	0	0	0	142
2005	13	10	10	7	10	85	7	0	0	0	142
2006	1	1	1	1	1	9	1	0	0	0	15
2007	1	1	1	1	1	9	1	0	0	0	15
2008	1	1	1	1	1	9	1	0	0	0	15
2009	1	1	1	1	1	9	1	0	0	0	15
2010	1	1	1	1	1	9	1	0	0	0	15
2011	1	1	1	1	1	9	1	0	0	0	15
2012	1	1	1	1	1	9	1	0	0	0	15
2013	1	1	1	1	1	9	1	0	0	0	15
2014	1	1	1	1	1	8	1	0	0	0	14
2015	1	1	1	1	1	8	1	0	0	0	14
2016	1	1	1	1	1	8	1	0	0	0	14
2017	1	1	1	1	1	8	1	0	0	0	14
2018	1	1	1	1	1	8	1	0	0	0	14
2019	1	1	1	1	1	8	1	0	0	0	14
2020	1	1	1	1	1	8	1	0	0	0	14
2021	1	1	1	1	1	8	1	0	0	0	14
2022	1	1	1	1	1	8	1	0	0	0	14
2023	1	1	1	1	1	8	1	0	0	0	14
2024	1	1	1	1	1	8	1	0	0	0	14
Totals	769	543	2849	2052	543	5726	2033	2818	25	67	17425

Volume in Cubic Meters