1993 Solid Waste Reference Forecast Summary

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EXECUTIVE SUMMARY

This report, which updates WHC-EP-0567, *1992 Solid Waste Reference Forecast Summary*, (WHC 1992) forecasts the volumes of solid wastes to be generated or received at the U.S. Department of Energy Hanford Site during the 30-year period from FY 1993 through FY 2022. The data used in this document were collected from Westinghouse Hanford Company forecasts as well as from surveys of waste generators at other U.S. Department of Energy sites who are now shipping or plan to ship solid wastes to the Hanford Site for disposal. These wastes include low-level and low-level mixed waste, transuranic and transuranic mixed waste, and nonradioactive hazardous waste.

The forecast indicates that approximately 430,000 m³ (15,185,225 ft³) of solid waste will be received over the next 30-year period. Approximately 76% of this waste is low-level waste and will require minimal or no treatment before disposal. Nearly 23% will require treatment before it can be disposed of at the Hanford Site or shipped to the Waste Isolation Pilot Plant. The final 1% is nonradioactive hazardous waste that is shipped offsite for treatment or disposal.

A large portion (30%) of the total volume is expected to be generated from Hanford Site's environmental restoration activities, which will involve large volumes of soils. Much of the waste to potentially be generated from environmental restoration activities has not been included in this report, because most of the waste will be managed by a separate division. Potential waste has been estimated to be as high as 21,100,000 m³ (745,135,430 ft³) in other sources. An additional 21% of the total volume is expected to come from

offsite generators, mostly from decontamination and decommissioning activities. A third significant contributor of waste will be defense waste management activities, which account for approximately 18% of the total volume of solid waste that has been forecast.

The total 30-year forecast volume is only 4% greater than the volume forecast reported in the *1992 Solid Waste Reference Forecast Summary* (WHC 1992). The slight increase is a result of the additional waste generators and as well as minor adjustments in forecast volumes by the existing generators. The waste generator estimates contain some level of uncertainty because of the nature of long-range projections as well as definition of mission objectives and scope. Over the past several forecasts, improvements have been made in this area as a result of a concerted effort to base the projections on the currently defined scope and not on speculation about future mission objectives. As the DOE complex-wide programs become more mature, these solid waste volume forecasts are expected to be more durable.

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1993 SOLID WASTE REFERENCE FORECAST SUMMARY

1.0 INTRODUCTION

This report, which is an update of WHC-EP-0567, 1992 *Solid Waste Reference Forecast Summary* (WHC 1992), provides a forecast of solid wastes to be generated or received at the U.S. Department of Energy (DOE) Hanford Site during the period spanning fiscal year (FY) 1993 through FY 2022. The objective of this report is to present a documented set of data that may be used consistently for both short- and long-term planning of solid waste treatment, storage, and disposal (TSD) activities.

This planning document incorporates presently defined wastes forecast by the Westinghouse Hanford Company (WHC) for future site activities such as decontamination and decommissioning (D&D) of surplus facilities and Environmental Restoration (ER) activities, as well as waste to be generated in the course of ongoing operations at the Hanford Site. Solid waste from other DOE sites that have been granted approval to ship waste to the Hanford Site for waste management activities is also included in the forecast.

Excluded from this report are the large potential volumes of waste estimated for ER activities and D&D. Volumes as high as 21,100,000 m³ (745,135,430 ft³) have been estimated (DOE 1992), although details are not known about the waste. The ER and D&D wastes represent the largest volume of waste at the Hanford Site. Under current planning, only a small fraction of this waste is to be sent to the solid waste management facilities. The remaining volume, which has been excluded from the forecast, will be managed by a separate division.

Specifically, this forecast quantifies expected volumes of newly generated low-level waste (LLW), low-level mixed waste (LLMW), transuranic waste (TRU), transuranic mixed waste (TRUM), and nonradioactive hazardous wastes (HAZ). The forecast further delineates the physical characteristics of these wastes and identifies the types of containers that will be used to ship the waste. Hazardous constituents of the LLMW, TRUM, and nonradioactive HAZ waste regulated by the *Resource Conservation and Recovery Act of 1976* (RCRA) are also incorporated into the forecast.

Data for future solid waste expected at the Hanford Site have been collected for several years. Because of the waste volumes, the schedule of expected receipts, and/or the waste characteristics change from one forecast to the next, and since the reasons for these changes are seldom fully documented, there can be confusion over which data set should be used for planning purposes. This forecast, therefore, is intended to overcome this problem by documenting and addressing the following three key points.

- **Forecast assumptions** — This forecast summary discusses the key assumptions made by the major waste generators. These generators, each forecasting over 10,000 m³ (353,144.75 ft³) of waste, were individually contacted and asked to describe the assumptions they used to complete the forecasts. In some cases, the assumptions used by the generators may not necessarily correspond with current, overall site assumptions.
- **Forecast comparison** — In order to assess the usefulness of these data, past forecasts were reviewed to identify those generators that generally supply consistent forecast data over several years. In the process of addressing assumptions, major waste generators were contacted to determine what wastes were and were not included in their forecasts. This forecast summary identifies areas where the solid waste forecast is believed to be a good approximation of future waste volumes scheduled to arrive at the Hanford Site, given current mission plans. Further, this report seeks to identify areas where there is potential for significant changes to the forecast.
- **Forecast completeness** — This forecast document identifies several potential sources of additional solid waste, provides a preliminary quantification of the waste volumes associated with these sources, and shows the impact of including these wastes in the 30-year forecast.

1.1 FORECAST DEVELOPMENT METHODOLOGY

Solid waste forecasts from 93 onsite and offsite waste generators are included in the 30-year reference forecast. The data for developing this forecast summary are primarily from forecasts prepared by the waste generators in FY 1992. FY 1991 and FY 1990 forecasts were used for a few waste generators who have not updated previous forecasts. The following aspects were considered while compiling the forecast summary.

- **Waste generator set** — All waste generators presently expected to ship waste for TSD at the Hanford Site were included in the request for solid waste forecast information. In certain instances, more than one forecast was received for the same facility but under a different name. All identified duplicate entries were eliminated to avoid double counting.
- **Waste generator contact and data assessment** — The forecast reflects the most current volume information available from the waste generators. For example, communications with several key generators indicated that some errors were contained in the forecasts submitted; volumes were reported in incorrect units, wastes were incorrectly classified, and scheduling was incorrect. In those cases, appropriate corrections were made and are reflected in this forecast summary.
- **Container types** — Past forecasts suggest that the generators expect to ship their waste in several different container types. For the

purposes of this forecast, however, these numerous containers have been grouped into four categories that generally conform to material handling requirements:

- Drums — which generally have a 55-gal capacity
- Small boxes — including 1.22- by 1.22- by 2.44-m (4- by 4- by 8-ft) boxes and standard waste boxes
- Big boxes — including containers having capacities greater than 3.62 m^3 (128 ft^3).
- Special-case containers — such as plastic-wrapped items, sealed equipment, dump trucks, tanker trucks, and various other specialty containers predicted by the generators.

Definitions and abbreviations for these container types are included in the Glossary.

- Physical characteristics — Because there was not a one-for-one correspondence between the characteristics used to describe the waste during past forecast compilation efforts, some assumptions had to be made to combine, analyze, and compile the reference data contained in this report.

Special categories were created in instances where certain waste types would be similarly handled and treated. Examples include absorbed liquids and sludges, which include encapsulated liquids/sludges and other solidified/absorbed liquids; and compactibles, which include compactible solids, and compactible-combustible solids. Abbreviations and definitions of physical characteristics used to describe the waste in this forecast are included in the Glossary.

- Hazardous constituents — Because there was not a one-for-one correspondence between the hazardous characteristics used to describe the waste during past forecast efforts, some assumptions were made in order to combine, analyze, and compile the forecast data. Abbreviations and definitions of hazardous constituents are included in the Glossary.
- Manageable data uncertainties — Uncertainties pertaining to the waste generators included in the forecast and the volumes associated with the data are also discussed in this report. Certain uncertainties have been created as a result of inconsistent assumptions made by the waste generators. To reduce the uncertainty of future data, the following steps have been implemented to assist the waste generators with the forecast request.
 - Sites are being visited and personal contacts are being made to assist waste generators in completing the forecast forms.
 - Classes are being held to explain the forecast request and to answer any questions the waste generators may have. The

importance and the use of the data are being explained in the classes to assist the waste generators in understanding the importance of the data being collected.

- Updates are requested each year so that the forecast estimates may be revised as missions and facility operations change.
- Only offsite facilities that currently plan on shipping waste to the Hanford Site are included in the forecast summary, but other offsite generators may be added in the future. Further, there may be many activities that are currently in the planning stages which could also potentially generate substantial quantities of solid waste (e.g., remediation of nonplateau burial grounds) but do not have volume estimates available.

1.2 CHANGES MADE TO THE DATABASE FOR THE 1993 UPDATE

The data used for this forecast summary are from the Version 1.4 solid waste forecast database. The report has been updated to reflect database changes that occurred through March 1993. During March 1993, the following data, which were submitted in the FY 1992 forecasts, were deleted from the database and from the analyses presented in this report.

- The SP-100 data were deleted from the database because this project has been canceled.
- Project B-W002, the crane replacement project, volumes were deleted from the database because the volumes were already included in other forecasts.
- Portsmouth polychlorinated biphenyl (PCB) waste was deleted from the database because this waste will not be accepted at the Hanford Site.
- Maintenance and storage facility (MASF) remote-handled (RH) TRU waste was deleted from the database because it is spent fuel and the associated packaging.

Where data are known to be missing, these omissions are discussed throughout the report.

The total 1993 forecast 30-year volume increased only 4% over last year. However, several individual forecasts changed significantly.

- University of California, Davis — forecast dropped to 22% of last year's estimate. They are now using a shredder and compactor and have implemented waste minimization.
- Lawrence Berkeley Laboratory (LBL) — increased to 30 times last year's forecast volume. The Beaverton site was added to their forecast; metals assumed to be compactible last year have been found not to be compactible, and they are now planning more D&D than last year.

- Laundry — decreased to about 3% of last year's forecast volume. Generators are using product substitution, so HAZ waste is no longer being generated. They are also using compaction to reduce waste.
- The Hanford Grout Facility — increased to almost 8 times last year's forecast volume. They went through a rigorous exercise this year to estimate volumes based on analyses of incoming waste streams. They also included terminal cleanout estimates not included in last year's forecast.
- 300 Area Waste Water Treatment Project — increased by orders of magnitude over last year, but potential plans call for the water to be sent, untreated, to the Richland POTW (Publicly Owned Treatment Works).
- Low-Level Waste Burial Ground — decreased to 14% of last year's forecast volume. Generators have adopted compaction and have assumed less cleanup.

During a survey, it was discovered only two of the waste generators of TRU or TRUM included shielding in their volume estimates. Of the 21 LLW/LLMW waste generators surveyed, only two other generators included shielding. The TRU and TRUM shielding has been broken out separately in the database; the LLW/LLMW shielding has not. Affected waste generators and associated shielding volumes (all rounded to the nearest integer) are as follows:

- Tank waste remediation (TWR) 151 Project — 99 m³ (3,496.13 ft³) of RH TRU
- Pacific Northwest Laboratory (PNL) — 22 m³ (776.92 ft³) of RH TRU
- 222-S Laboratory — 44 m³ (1,553.84 ft³) of contact-handled (CH) LLW 1
 - 1 m³ (35.32 ft³) of CH LLW 3
 - 6 m³ (211.88 ft³) CH LLMW 1
 - Less than 0.5 m³ (17.65 ft³) for each CH LLMW 3 and CH LLMW greater than class (GTC) 3
- Brookhaven National Laboratory — 556 m³ (19,634.85 ft³) of CH LLW 1
 - 1 m³ (35.32 ft³) of RH LLW 1.

Finally, it should be noted that in cases where no updated forecasts have been received from the generators, data from the reference solid waste database were used.

1.3 REPORT OVERVIEW

This report is divided into six sections. Section 1 provides an overview of the document and Section 2 summarizes the results of analyses performed during compilation of the forecast. Section 2 also provides a comprehensive overview of the data.

Section 3 presents a detailed overview of the solid waste forecast volumes divided into source-term components (e.g., offsite waste generators, Defense Waste Management [DWM] generators, and ER activities). The purpose of this section is to emphasize the areas of greatest uncertainty associated with the data that have been used to prepare this forecast, to discuss alternatives to manage these uncertainties, and to identify some of the fundamental assumptions that the major waste generators followed when preparing the forecasts.

Section 4 provides a much more detailed description of the forecast data. Information that was gathered during contacts with the major waste generators is discussed throughout this section. Manageable uncertainties concerning the data used to compile the waste class information are also discussed.

Section 5 describes the more notable results from the analyses performed to establish this forecast. Additionally, this section explains how the information can be used, readdresses its limitations, and describes how the forecast data can be further enhanced if changes in the annual solid waste forecast request cycle are undertaken. Section 6 provides a glossary of terms used throughout the document.

Appendixes are as follows: Appendix A lists all onsite and offsite generators; Appendix B lists persons contacted during the investigation performed for this report; Appendix C provides waste volumes forecast for each waste class; and Appendix D lists standard, tabular database reports that are available upon request.

2.0 SUMMARY OF RESULTS

This section summarizes the waste volumes forecast for the expected waste streams and identifies the major physical characteristics, hazardous constituents, and container types associated with these solid waste streams. In addition, this section provides general observations about the waste forecasts and discusses the usefulness of these data for both short- and long-term system planning.

2.1 WASTE VOLUME SUMMARY

The purpose of this section is to present a detailed overview of the volumes, types, and characteristics of the solid waste streams expected over the next 30 years. Comparisons with previously forecast volumes and schedules also are provided.

The total volume of solid waste forecast for receipt at the Hanford Site is approximately 430,000 m³ (15,185,244 ft³); approximately 5,900 m³ (208,355.4 ft³) has already been generated and is being held at the generating sources waiting to be shipped to the Hanford Site. As shown in Table 2-1, this waste is distributed among several waste categories with average arrival rates varying across different time periods. The first column in Table 2-1 shows the volume of waste currently being held in storage at the generating facilities awaiting approval for transfer to waste management facilities at the Hanford Site. Annual averages are shown for 5-year periods beginning in FY 1993 through the period ending in FY 2012, and a 10-year average is given for the period FY 2013 through FY 2022.

Table 2-1. Annual Volume Summary by Waste Category (m³).^a

	Held	Average 1993-97	Average 1998-2002	Average 2003-07	Average 2008-12	Average 2013-22	TOTAL	% TOTAL
LLW	5,300	12,800	9,100	14,900	15,000	6,000	324,500	75.5%
LLMW	100	1,600	1,900	4,500	4,700	1,800	82,000	19.1%
TRU	500	300	400	700	500	400	14,700	3.4%
TRUM	0	200	100	100	0	0	2,500	0.6%
HAZ	0	400	200	200	200	100	6,300	1.4%
TOTAL	5,900	15,300	11,800	20,300	20,500	8,400	430,000	100.0%

^a Column totals may not equal total values reported because the numbers were rounded.

Figure 2-1 presents the annual volumes for all waste categories over 30 years. (For the purposes of this graph, the TRU and TRUM categories have been combined.) The figure reveals two peak periods for solid waste receipts. These periods, described as follows, are primarily driven by expected receipts from offsite facilities and future planned activities at the Hanford Site, including facility upgrades, D&D of surplus facilities (including D&D of eight reactors) and ER activities.

Figure 2-1. Annual Solid Waste Volume 30-Year Forecast for All Waste Categories.

- Waste generated in FY 1995 and FY 1996 — The high volumes of waste forecast for these 2 years are largely a result of cleanup activities at offsite facilities, particularly those within the Formerly Utilized Sites Remediation Action Program (FUSRAP).
- Waste generated between FY 2003 and FY 2012 — The major reason for the high volumes of waste during this period is the planned in situ remediation of single-shell tanks. Much of this waste is soil that has been removed in preparation for tank waste retrieval and installation of new pipe lines at the single-shell tank farms.

In general, the forecasts show a slight increase in total annual waste volumes from 8,900 m³ (314,298.83 ft³) in FY 1993, to 11,700 m³ (413,179.36 ft³) in FY 2002. Note the TRU and hazardous components are relatively minor. Beginning in FY 2003, the expected total annual waste volumes increase to approximately 20,300 m³ (716,883.85 ft³) through FY 2012, while volumes beyond FY 2013 remain fairly constant between 7,000 and 9,000 m³ (247,201.32 and 317,830.27 ft³). However, if new missions are developed or cleanup activities undertaken, volumes beyond FY 2013 could be commensurate with those of the FY 2003-12 timeframe.

As shown in Figure 2-2, over 63% of the total volume reported in Table 2-1 is expected to be CH LLW 1. No treatment processes are required for this waste. Treatment requirements for the other LLW categories (12% of the waste) have not yet been defined. About 19% of the waste is LLMW, which will require some form of treatment before onsite disposal. The 4% which is TRU and TRUM will require special handling and some processing before final

offsite disposal at the Waste Isolation Pilot Plant (WIPP). The final 1% is nonradioactive HAZ waste, which is shipped offsite for treatment or disposal.

Figure 2-2. Total Solid Waste Volume 30-Year Forecast for All Waste Categories (m^3).

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Figure 2-3 has been included to show the expected annual volume of solid waste that may require some treatment or special handling. The volumes shown in the graph include LLW classes other than CH LLW 1, LLMW, TRU, and TRUM. CH LLW 1 and nonradioactive HAZ waste have been excluded from this figure as these streams are not expected to require treatment at the Hanford Site. While the timing of these volumes is similar to those described earlier and the overall trends of expected receipts appear to be similar, the magnitude of solid wastes requiring treatment is obviously smaller than the total waste streams shown in Figure 2-1.

2.2 FORECAST DATA OBSERVATIONS

As noted in the previous section, approximately 76% of the solid waste expected to arrive at the Hanford Site is LLW and, consequently, will require little or no treatment before its disposal. However, nearly 99,200 m^3 (3,503,195.9 ft^3) (23%) of the waste will require treatment before it can be disposed of at the Hanford Site or shipped to the WIPP. Similar general observations may be made about what the forecast reveals. Such general observations are discussed in this section, while information pertinent to a specific waste stream is described in subsequent sections.

While 95% of the waste is CH (having a dose rate less than or equal to 200 mrem/h at the surface of the container), nearly 19,500 m^3 (688,632.27 ft^3) (5%) of the total waste volume is expected to be RH at the source. Generators forecasting RH waste expect to package it to CH specifications. However, the generators did not incorporate shielding volumes in their estimate.

Approximately 7,000 m³ (247,201.32 ft³) of the RH waste is expected to be shipped in small boxes or drums. However, because of the size and bulk of some of the RH waste, nearly 8,200 m³ (289,578.69 ft³) is expected to be transported in big boxes, plastic wrap, or dump trucks, or shipped as

Figure 2-3. Annual Solid Waste Volume 30-Year Forecast for All Waste Categories Requiring Treatment.

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sealed equipment. This will primarily be the surplus equipment stored in the Plutonium Uranium Extraction Facility (PUREX) tunnels and waste generated during retrieval of the double-shell tanks. The remaining 4,300 m³ (151,852.24 ft³) will be shipped in other special transportation containers.

Approximately 90,800 m³ (3,206,554.3 ft³) of waste is expected to be mixed waste (e.g., either LLMW, TRUM, or nonradioactive hazardous) because of the presence of materials regulated by the RCRA. Approximately 66% of the hazardous constituents expected to contaminate the waste are not presently characterized by the waste generators. The remaining 34% are predominantly distributed among toxic materials and spent solvents.

Typically, waste generators reported that, because of changing missions, they did not know enough about their future waste streams to provide adequate characterization information. For example, data received from D&D and ER activities contained minimal detail, primarily because the facilities and sites have not been fully characterized yet. Annual forecast updates will ensure the most recent planning and characterization information is captured. Also, sensitivity analyses will be performed to determine the sensitivity of the TSD planning to variations in waste characteristics.

2.2.1 Low-Level Waste

Approximately 324,500 m³ (11,459,547 ft³) (76%) of the solid waste expected at the Hanford Site is LLW; of this volume, 84% is CH LLW 1, 13% is CH LLW 3, and the remaining 3% is distributed among the other LLW classes. The LLW is composed largely of soils (37%), compactibles (26%), and metals (15%). The remaining 22% is composed of a variety of other physical characteristics.

The large volumes of soil are a result of retrieval operations at the single-shell tank farms where soils will be removed during waste retrieval. However, other wastes, such as salts, sludges, and the tanks themselves, are not included in the forecast.

Big boxes are expected to be used to transport approximately 33% of all LLW, primarily because drums or small boxes are not conducive to shipping large volumes of soil. Drums account for 24% and small boxes account for 29% of the LLW expected at the Hanford Site.

2.2.2 Low-Level Mixed Waste

Approximately 82,000 m³ (2,895,786 ft³) (19%) of the solid waste expected at the Hanford Site are shown as LLMW; of this volume, nearly 90% is CH LLMW 1, 9% is CH LLMW 3, and the remaining 1% is distributed among the other LLMW classes. The volumes of LLMW compared to LLW are quite small. The total volume of LLMW expected at the Hanford Site has increased approximately 13% compared with the volumes reported in the previous reference forecast. These volumes could increase even more if mixed wastes are redefined under new government regulations.

The LLMW is largely soils (37%), particulates (20%), metals (14%), and compactibles (13%). The remaining 16% is distributed in small portions among the other physical characteristics. The large amount of soil waste is a result of retrieval operations at the single-shell tank farms for the same reasons as noted above for LLW. Particulates are expected from operations performed at the Liquid Effluent Treatment Facility (LETF).

Approximately 47% of the waste, much of which will come from the LETF, is expected to be shipped in drums. Big boxes compose another 38%, primarily to transport the soils from the single-shell tank farms. About 5% of the waste is expected in small boxes and the remainder of the waste can be expected in other containers.

Approximately 20% of the LLMW is forecast as "mixed" because of the expected presence of toxic metals. Beyond the existence of toxic metals or spent solvents (6%), however, the waste generators do not appear to know much about the RCRA constituents, which make their wastes LLMW rather than LLW; approximately 68% of the constituents contained in the mixed waste were identified only as "other regulated materials."

2.2.3 Transuranic Waste

Approximately 14,700 m³ (519 122.78 ft³) of the waste (approximately 3%) is expected to be TRU, over 76% of which is CH. Over 48% of the TRU waste is expected to be generated during onsite ER activities and D&D of surplus facilities (including D&D of eight reactors). Most of the wastes generated from these activities are expected to arrive between FY 1999 and FY 2014.

Other contributors of TRU waste include the Hanford Waste Vitrification Plant (HWVP) (21%), and the Plutonium Finishing Plant (PFP) (18%). Offsite generators including Battelle Columbus Operations, Argonne National Laboratory (ANL), and LBL account for an additional 3%. Other sources of TRU include PNL, surplus equipment stored in the PUREX tunnels, and retrieval operations at the double-shell tank farms. These facilities contribute the remaining 10% of the TRU waste forecast.

The physical characteristics of the waste include compactibles (25%), liquids and sludges (21%), metals (19%), and filters (11%). The remaining 24% is distributed in small portions among other physical characteristics. A vast majority of the waste will be in either drums (67%) or small boxes (26%).

2.2.4 Transuranic Mixed Waste

Approximately 2,500 m³ (88,286.18 ft³)(less than 1%) of the solid waste forecast for receipt at the Hanford Site is expected to be TRUM; 65% of which is RH. The double-shell tank retrieval operations account for almost 40% of the total TRUM waste included in this forecast. The volumes include large pieces of equipment, such as thermocouple assemblies, transfer pumps, and mixer pumps. Because it has been 2 years since the forecast for double-shell tank retrieval operations has been updated, the volumes and characteristics of the TRUM waste may change once new information is received.

The double-shell tank retrieval waste volumes significantly impact the expected physical characteristics of the TRUM waste and the container types in which it will be shipped. Nearly 64% of the TRUM will be metals greater than 1.2-cm (0.5-in.) thick. Because most of these metal pieces are very large (some up to 18.2 m [60 ft]), much of the waste (64%) will need to be shipped in big boxes.

Other generators of TRUM waste include T Plant, PUREX, the PFP, the Fuel Supply Building (i.e., Building 308), Hanford Site ER, D&D, and PNL. ANL and Canoga-Rockwell are the offsite generators of TRUM, which is included in the forecast.

Detailed information of the hazardous constituents is not available. Approximately 91% of the constituents were identified as "other regulated materials" and not further delineated by the generators. Approximately 8% were identified as toxic metals. The remaining 1% is distributed among other hazardous constituents. Annual updates and sensitivity analyses will be performed to capture the most recent information and to determine the impacts of variation in hazardous constituents on TSD planning.

2.2.5 Nonradioactive Hazardous Waste

The solid waste volume forecast for nonradioactive HAZ waste is approximately 6,300 m³ (222,481.19 ft³), or slightly more than 1% of the total volume expected at the Hanford Site. The generators of this waste are all located on the Hanford Site. Much of this waste (98%) is expected to be shipped in drums or small boxes. The major physical characteristics include compactibles (23%), liquids and sludges (20%), and labpacks (16%).

Much of the hazardous constituent information (nearly 30%) is unavailable for nonradioactive HAZ waste. This compares to 44% listed as "other" or "unknown" in the previous forecast summary. Approximately 18% of the waste is expected to be flammable and the remaining 52% is distributed almost equally among combustibles, toxic metals, acidic materials, and toxic organics.

2.3 QUALITY OBSERVATIONS

The data summarized in this forecast document provide considerable insight into the solid wastes to be managed at the Hanford Site over the next 30 years. Specifically, this document quantifies the volumes of waste to be generated; describes the types of solid wastes currently expected, as generators can best estimate; identifies the timing of solid waste arrivals; and delineates the physical characteristics, hazardous constituents, and container types.

The data represent a reasonable basis from which future plans for solid waste TSD requirements can be made. In general, the volumes reported in this forecast are fairly consistent with volumes reported in the previous reference forecast (WHC-EP-0567 [WHC 1992]). Consistency between these data sets suggests, in part, that the Hanford Site's generators of solid waste have established a set of baseline planning assumptions from which to prepare their estimates. In addition to these assumptions, certain issues still remain. These issues are described as follows.

- Total (waste) volume forecast — The volume of waste to be managed at the Hanford Site could be significantly increased in the future as missions are defined throughout the DOE complex, as future environmental cleanup activities are specified, and as D&D operations are better defined for surplus facilities at the Hanford Site. Solid waste volumes could also be increased by the need to accept more waste from other offsite DOE facilities or the expansion of the DOE's responsibilities to include commercial mixed wastes and waste generated at U.S. Department of Defense (DOD) facilities. To address this issue, analyses are being performed to determine the sensitivity of TSD planning to waste volume variations. The results of the analyses are used to manage the TSD planning effort.

Although the forecast does not make provisions for several, potentially large waste streams (e.g., soils, metals, facility cleanout, and various other wastes generated during cleanup activities), it does provide a good basis from which to plan TSD needs. At a minimum, the forecast establishes a lower bound on the total volume of waste that can be expected at the Hanford Site over the next

30 years since it includes estimates for currently planned, onsite ER activities; D&D of onsite surplus facilities (including D&D of eight reactors); and waste expected to be received from 19 offsite DOE facilities. Waste generators will continue to be added to the forecast summary as they plan to send waste to the Hanford Site.

- Reporting of RH waste — Some generators provide volume estimates based on actual waste volumes whereas others include the packaged waste volumes. This is particularly a problem for waste requiring remote handling. In some instances, the shielding materials could be at least 10 times the actual waste volumes. To resolve this issue, the waste generators were contacted this year to understand their reporting practices. Next year, the forecast request forms have explicit instructions for reporting external volumes and shielding materials. In addition, classes are being held with waste generators to review the forecast request forms and resolve questions.
- Translating forecast volumes into the number of containers to be managed at the Hanford Site — As discussed above, some generators provide volume estimates based on actual waste volumes (i.e., volume at the source) while other generators include the packaged waste volumes (i.e., external surface volume). This difference significantly influences the engineering calculations performed to estimate the number of containers expected to be managed at the Hanford Site. To address this issue the forecast request forms have been revised to collect data on a container basis.
- Waste types (i.e., waste categories) expected to be managed at the Hanford Site — As generators gain experience with the wastes they manage, some of the waste contained in the forecast may be reclassified. For example, the use of newer and more accurate assaying equipment by the waste generators may reveal that much of their CH LLW 3 waste should actually be reclassified as CH LLW 1. Conversely, some expected CH LLW 1 wastes may be reclassified as CH LLW 3. To address this issue, waste volume data are collected on an annual basis allowing the waste generators to update data submittals as additional information is gained.
- Timing of waste generation — Waste generators develop their schedules based on their current understanding of funding levels and the guidelines documented in the *Hanford Site Solid Waste Acceptance Criteria* (Willis and Triner 1991). Generators generally assume funding will be available to perform planned activities when required and the acceptance criteria will not change significantly to cause major delays in their waste shipments. In addition, offsite generators assume transportation regulations will permit solid waste shipments to continue. Therefore, changes in funding levels, shifts in national priorities for certain activities (e.g., D&D and ER), or more stringent transportation regulations could significantly influence the timeframe within which the Hanford Site will experience the most significant demand for TSD. Although the forecast data do not include provisions for these factors, the data do provide a reasonable estimate of the yearly volumes expected at

the Hanford Site for TSD and a relatively good estimate of when the peak periods of waste receipts will occur. In addition, TSD planning tools are being used to assess the impacts of varying volumes and timing of waste receipts on waste management facilities.

- Primary waste characterization, physical characteristics, hazardous constituents, and container types — One issue specifically applicable to solid waste generated during D&D and ER activities is that many of the sites and/or facilities designated for cleanup have not yet been fully characterized. Therefore, it is nearly impossible for the generators to provide accurate and precise characterization data. Although the waste characterization information provided by the generators is limited, it provides insight into the general types of solid waste expected to be generated. Further, the uncertainties associated with characterization suggest plans for future TSD facilities to be adaptable in order to manage a variety of waste.

Of particular concern, however, is the absence of RCRA-regulated hazardous constituent data in the mixed waste streams. While the forecasts provide useful information about the existence of mixed wastes and a general estimate of the magnitude of these streams, planning treatment capacity for these waste streams requires much better information about specific hazardous constituents. Future forecast efforts are concentrating on collecting such information.

- Updated waste generator forecasts — This issue deals primarily with the double-shell tank forecasts, which have not been updated since FY 1990. The double-shell tank volumes used in this report do not reflect any changes in assumptions or plans since their last forecast. Although not a major waste generator (over 10,000 m³ [353,144.75 ft³] of forecast waste), they are a major contributor of RH LLMW 3 (74% of the RH LLMW 3 volume) and RH TRUM (98% of the RH TRUM volume). Positive steps are being taken to obtain an updated forecast by explaining the importance of the data through personal visits and training classes.

In summary, the forecast presented in this report can be used as a reference, a starting point, from which future solid waste management plans for the Hanford Site can be developed. Specifically, the forecast identifies the types of waste that must be treated, provides a reasonable approximation of the magnitude of waste volumes and establishes a lower bound on the total volume of waste that can be expected over the next 30 years, provides a reasonable estimate of the annual volumes and different operating levels during different periods, and identifies the need for flexibility to ensure TSD facilities can handle a variety of waste characteristics.

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3.0 FORECAST VOLUMES BY WASTE GENERATOR GROUP

This section presents the 30-year waste volumes forecast by the various generating sources and identifies the major forecast trends over time. Where appropriate, references are made to generators' forecasting consistency over several forecast cycles; generators providing similar forecasts from one year to the next likely have a better understanding of their current missions and the wastes they will generate in the future. However, this may not be true for facilities with changing missions, or with generators who must estimate activities to be initiated in the future. For these reasons, many of the forecasts reflect a set of assumptions made about future operations. This section seeks to help validate the forecast by documenting assumptions and identifying potential impacts to the forecast should the assumptions change.

The waste generators included in this forecast have been divided into 10 groups based on similar missions and operating characteristics and are expected to have similar abilities and constraints with regard to providing accurate forecasts. The 10 waste generator groups are as follows: (1) ER, (2) Offsite Facilities, (3) DWM, (4) Chemical Processing, (5) D&D/Surplus Facilities and Equipment, (6) Other Onsite Waste Generators, (7) Support Services, (8) Projects, (9) Advanced Reactor, and (10) Defense Reactor Division. The individual waste generators assigned to each of these groups are identified in Appendix A.

A summary of the waste volumes and major data observations for each of the groups is provided in Table 3-1. The 30-year volume totals for each of these groups are shown in Figure 3-1. The largest source group is ER (30%), followed by Offsite Facilities (21%), and DWM (18%). The volumes forecast for D&D/Surplus Facilities and Equipment and ER appear to be underestimated, as these generators assume soils will be cleaned in-place, they do not include estimates for facilities not yet placed on the surplus facilities list, and they do not include any secondary waste generated during D&D and cleanup operations.

Two specific issues that must be resolved before the waste volumes reported in Table 3-1 are more complete for the D&D/Surplus Facilities and Equipment and the ER groups are "How clean is clean?" and "What will be cleaned?" Other issues impacting the data presented in the table are equally important and appear to pertain to the data for each of the groups. These are highlighted as follows.

- Hanford Site remediation plans are still being refined. ER activities are currently being developed and will likely undergo considerable change before they are fully implemented. As a result, environmental programs make certain assumptions about cleaning soil in place or allowing a certain level of radiation to remain after remediation is complete.

Table 3-1. Solid Waste Forecast by Waste Generator Group (m³).^a

Waste generator group	LLW	LLMW	TRU	TRUM	HAZ	TOTAL	General observations
Environmental Restoration	99,000	29,400	0	300	700	129,400	<ul style="list-style-type: none"> High potential for additional waste Large volumes of soils Limited waste characterization data since sites not yet fully characterized Less than 20 m³ (706.29 ft³) of TRU waste
Offsite Facilities	82,300	7,600	400	0	0	90,300	<ul style="list-style-type: none"> Potential for additional generators Very low volumes beyond FY 2000 Less than 10 m³ (353.14 ft³) of TRUM
Defense Waste Management	44,700	27,400	3,500	1,600	1,100	78,200	<ul style="list-style-type: none"> Changing facility missions could impact volume and characterization data No data for waste generated from processing single-shell/double-shell tank waste
Chemical Processing	45,000	8,400	2,600	200	600	56,800	<ul style="list-style-type: none"> Changing facility missions could impact volume and waste characteristics
Decontamination and Decommissioning/Surplus Facilities and Equipment	30,600	600	7,200	400	300	39,100	<ul style="list-style-type: none"> High potential for additional waste No estimate of surplus equipment in canyon buildings Waste includes large pieces of metal equipment and soils Waste characterization data may change when facilities have not been fully characterized
Other Onsite Waste Generators	13,800	700	100	0	900	15,500	<ul style="list-style-type: none"> Fairly uniform annual generation rates Less than 10 m³ (353.14 ft³) of TRUM
Support Services	300	7,800	0	0	1,800	9,900	<ul style="list-style-type: none"> Constant annual generation rates
Projects	2,900	100	400	0	100	3,500	<ul style="list-style-type: none"> Short planning horizon; little waste forecast beyond FY 1994
Advanced Reactor	1,600	100	0	0	100	1,800	<ul style="list-style-type: none"> Small annual generation rates Less than 20 m³ (706.28 ft³) of TRU and 1 m³ (35.31 ft³) of TRUM
Defense Reactor Division	4,300	100	400	0	700	5,500	<ul style="list-style-type: none"> Changing facility missions Small waste volume forecast beyond FY 1998
TOTAL	324,400	82,000	14,700	2,500	6,300	430,000	

^a The values reported in this table have been rounded.

Figure 3-1. Total Solid Waste 30-Year Forecast (m³) for All Waste Generator Groups.

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WGs = Waste generators.

- Timing of many planned activities is unknown. Planning for D&D activities at the Hanford Site has been under way for several years and most of the technology seems to exist to initiate this work. However, implementing these plans is largely dependent on budget decisions made at the DOE-Headquarters; shifting national priorities may influence the schedule of many activities that generate solid waste. Consequently, some generators currently forecasting D&D and remediation activities to take place between FY 2003 through FY 2012 may actually perform the operations over a much longer time span, may start them much later than FY 2003, or may reduce or increase the scope of the activity. Such changes would impact the volume, arrival, and characteristics of solid wastes.
- Information about a facility's mission may be limited and/or change. Facility missions and operating schedules may change from one year to the next, thereby making it difficult for the generators to adequately forecast the volumes of wastes created, the years during which the waste will be generated, and the characteristics of the waste.
- Solid wastes are a by-product of a facility's operations. Typically, more attention is paid to operating the facility than managing the solid wastes created. As a result, the past forecasts were frequently based on an individual's best estimate of the waste streams generated at the facility, not a thorough analysis of past and anticipated waste streams. The trend this year has been for

more generators to analyze their waste and establish a baseline for their forecast. Such planning should result in fewer variations from changing personnel and will provide better causal information when volumes are revised.

- Regulations may change. New regulations may redefine the various waste categories presently used to delineate the solid waste managed at the Hanford Site. Therefore, facilities generating what they once considered a LLW may discover it is actually a LLMW.
- Waste may be received from additional generating sources. This forecast does not include any solid wastes from DOD sites or commercial mixed-waste generators. As a result, the amount of LLW and LLMW received from offsite sources may dramatically increase in future years.
- Most generators forecast only waste volumes and not packaged volumes. Packaged volumes could be several times greater than the totals reported in this assessment, especially since no shielding volumes were included for RH wastes.

To help address some of these issues impacting waste volumes, the waste generators frequently make assumptions about future operating missions and activities. Some of the more important assumptions associated with the major waste generators are highlighted in the following sections. These assumptions were either provided with the generators' solid waste forecasts or learned during communications with the individuals responsible for completing the forecast. A list of contacts is provided in Appendix B.

3.1 ENVIRONMENTAL RESTORATION

ER activities presently account for approximately 30% of the total 30-year forecast volume. Specifically, this group's forecast is composed of waste from three activities at the Hanford Site, as shown in Table 3-2.

Table 3-2. Solid Waste Forecast for Environmental Restoration Group.

Activity	Approximate volume (m ³) ^a
Waste generated while preparing the single-shell tanks for retrieval operations	127,800
Waste generated from cleanup resulting from the Expedited Response Action projects at the Hanford Site	400
Waste generated from other environmental restoration projects	1,200
TOTAL	129,400

^a The values reported in this table have been rounded.

The 30-year volume forecast is given in Figure 3-2. The figure shows a large volume of waste expected between FY 2003 and FY 2012. This is primarily driven by the forecast for single-shell tank retrieval operations. The total waste volume is 10% less than the volumes reported last year for this

Figure 3-2. Annual Solid Waste 30-Year Forecast for the Environmental Restoration Group.

S9303030.5

group. Last year, waste generated from double-shell tank retrieval operations were included in this group. These volumes have been placed in the DWM group.

The waste generated from ER activities, which is composed of soils (89%), metals (8%), and compactible solids (2%), will require special handling when it arrives for TSD. Because of the enormous volume of soil to be transported, much of it is expected to be shipped in large containers having a capacity greater than 3.62 m³ (128 ft³).

Although the 30-year volumes forecast by this group are large, there is potential for a significant amount of additional solid waste from environmentally related activities at the Hanford Site. The reasons are identified as follows.

- Large-scale cleanup approaches for Hanford Site's 100 and 300 Areas could result in extremely large amounts of waste consisting primarily of contaminated soils and other solid waste. For example, the *Integrated Data Base for 1992* (DOE 1992) estimated the volume of soil and other radioactive solid waste from ER activities at the Hanford Site as 21,100,000 m³ (745,135,430 ft³). The Hanford Site's solid waste management facilities will only be responsible for the portion of waste which will be sent to the 200 Area in the future.
- The forecast was based on leaving low levels of radioactivity in situ by applying the Allowable Residual Contamination Levels (ARCL) method. If ARCL is not applied, waste volumes could increase by orders of magnitude.

- The single-shell tank retrieval forecast, besides being a FY 1990 forecast, estimates the volume of soil removed during restoration, as well as external equipment (pumps, pipes, risers, etc.). The forecast does not include other waste associated with retrieval and remediation such as any waste remaining in the tanks after retrieval; the tanks themselves, as well as internal equipment; or secondary waste generated during cleanup operations.

It is clear that while the volume estimates associated with ER activities are already large, there is the potential for substantial increases. Conversely, if soils are assumed to be treated in the field, these waste streams could be considerably smaller.

One of the difficulties associated with the wastes forecast by this group of generators is lack of characterization information. Better information should be available in the future as a number of onsite facilities will be characterized as a part of ongoing *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* investigations or before ER activities. This effort should also yield better information about the volume of waste that could result from future environmental work at the Hanford Site.

3.2 OFFSITE FACILITIES

Waste generated at several other DOE facilities represents approximately 21% of the total waste expected at the Hanford Site over the next 30 years. The major offsite facilities and their associated waste volumes are shown in Table 3-3.

Table 3-3. Solid Waste Forecast for Offsite Facilities.

Facility	Approximate volume (m ³) ^a
Portsmouth	16,300
Formerly Utilized Site Remedial Action Program	18,000
Lawrence Berkeley Laboratory	12,100
Brookhaven National Laboratory	11,400
Paducah Gaseous Diffusion Plant	11,800
Argonne National Laboratory	7,300
Other DOE facilities	13,500
TOTAL	90,300

^aThe values reported in this table have been rounded.

The 30-year volume forecast for this group is shown in Figure 3-3. The most notable feature about this graph is the extremely large amount of waste expected starting in FY 1994 and ending in FY 1998. This spike in waste volumes may be due to scheduling of waste reported as "held" in last year's forecast. Several offsite generators reported a large quantity of waste as held

Figure 3-3. Annual Solid Waste 30-Year Forecast for the Offsite Facilities Group.

S9303030.6

last year, and expected shipping to begin sometime after FY 1992. The total volume decreased about 3% from the waste volume reported last year.

The waste generated by offsite facilities is primarily CH LLW 1, although ANL, Battelle Memorial Institute (Battelle Columbus Operations), LBL, and Rockwell Canoga expect to ship TRU and TRUM wastes. Of the 90,300 m³ (3,188,897.1 ft³) of waste expected to arrive at the Hanford Site from offsite DOE facilities, approximately 7,600 m³ (268,390.01 ft³) is forecast as mixed waste (e.g., LLMW or TRUM).

The waste generated by offsite facilities is composed primarily of compactibles (22%), soil (21%), concrete (17%), metals (12%), and particulates (10%). Much of the waste is expected to be shipped in drums (41%) and small boxes (32%). Other data observations and assumptions are described below.

- Portsmouth indicates they are ready to send their waste as soon as the Hanford Site certifies it. The DOE has approved shipment of waste from Portsmouth. Portsmouth expects their waste certification plan to be approved by July 1, 1993. They also assume all currently stored LLW will be shipped between FY 1994 and FY 2005.
- Oak Ridge National Laboratory (ORNL) provides the forecast for the FUSRAP. There are fourteen FUSRAP sites. The FUSRAP forecast covers the remediation of seven of the sites. The volumes forecasted for shipment to the Hanford Site, as well as the shipment schedule, assume funding is available for cleanup activities at the seven sites.

The waste categories changed slightly from last year's forecast for FUSRAP. The seven sites have been fully characterized since last year and this forecast reflects the most recent data. Additional waste for the remaining seven sites has been estimated by the forecasters as 12,000 m³ (423,773.7 ft³) of waste. FUSRAP will be requested to supply a complete forecast of all fourteen sites in the future. The *Integrated Data Base for 1992* (DOE 1992) estimates the total (14 sites) FUSRAP waste volume as approximately 355,600 m³ (12,557,827 ft³). The additional waste may be shipped to other locations or treated on site and may not be shipped to the Hanford Site.

- LBL assumed certification of their waste by the beginning of FY 1993, with shipment beginning shortly thereafter.

The LBL volumes increased drastically from their previously forecast volumes. This increase was a result of the addition of held waste from Beaverton, California; the addition of projects; and because induced metals assumed compactible in the previous forecast were discovered to be noncompactible.

- ANL assumed their operations and D&D activities would continue at the current level. However, forecast RH TRU waste (about 50 m³ [1,765.72 ft³]) will be shipped to Idaho National Engineering Laboratory (INEL) and not to the Hanford Site.
- Brookhaven National Laboratory assumed continued growth over the next 30 years and added some D&D waste. However, their wastes may increase significantly as more D&D projects are funded. For example, they have a graphite core reactor. Based on the average Hanford Site reactor, this could result in an additional 4,200 m³ [148,320.79 ft³] of waste (DOE 1989).

Brookhaven has been identified as a Superfund site, with 24 areas of concern. Over the next 2 to 3 years, ER activities may increase. One 48,564-m² (12-acre) site contaminated with radioactivity may necessitate removal of 0.3 to 0.6 m (1 to 2 ft) of soil (at least 14,500 m³ [512,059.89 ft³]). Thus, there is potential to receive a large volume of soil waste from Brookhaven. However, if this soil is found to be mixed waste, the preferred disposal method would be at a commercial disposal facility, should such a facility with sufficient capacity exist.

- The Paducah Gaseous Diffusion Plant, based on their FY 1991 forecast, is presently authorized to ship LLW to the Hanford Site. However, the Nevada Test Site is their preferred location because it has lower disposal costs. It is unknown whether the Hanford Site will get all or only a small fraction of the waste generated by Paducah.

Paducah noted in their forecast (WHC 1991) that they have approximately 2,000 m³ (70,628.95 ft³) of LLW metal scrap (thin metals less than 1.27-cm [0.5-in.] thick) at their facility and will likely continue to generate an additional 330 m³ (9.34 ft³) per

year. Because they have not received direction to ship this waste, they did not include it in their forecast. However, it is a potential waste stream for the Hanford Site. Annual updates will be requested to ensure the most recent planning is reflected in the forecast data.

Paducah also noted there could be as much LLMW as has been forecast for LLW, but this has not been included in their forecast because they are investigating the possibility of disposing of LLMW elsewhere. In addition, Paducah notes they will have TRU waste, but only a very small quantity, which should be managed by ORNL.

Paducah assumed operations would be ongoing for at least the next 10 years. If D&D were to occur after this time, their waste volumes would increase and the characteristics of their waste streams would change. This would, however, be contingent upon funding and scheduling constraints.

Offsite facilities expressed difficulty in providing accurate data because many of their activities depend on dynamic policy decisions. For example, ongoing and future D&D project plans may be impacted by national budget constraints. Therefore, the timing of waste receipts from offsite facilities is based on current planning. Annual updates, will be used to capture the most recent planning.

There is a reasonable probability that the volumes destined for the Hanford Site from other sites will increase rather than decrease. Only a few of the offsite generators have forecast any wastes associated with D&D activities, which could result in a substantial increase in LLMW and TRU streams. Further, this forecast summary includes only waste generators who are sending or currently plan on sending waste to the Hanford Site. Other sites, DOE, commercial, or DOD may also send waste in the future.

3.3 DEFENSE WASTE MANAGEMENT

The DWM group presently accounts for approximately 18% of the total 30-year forecast waste volume. This group's forecast is composed of waste from facilities supporting a variety of Hanford Site's waste management activities. The major facilities and activities included in this group are the HWVP, DWM tank farms operations, LETF, the Hanford Grout Facility, double-shell tank retrieval, and B Plant. The total 30-year forecast for the DWM group is shown in Figure 3-4.

The volume of waste forecast for this group increased 13% over last year's forecast. The major causes for this increase were significant increases in the volumes forecast by HWVP and the Hanford Grout Facility. The timing of the waste also changed from last year's forecast. In last year's estimates, waste volumes generally decreased over time, mainly because the

Figure 3-4. Annual Solid Waste 30-Year Forecast for the Defense Waste Management Group.

S9303030.7

HWVP was scheduled to operate only 12 years. This year's forecast volumes appear fairly steady over the entire 30-year period, mainly because the HWVP is now planned to operate beyond the full 30 years.

The waste generated by this group is composed primarily of compactible solids (31%), metals (29%), and particulates (21%). Much of the waste is expected to be shipped in drums (62%) and small boxes (28%). Other data observations and facility assumptions are noted as follows.

- HWVP's forecast (WHC 1992) includes waste resulting from daily operations and failed equipment with the exception of melters, which are considered to be high-level waste.

Full characterization of HWVP's waste streams had not been completed for last year's forecast. Since then, the reference feed composition has been defined and wastes were estimated based on a percentage of the overall feed composition. This year's forecast volume was almost double last year's.

Since HWVP has recently been delayed, volumes may decrease. The volumes and waste characteristics may also change once operations begin.

- DWM Tank Farms Operations' forecast is for operational waste over the next 30 years. The volumes and characteristics are based on waste shipped over the past 2 years.

The tank farms have material not classified as waste but which may become waste at some later time. None of this material is included in the forecast, and the volume of this material is unknown. Also, DWM Tank Farm management has become more conservative on waste classification. Waste currently listed as LLW may be classified as LLMW. Any waste assumed to have come in contact with tank waste will be classified as mixed waste in the future. Previously such material was triple-rinsed and declared LLW.

- The LETF is scheduled to be operational by FY 1994 and is expected to generate approximately 16,700 m³ (589,751.73 ft³) of solid waste over the 30-year period, all of which is presently classified as CH LLMW 1. Both volume information and waste classification may change as experience is gained with operating the facility.
- Hanford Grout Facility's forecast is for operating the facility and monitoring operations. The estimates were based on actual operational data on laboratory samples taken from some tanks. The data were used to rigorously estimate the volumes associated with each "module" and include failed equipment estimates based on actual individual equipment failure rates and planned maintenance operations. The grouted items themselves are not included in the forecast. This year's forecast also included estimates for terminal cleanout. The result was a sevenfold increase in expected waste over last year's forecast volumes. This estimate may increase or decrease once operations begin.
- B Plant and the Waste Encapsulation and Storage Facility's forecast was based on routine operation of the facility through FY 1997 with no data provided for FY 1998 or beyond. Their forecast does not include any secondary waste generated from single-shell or double-shell tank waste processing or any secondary waste generated during planned cleanout and D&D of the facilities.

3.4 CHEMICAL PROCESSING

The Chemical Processing group presently accounts for 13% of the total 30-year forecast waste volume. This group consists of the major chemical processing facilities at the Hanford Site, including PUREX and the PFP; the 222-S Laboratory is the major contributor of waste in this group. The total 30-year forecast for these facilities is shown in Figure 3-5.

The waste volume for this group increased about 38% from last year's forecast. This increase was almost entirely because of an 83% increase (11,200 m³ [395,522.12 ft³]) in the 222-S Laboratory volumes.

The total volumes reported last year for this group showed a downward trend during FY 1992 through FY 2006, with fairly consistent generation rates from FY 2006 through FY 2021. This year's forecast shows an almost steady generation rate over the entire 30 years. The difference is caused by the 222-S Laboratory, which shows a slight growth over time.

Figure 3-5. Annual Solid Waste 30-Year Forecast for the Chemical Processing Group.

S9303030.8

The waste generated by facilities in this group is composed primarily of compactible solids (69%), metals (10%), and absorbed liquids and sludges (8%). Much of the waste is expected to be shipped in small boxes (56%) and drums (43%). Other data observations and facility assumptions are noted as follows.

- The 222-S Laboratory forecast is based on the past 2 years' waste generation and growth. A slow and steady growth was assumed over the full 30 years. Last year this laboratory assumed a steady rate after 1997, but this year they have seen sampling increases and incorporated the expected growth in their forecast. The hot cell project alone has projected a 30% increase in samples for FY 1994.

The 222-S Laboratory forecast volumes may increase further. Waste from an ongoing ventilation upgrade and other planned upgrades and remodeling have not been included in the estimates. 90% of the 222-S Laboratory's waste is expected to be CH LLW 1.

- PFP's forecast further reinforces an observation pertaining to the waste generated by chemical processing facilities that over 75% of the newly generated waste is expected to be CH LLW 1. PFP's waste forecast was based on records of waste generated in the past.
- PUREX has been shut down since last year's forecast. This caused their forecast volume to halve. Their forecast is for minor cleanup and includes an estimate of tunnel waste as held waste in their forecast, even though it was assumed the tunnels and canyon

cells would not be cleaned out. The waste in these areas is very hot (up to 5 R/h at the surface per 10^3 cm (0.61 in.³) of waste).

3.5 DECONTAMINATION AND DECOMMISSIONING SURPLUS FACILITIES AND EQUIPMENT

This group presently accounts for approximately 9% of the total waste expected at the Hanford Site. It consists of facilities considered to be of no further operational use and are scheduled for D&D or removal. Specifically, this group's forecast is composed of waste from two primary sources, as shown in Table 3-4.

The 30-year volume forecast is given in Figure 3-6. The figure shows a significant volume of waste currently held in the PUREX tunnels. The waste generated between FY 1998 through FY 2005 is driven by D&D of eight reactors and other facilities currently on the Hanford Site's surplus facilities list.

Table 3-4. Solid Waste Forecast for Decontamination and Decommissioning/Surplus Facilities and Equipment.

Activity	Approximate volume (m ³) ^a
Waste from D&D of surplus facilities	37,100
Surplus equipment in PUREX tunnels	2,000
TOTAL	39,100

^aThe values reported in this table have been rounded.

Figure 3-6. Annual Solid Waste 30-Year Forecast for the D&D/Surplus Facilities and Equipment Group.

S9303030.9

The waste generated by facilities in this group is primarily soil (33%), concrete or wood (23%), and sludge and absorbed liquids (12%). Much of the waste is expected to be shipped in dump trucks (38%), drums (28%), and small boxes (24%). Other data observations and assumptions are noted as follows.

- The surplus facilities' D&D forecast includes volumes reflecting actual inventories in the structures and the structures themselves (for non-canyon facilities), one-piece transportation and disposition of the eight shutdown reactors, and in situ decommissioning of canyon facilities. The reported volumes would be smaller if in situ decommissioning was performed for all facilities. Further, methods of waste minimization, volume reduction, and decontamination methods for facilities have not been determined or considered in the estimates.

The forecast does not include estimates for the secondary waste generated during performance of D&D activities. In addition, only soil encountered during excavation was reported because it was assumed other soil would be someone else's responsibility. Since no one has forecast this soil, there is potential for additional waste volumes not reported here.

The volumes reported for D&D at the Hanford Site appear to be quite low considering the vast number of facilities slated for D&D. In addition, there are other facilities (e.g., N Reactor) that have not been scheduled for D&D. Also, data for surplus equipment stored in the canyon buildings across the Hanford Site are not included in this forecast.

- Surplus equipment volumes for the PUREX tunnels do not include the railcars, rail tracks, or tunnel structures; these items have yet to be classified as waste. Also, secondary waste generated in the process of removing the equipment has not been estimated. PUREX tunnel 2 may receive additional unknown equipment in the future, which has not been addressed in the forecast volumes.

The PUREX tunnel waste is forecasted primarily as CH LLW 1 (approximately 1,800 m³ [63,566.06 ft³]). Actual waste classification will not be known until after the waste has been characterized.

3.6 OTHER ONSITE FACILITIES

The Other Onsite Facilities group contributes approximately 4% of the total waste expected at the Hanford Site. These facilities are operated by the Hanford Environmental Health Foundation (HEHF), Kaiser Engineers Hanford (KEH), and PNL. Their annual forecast volumes are shown in Figure 3-7.

This group's wastes are well defined and the forecast data submitted during the past 3 years have been consistent with respect to volumes, waste characteristics, and timing of receipts. However, the changing role of KEH could potentially impact the data for future years.

Figure 3-7. Annual Solid Waste 30-Year Forecast for the Other Onsite Facilities Group.

S9303030.10

The wastes generated by facilities in this group are primarily compactible materials (62%) and metals (8%). Much of the waste is expected to be shipped in drums (47%), small boxes (26%), and big boxes (25%). Other data observations and assumptions are as follows.

- HEHF assumed moderate laboratory growth through FY 1995 as they complete laboratory upgrades and assume monitoring responsibilities for Hanford Site environmental cleanup. They also assumed little or no change in operations once full cleanup operations were under way.
- KEH included nonradioactive HAZ waste for their daily operations and LLW for cleanup of their "hot" yards in the 200 East and 200 West Areas. This waste is known to be radioactively contaminated, but the type or concentration of contamination is unknown. KEH does not plan to generate any other radioactive waste in future years.
- PNL assumed their volume and character of research would remain similar to previous years and they would continue to compact LLW throughout the 30-year period. They also assumed the 324 Building hot cell cleanout operations would be funded to completion. PNL further assumed they would not be shipping any of their nonradioactive HAZ waste to WHC for disposal. The CH TRU volume, roughly 110 m³ (3,884.59 ft³), is a decrease to about 20% of the volume forecast last year (approximately 540 m³ [19,069.82 ft³]), but this was due to a misunderstanding of what was required for the forecast

in past years. Previously, PNL forecast waste remaining within their facilities instead of newly generated waste, as requested in the forecasts.

3.7 ONSITE SUPPORT SERVICES

Facilities assigned to this waste source group provide services supporting the facilities and operations associated with the Hanford Site. Examples of these services include duplicating, graphics, maintenance, repair, Hanford Patrol, and laundry services. Generators in this group account for only 2% of the 30-year total volume contained in the forecast. The 30-year forecast for Onsite Support Facilities is shown in Figure 3-8.

The volume of waste reported for this group has remained constant for the past 2 years. However, the annual generation rate has changed from a constant rate to an oscillating rate. This oscillating pattern is caused by Fleet and Site Support Planning, responsible for disposing of General Purpose equipment. This is their first year to forecast and, even though they based their forecast on past experience, they may smooth their estimates over time as other forecasters do. The waste generated by this group is primarily metals (80%) and compactibles (10%). Much of the waste is expected to be shipped in special containers (79%) or drums (17%).

Figure 3-8. Annual Solid Waste 30-Year Forecast for the Onsite Support Services Group.

S9303030.11

3.8 PROJECTS

Facilities assigned to this waste source group include major facility improvements. The volumes generated by projects account for less than 1% of the total volume of waste expected at the Hanford Site. The 30-year volume forecast for this group is shown in Figure 3-9.

Figure 3-9. Annual Solid Waste 30-Year Forecast for the Onsite Projects Group.

S9303030.12

The volume forecast by this group is about half of the volume they predicted in last year's forecast. The cause of this difference appears to be cancellation of several B Plant projects. However, at the time this document is being prepared, there are outstanding forecasts for B Plant projects. Therefore, the volume may increase for this group.

As shown in Figure 3-9, data for projects are not available very far into the future. However, the total volume that projects contribute in relationship to other groups is minimal, so there will probably not be major impacts to the overall total volume included in this forecast.

The waste generated by projects is primarily particulates (50%), concrete (22%), and metals (16%). Much of the waste is expected to be shipped in small boxes (68%) or big boxes (18%).

3.9 ADVANCED REACTOR

Facilities assigned to this group primarily relate to the Fast Flux Test Facility (FFTF). The members of this group account for less than 1% of the total 30-year waste expected to be shipped to the Hanford Site. Their expected annual forecast volumes are shown in Figure 3-10.

Figure 3-10. Annual Solid Waste 30-Year Forecast for the Advanced Reactor Group.

S9303030.13

The waste generated by members of this group is primarily metals (65%) and compactibles (18%). Much of the waste has unidentified containers (58%) or is expected to be shipped in drums (29%).

Each facility in the Advanced Reactor group has generally submitted consistent forecast data in the past, with respect to both forecast volumes and waste characteristics. However, the volume forecast this year for this group is 66% smaller than last year. The major causes of this difference are that fuel fabrication is no longer expected to generate waste, spent-fuel volumes are no longer included in the forecast, and SP-100 has been canceled. Other data observations and assumptions are as follows.

- MASF is this group's major generating facility. Their forecast was based on operational records and actual inventories; waste characterization information was similarly developed. MASF assumed they would remain in operation over the full 30 years.
- The Fuels and Materials Examination Facility assumed the Radioisotope Power Supply Systems Facility would begin operating in FY 1997. The periodic spikes in the forecast data shown in the figure are driven by replacement of their heating, ventilation, and air conditioning (HVAC) exhaust high-efficiency particulate air (HEPA) filters.

3.10 DEFENSE REACTOR

The facilities assigned to this group are the N Reactor and its supporting facilities. The members of this group account for about 1% of the total 30-year volume.

Forecast volumes are for current inventories and waste from maintenance and cleanup activities. Anticipated waste generated from cleanout of the N Reactor to the acceptance criteria for Surplus Facilities is included; however, the waste generated from D&D operations is not included in the forecast. The forecasts for these activities were based on using waste compaction processes when possible.

The volume for this group more than doubled the amount forecast last year. The reason for the increase was inclusion of K Reactor, which was not considered previously.

Figure 3-11 shows members of this group will generate a large volume of waste through FY 1999, with the volumes tapering off in later years. The timing appears to be driven by the forecast submitted by N and K Reactors, which shows large volumes being generated through 1999 and tapering off to a lower steady state until 2012, after which no additional waste is expected.

The waste generated by members of this group is primarily compactibles (35%), metals (26%), and liquids and sludges (12%). Much of the waste is expected to be shipped in small boxes (52%) and drums (25%).

Figure 3-11. Annual Solid Waste 30-Year Forecast for the Defense Reactor Group.

S9303030.14

3.11 WASTE GENERATOR GROUP DATA ASSESSMENT

Effective planning for solid waste management requires an understanding of the wastes expected to be generated or to arrive at the Hanford Site. This includes the information presented earlier in this document; specifically, facts about the sources generating the waste, major characteristics of the waste, the assumptions used by the various generators to prepare their forecasts, as well as the strengths and weaknesses of the forecasts. Although the forecasts provide considerable insight into the solid waste to be managed at the Hanford Site, a number of issues exist in these estimates that may significantly impact the systems planned for future TSD activities at the Hanford Site. These issues and the positive steps being taken to manage them are discussed in the following paragraphs.

One issue associated with this forecast is the volume of waste reported for Hanford Site ER activities. This issue is primarily due to the single-shell tank farm forecast, which includes the soils generated during retrieval operations. Other forecasts also include soils in the volume estimates. If soils are assumed to be treated in the field, the waste streams from ER could be considerably smaller than those currently included in the forecast. Figure 3-12 shows the total 30-year volume forecast without soils from ER activities.

On the other hand, depending on the scope ultimately defined for ER activities, there is the potential for substantial changes in the estimated quantity of waste resulting from these operations, such as the following.

Figure 3-12. Annual Solid Waste Forecast Excluding Soils from Environmental Restoration Activities.

S9303030.32

- Retrieval of waste buried at the Hanford Site before 1970 (estimated to be approximately 110,000 m³ [3,884,592.2 ft³]) would significantly increase ER waste volumes.
- Neither the single-shell nor double-shell tank forecasts include the solid wastes remaining in the tanks after liquids are removed. Recovery of such residual wastes, or inclusion of the tank shells themselves, would greatly increase ER waste volumes.
- The macro-engineering approach at the Hanford Site's 100 and 300 Areas could result in extremely large volumes of contaminated soils.

These potential volume variations can be addressed through sensitivity studies, which place upper and lower bound estimates on the forecast volumes to determine the operational requirements for the TSD facilities.

A second issue associated with the forecast is the volumes of waste resulting from complete D&D of Hanford Site facilities. The forecast currently includes estimates of waste from Hanford Site's surplus facilities identified to date. However, the forecast does not include waste estimates for D&D of several major facilities not yet placed on the surplus facilities list, such as B Plant, PUREX, and PFP. Although the forecast contains data for surplus equipment in the PUREX tunnels, it does not contain an estimate of the volume of surplus equipment in the canyon buildings. The forecast understates the total potential volume of waste to be generated from the Hanford Site's D&D activities. As additional facilities are placed on the surplus facility list, their annual volume projections will also be included in future forecast request cycles.

A third issue is that only a few of the offsite generators appear to include wastes associated with D&D activities. Further, it is likely many additional sites, including commercial and DOD sites, could identify waste for shipment to the Hanford Site in the future. Therefore, it appears the waste volumes forecast by currently identified offsite facilities could significantly increase. To help capture these volumes, waste generators are being contacted to ensure that waste generated from future D&D activities is included in their waste volume projections.

3.12 SUMMARY

The issues addressed in this section are important in understanding the data presented in this document and using those data to support solid waste management planning activities. In addition, understanding the various waste categories, physical characteristics, hazardous constituents, and container types will also enhance solid waste management decisions. A description of these aspects of the forecast data is provided in Section 4.

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4.0 SOLID WASTE VOLUME SUMMARY BY WASTE STREAM

This section presents the forecast data by their waste stream components. These waste streams have been defined based on similarities in their expected treatment requirements. The relationships between the waste categories described in Section 2 and the waste streams are shown in Table 4-1. See Appendix C for the waste volumes forecast for each waste stream (referred to as waste class in Appendix C).

Table 4-1. Waste Categories and Their Corresponding Waste Streams.

Waste category	Waste streams
LLW	CH LLW 1 CH LLW 3 CH LLW GTC3 RH LLW 1 and RH LLW 3 RH LLW GTC3
LLMW	CH LLMW 1 CH LLMW 3 CH LLMW GTC3 RH LLMW 1 and RH LLMW 3 RH LLMW GTC3
TRU and TRUM	CH TRU and CH TRUM RH TRU and RH TRUM
HAZ	HAZ

The information in this section should provide further insight into the quantities of waste and the types of containers in which the waste is expected to be shipped to the Hanford Site. The major physical characteristics of each waste stream and the characteristics are also presented.

General observations about the data presented in this section are summarized in Table 4-2. Further, this section identifies those waste generators that significantly influence the volumes and major characteristics of each waste stream. This information, together with the assumptions and data observations described in Sections 2 and 3, should provide greater insight into the certainty of the data summarized and presented in this forecast summary.

4.1 LOW-LEVEL WASTE

Approximately 324,500 m³ (11,459,547 ft³) of the solid waste expected at the Hanford Site is LLW. The LLW is composed largely of soils (37%), compactibles (26%), and metals (15%). The remaining 22% is distributed in small portions among the other physical characteristics. Specific information about each of the LLW categories expected at the Hanford Site is provided in Sections 4.1.1 through 4.1.5.

Table 4-2. Waste Stream Observations.^a

Waste stream	30-year volume (m ³)	General observations
CH LLW 1	271,200	<ul style="list-style-type: none"> • High potential for additional LLW as D&D and ER activities become better defined at the Hanford Site and across the DOE complex. • Large volumes of soils are expected to be shipped in big boxes. • Compactibles compose approximately 28% of this waste stream.
CH LLW 3	40,700	<ul style="list-style-type: none"> • Implementation of better assaying equipment may cause a portion of this waste to be reclassified as CH LLW 1.
CH LLW GTC3	0	<ul style="list-style-type: none"> • This waste stream is expected only from one offsite facility: Portsmouth, about 30 m³ (1,059.43 ft³) held.
RH LLW 1 and RH LLW 3	12,500	<ul style="list-style-type: none"> • A major portion of these wastes is surplus equipment stored in the PUREX tunnels and waste generated by the HWVP and B Plant.
RH LLW GTC3	0	<ul style="list-style-type: none"> • PNL is the only source of this waste, estimated to be approximately 10 m³ (353.14 ft³). • The physical characteristics of this waste are primarily unknown or other.
CH LLMW 1	73,000	<ul style="list-style-type: none"> • Potential for additional LLMW as D&D and ER activities become better defined at the Hanford Site and across the DOE complex. • Primary generating sources are ER activities and DWM.
CH LLMW 3	7,100	<ul style="list-style-type: none"> • A large portion of this waste stream is compactibles. • The Hanford Grouit Facility is the major source of this waste.
CH LLMW GTC3	0	<ul style="list-style-type: none"> • This waste stream, of about 20 m³ (706.29 ft³), is generated by the 222-S Laboratory.
RH LLMW 1 and RH LLMW 3	1,900	<ul style="list-style-type: none"> • A large portion of these waste streams is large metal items, including pipes, thermocouples, etc., generated during double-shell tank retrieval.
RH LLMW GTC3	0	<ul style="list-style-type: none"> • Totalling less than 3 m³ (105.94 ft³), this waste is generated by only two onsite generators: PUREX and Electric Utilities.
CH TRU and CH TRUM	12,100	<ul style="list-style-type: none"> • Several waste generators indicate these waste streams will be generated beyond FY 2018, the current WJPP closure date. • A majority of these waste streams is from ER activities and the PFP. • Potential for additional waste as ER activities become better defined.
RH TRU and RH TRUM	5,100	<ul style="list-style-type: none"> • Waste generators indicate RH TRU will be generated beyond FY 2018, the current WJPP closure date. • A majority of these wastes is from the HWVP and double-shell tank retrieval.
HAZ	6,300	<ul style="list-style-type: none"> • Relatively constant generation rates.
TOTAL	430,000	

^aThe values reported in this table have been rounded.

4.1.1 Contact-Handled Low-Level Waste 1

CH LLW 1 is the largest waste stream expected at the Hanford Site over the next 30-year period, with the major source of this waste being ER activities. In particular, restoration of the single-shell tanks is responsible for the large volumes of waste expected to be generated between FY 2003 and FY 2012, as shown in Figure 4-1.

Figure 4-1. Annual Solid Waste Volume 30-Year Forecast for Contact-Handled Low-Level Waste 1 and Containers in Which It Will Be Shipped.

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Because the waste generated by single-shell tank activities is so substantial, it is important to understand the types of waste included in their forecast. This information is based on observations of forecast data submitted in FY 1990 and communications with the people responsible for completing the forecast.

- The forecast volumes are only for waste removed during tank waste retrieval, including soil, metal equipment such as pipes and pumps, and compactible wastes.
- The forecast does not include any waste remaining in the tanks after retrieval, the tanks themselves, a large portion of the metal equipment, such as pipes and internal equipment, or secondary waste that would be generated during cleanup operations.

Other future activities at the Hanford Site may also substantially impact the expected volume of CH LLW 1; specifically, the D&D of surplus facilities and other ER activities. As described in Section 3, the forecast does not contain data for the large volume of soil that may be generated if the macro-engineering cleanup approach is taken, nor does it include waste that would be

generated from D&D of facilities that are not presently on the surplus facilities list (Hughes et. al 1989) but may be candidates for future D&D (e.g., PUREX and B Plant). The forecasts also do not generally include estimates of material-not-classified-as-waste or terminal cleanout waste.

Another factor that may influence the growth of this waste stream is the use of more accurate assaying equipment. Much of the CH LLW 3 may be reclassified as CH LLW 1 with better assaying equipment.

As shown in Figure 4-1, the amount of waste expected to be shipped in drums and small boxes remains fairly constant between FY 1997 and FY 2022. However, the amount expected to arrive in big boxes is quite large for FY 2003 through FY 2012. These are the years during which restoration of the single-shell tanks is expected to take place. This would indicate waste from ER activities, such as massive volumes of soil, which will be inconvenient to transport in small boxes and drums. Information on the physical composition of the waste in these various container types is delineated below.

Figure 4-2 illustrates the physical characteristics of the waste to be received in drums, small boxes, big boxes, and special case and other containers. Waste to be received in drums and small boxes will primarily be compactibles. Several generators, including Single-Shell Tank Restoration, PFP, DWM Tank Farms, PNL, Paducah Gas Diffusion Group, and others, indicated compactibles would be shipped in drums and small boxes.

Figure 4-2. Solid Waste Volume (m^3) 30-Year Forecast for Physical Characteristics of Contact-Handled Low-Level Waste by Container Type.

Of interest are the physical characteristics of the wastes expected to be received in big boxes. These are primarily soils and metals expected to be generated during restoration of the single-shell tanks. As other ER activities at the Hanford Site become better defined, the volumes of soils and metals shipped in large boxes may grow appreciably.

4.1.2 Contact-Handled Low-Level Waste 3

Figure 4-3 illustrates the 30-year forecast volumes for CH LLW 3. The primary generator source group of this waste is Offsite Facilities, specifically the FUSRAP sites, which account for the large volumes from FY 1994 to FY 1997. Because FUSRAP site remediation activities are currently being performed, actual waste characterization experience may cause some of this waste to be reclassified as CH LLW 1.

Figure 4-3. Annual Solid Waste Volume 30-Year Forecast for Contact-Handled Low-Level Waste 3 and the Containers in Which It Will Be Shipped.

S9303030.17

The amount of waste expected to be shipped in small boxes is quite large in relation to other containers. Figure 4-4 illustrates, by container type, the physical characteristics of the waste to be received.

Boxes will be used primarily for metals. Special case and other containers will be used primarily for soils. Some soils will also be packaged in small boxes. Drums will be used mostly for compactibles and filters.

4.1.3 Contact-Handled Low-Level Waste GTC3

Only one generator, Portsmouth, currently anticipates shipping CH LLW GTC3. Approximately 30 m³ (1,059.43 ft³) of CH LLW GTC3 is being held at their facility. No new generation of CH LLW GTC3 is forecast. The held CH LLW GTC3 consists of spent resins packaged in drums in a dewatered state.

Figure 4-4. Solid Waste Volume (m³) 30-Year Forecast for Physical Characteristics of Contact-Handled Low-Level Waste 3 by Container Type.

S9303030.18

4.1.4 Remote-Handled Low-Level Waste 1 and 3

Figure 4-5 illustrates the 30-year forecast volumes for both RH LLW 1 and RH LLW 3, which are expected to total less than 300 m³ (10,594.34 ft³) per year during much of the 30-year forecast period. Surplus equipment stored in the PUREX tunnels compose almost all of the held waste, while the HWVP is the major contributor after FY 1999. The large increase in waste between FY 1994 and FY 1997 is driven by the planned B Plant ventilation upgrade project and B Plant maintenance and cleanup activities.

Much of the waste is expected to be received in big boxes, especially between FY 1993 and FY 1997. As illustrated in Figure 4-6, over 80% of the waste to be shipped in big boxes is expected to be metals, most of which is expected to come from B Plant.

As is also shown in Figure 4-6, waste shipped in small boxes is expected to be either concrete, mostly from the B Plant ventilation upgrade, or metals. Waste to be shipped in drums, as illustrated in the figure, is primarily compactible-combustible materials. Other containers will be used primarily for metals.

Figure 4-5. Annual Solid Waste Volume 30-Year Forecast for Remote-Handled Low-Level Waste 1 and 3 and the Containers in Which It Will Be Shipped.

S9303030.19

Figure 4-6. Solid Waste Volume (m^3) 30-Year Forecast for Physical Characteristics of Remote-Handled Low-Level Waste 1 and 3 by Container Type.

S9303030.20

4.1.5 Remote-Handled Low-Level Waste GTC3

Only PNL expects to ship RH LLW GTC3, but in very small quantities; at less than 0.5 m^3 (17.65 ft^3) per year throughout the 30-year period. This waste is expected to be mostly "other" physical constituents (86%) and will be shipped in big boxes.

4.2 LOW-LEVEL MIXED WASTE

Approximately $82,000 \text{ m}^3$ ($2,895,786.9 \text{ ft}^3$) of the solid waste forecast is LLMW, which is composed largely of soils (37%), particulates (20%), metals (14%), and compactibles (13%). The remaining 16% is distributed in small portions among the other physical characteristics.

Approximately 20% of the LLMW forecast is designated as "mixed" due to the expected presence of toxic metals. Beyond the existence of toxic metals, however, the waste generators have limited knowledge about the RCRA constituents that make their wastes LLMW rather than LLW; approximately 68% of the constituents contained in the mixed waste are identified only as "other regulated materials." This is a slight improvement over last year, when 76% of the constituents were listed as "unknown" or "other."

Most of the waste generators have a difficult time supplying characterization data for mixed wastes, especially for waste that will be generated from cleanup of contaminated soil sites. Since these sites have not yet been fully characterized, it is difficult to describe the expected contaminants. Additionally, the difficulty some generators have with identifying the hazardous constituents of their waste raises some concern about their assumption that the solid waste is actually mixed. Quite possibly, a significant portion of it may be LLW. At the same time, there is a trend to be more conservative in classifying waste. Waste previously triple-rinsed and labeled as LLW is now labeled as LLMW. However, the knowledge process of the waste generators improves as the waste generating activities continue to evolve, and characterization data should, therefore, improve over time.

4.2.1 Contact-Handled Low-Level Mixed Waste 1

CH LLMW 1 composes the second largest waste stream for the Hanford Site over the 30-year period. The primary source of this waste is ER activities, with restoration of the single-shell tanks generating large volumes between FY 2003 and FY 2012, as shown in Figure 4-7. Because other ER activities at the Hanford Site are only now being defined, the volume of this waste stream may grow appreciably.

As shown in Figure 4-7, the amount of waste expected to be shipped in drums, small boxes, and special case and other containers remains fairly constant throughout the 30-year period. However, the amount of waste expected in big boxes is quite large from FY 2003 through FY 2012, representing the surface soil removed during single-shell tank restoration activities. This would indicate ER activities generate waste inconvenient to transport in small boxes and drums.

Figure 4-7. Annual Solid Waste Volume 30-Year Forecast for Contact-Handled Low-Level Mixed Waste 1 and the Containers in Which It Will Be Shipped.

S9303030.36

As seen in Figure 4-8, of the volume forecast in drums, 48% is expected to be particulate, mostly from the LETF, and another 21% is expected to be compactibles. The waste transported in small boxes is expected to be soil (37%), filters (25%), liquid and sludges (19%), or concrete (18%).

Information supplied by the generators for the hazardous constituents contained in the CH LLMW 1 is limited. Most of the generators typically have a difficult time supplying this type of information. However, toxic metals have been identified as the constituent for 14,100 m³ (497,934.1 ft³) of waste, primarily from the LETF.

4.2.2 Contact-Handled Low-Level Mixed Waste 3

The 30-year forecast for this waste stream is shown in Figure 4-9. The generation rate for CH LLMW 3 is expected to be fairly constant over the 30-year forecast period, with the exception of FY 1993 through FY 1995 and FY 2016 and FY 2017. The initial low volumes are because the Hanford Grout Facility will not be fully operational until FY 1996. The lower volumes in FY 2016 and FY 2017 represent the transition from operations, ending in FY 2015, to D&D, starting in FY 2018, for the Hanford Grout Facility. The CH LLMW 3 volumes are sensitive to the Hanford Grout Facility waste variations because the Hanford Grout Facility is responsible for over 90% of this waste.

As shown in Figure 4-9, almost all the waste is expected to be shipped in drums (97%). Many of the waste generators plan to use drums, but the Hanford Grout Facility will be the major shipper of drums. The physical characteristics of the waste in the various container types is delineated below.

Figure 4-8. Solid Waste (m³) 30-Year Forecast for Physical Characteristics of Contact-Handled Low-Level Mixed Waste 1 by Container Type.

S9303030.31

Figure 4-9. Annual Solid Waste Volume 30-Year Forecast for Contact-Handled Low-Level Mixed Waste 3 and the Containers in Which It Will Be Shipped.

S9303030.22

Figure 4-10 illustrates the physical characteristics of the waste to be received in drums and boxes. Most of the drummed waste is compactibles (50%) or metals (21%).

Figure 4-10. Solid Waste Volume (m^3) 30-Year Forecast for Physical Characteristics of Contact-Handled Low-Level Mixed Waste 3 by Container Type.

S9303030.23

Last year, the information supplied by the generators for the hazardous constituents contained in the CH LLMW 3 was limited. Over 80% of the waste was listed as unknown or "other regulated material." However, this year's forecast has about 35% of the waste listed as "other." This improvement is because the Hanford Grout Facility has analyzed the waste streams to be grouted since last year's forecast.

4.2.3 Contact-Handled Low-Level Mixed Waste GTC3

The 222-S Laboratory is the only waste generator presently identified in the forecast to generate CH LLMW GTC3 for TSD at the Hanford Site. All of this waste is expected to be shipped in drums and is forecast as being labpacks (99%) or HEPA filters (1%). The annual generation rate is fairly constant, only rising from 0.4 to 0.7 m^3 (14.13 to 24.72 ft^3), over the 30 years.

4.2.4 Remote-Handled Low-Level Mixed Waste 1 and 3

Over 65% of this waste stream results from double-shell tank retrieval operations and will be generated primarily between FY 1999 and FY 2014. The 30-year forecast for this waste stream is shown in Figure 4-11. The schedule

has yet to be finalized for the double-shell tank retrieval. Budget priorities could be realigned, or retrieval operation schedule changes could cause these activities to occur at a later time during the forecast period. Also, the double-shell tank retrieval estimates are based on their FY 1990 forecast. The generators have been contacted to help explain how to complete the forms, and to recommend the forecasts be completed on an annual basis. This will help ensure the most recent planning and schedules are included in the data.

Figure 4-11. Annual Solid Waste Volume 30-Year Forecast for Remote-Handled Low-Level Mixed Waste 1 and 3 and the Containers in Which It Will Be Shipped.

S9303030.24

Ninety-two percent of the RH LLMW 1 and 3 is expected to be shipped in big boxes, primarily because of the nature of the materials to be generated. Most of the waste in big boxes is metals (almost 90%), which includes thermocouples and mixer pumps. These are all pieces that would be difficult to move in containers other than big boxes.

4.2.5 Remote-Handled Low-Level Mixed Waste GTC3

Only Electric Utilities and PUREX expect to ship RH LLMW GTC3. No newly generated RH LLMW GTC3 has been forecast. Less than 3 m³ (105.94 ft³) of the waste to be received at the Hanford Site is expected to be RH LLMW GTC3. The Electric Utilities waste is concrete and soil from excavation around a pole. This waste, to be shipped in small boxes, is about 70% of this waste stream. The remaining 30% is waste held at PUREX.

4.3 TRANSURANIC AND TRANSURANIC MIXED WASTE

Approximately 17,200 m³ (607,408.97 ft³) of the solid waste forecast for the Hanford Site is TRU and TRUM. This waste will be processed at the Hanford Site and then shipped to the WIPP for final disposal. However, the forecast data received from seven generators (ANL, LBL, PNL, PFP, WHC ER, HWVP, and the WHC Well Drilling Project) all indicate this waste will continue to be generated beyond FY 2018, the final date the WIPP will accept waste. Other specific information about each of the TRU and TRUM waste streams expected at the Hanford Site is described in the following sections.

4.3.1 Contact-Handled Transuranic and Transuranic Mixed Waste

CH TRU and CH TRUM (CH TRU/TRUM) wastes compose approximately 12,100 m³ (427,305.15 ft³), or slightly less than 3%, of the total waste expected to be received at the Hanford Site. However, these wastes pose some of the greatest difficulties in planning for TSD needs of solid waste.

The expected annual generation rate of CH TRU/TRUM is greatest between FY 1999 and FY 2017, as illustrated in Figure 4-12. A vast majority of the CH TRU/TRUM (over 90%) is expected from three generators: WHC ER, PFP, and the HWVP.

Figure 4-12. Annual Solid Waste Volume 30-Year Forecast for Contact-Handled Transuranic and Transuranic Mixed Waste and the Containers in Which It Will Be Shipped.

S9303030.25

Some generators, including ANL, LBL, PNL, PFP, WHC ER, HWVP, and the WHC Well Drilling Project, indicate they will ship CH TRU/TRUM to the Hanford Site through FY 2022, despite the current WIPP final acceptance date assumed to be

FY 2018. Other pertinent observations about the CH TRU/TRUM forecast data are described as follows.

- Waste volumes reported in this summary do not include any CH TRU/TRUM generated by the LETF. The data reported by the LETF in the 1992 Solid Waste Forecast Reference Summary (WHC-EP-0567) had included approximately 3,500 m³ (123,600.66 ft³) of CH TRUM. Based on updated characterization information, the LETF does not expect to generate any TRU or TRUM wastes.
- The estimates contained in this summary do not include any RH TRU or RH TRUM waste at the source that is shielded to CH for shipment to the Hanford Site.

Approximately 96% of the CH TRU/TRUM is expected to be shipped in drums and small boxes. Figure 4-13 illustrates the physical characteristics of the waste to be received in these containers. Sludges and absorbed liquids, compactible-combustible solids, and compactible solids are expected to compose much of the total CH TRU/TRUM expected at the Hanford Site throughout the next 30-year planning period.

Figure 4-13. Solid Waste Volume (m³) 30-Year Forecast for Physical Characteristics of Contact-Handled Low-Level Transuranic and Transuranic Mixed Waste by Container Type.

S9303030.26

Comp/Comb Sol = Compactible/combustible solid.

4.3.2 Remote-Handled Transuranic and Transuranic Mixed Waste

RH TRU and RH TRUM (RH TRU/TRUM) wastes presently compose approximately 5,100 m³ (180,103.82 ft³), or about 1%, of the total volume expected at the Hanford Site over the next 30-year planning period. Like CH TRU/TRUM, RH TRU/TRUM wastes pose some difficulties in planning the Hanford Site's TSD needs.

The expected annual generation rates of RH TRU/TRUM appear sporadic for the first 15 years of the forecast period illustrated in Figure 4-14. Much of the waste is expected to be generated by the HWVP and the double-shell tank retrieval operations.

Figure 4-14. Annual Solid Waste Volume (m³) 30-Year Forecast for Remote-Handled Transuranic and Transuranic Mixed Waste and the Containers in Which It Will Be Shipped.

S9303030.27

Some generators, including ANL, PNL, WHC ER, and the HWVP, indicate they will ship RH TRU/TRUM to the Hanford Site through FY 2022, despite the current WIPP final acceptance date (assumed to be FY 2018). Other pertinent observations about the RH TRU/TRUM forecast data are described below.

- Two generators, PNL and Tank Waste Retrieval Project 151, included shielding in their RH TRU/TRUM volumes. This shielding accounts for a little over 100 m³ (3,531.45 ft³) (or less than 2%) of the total RH TRU/TRUM reported in the forecast and has been uniquely identified for tracking purposes.
- Double-shell tank retrieval estimates are based on their FY 1990 forecast. Additional information on schedules, funding, or characterization since that time are not reflected in this forecast.

Approximately 99% of the RH TRU/TRUM is expected to be shipped in drums or boxes.

Figure 4-15 illustrates the physical characteristics of the waste to be received in drums and small boxes. Metals compose the greatest portion of the total RH TRU/TRUM (69%) expected at the Hanford Site throughout the next 30-year planning period. A vast majority of the metal waste is large pieces of equipment, including thermocouples and mixer pumps, from double-shell tank retrieval operations. These large pieces of metals will be sent in big boxes (almost 100% of the big boxes will be used for metals).

Figure 4-15. Solid Waste Volume (m^3) 30-Year Forecast for Physical Characteristics of Remote-Handled Transuranic and Transuranic Mixed Waste by Container Type.

4.4 NONRADIOACTIVE HAZARDOUS WASTE

S9303030.28

Nonradioactive HAZ wastes compose approximately 6,300 m^3 (222,481.19 ft^3), or less than 2%, of the total volume expected to be managed at the Hanford Site over the next 30 years. These wastes are generated by numerous onsite facilities.

Most generators based their forecast on past experience and assumed their missions would not change. The total 30-year HAZ waste volume reported in this summary, however, has increased over 60% from the volumes reported in the 1992 *Solid Waste Forecast Reference Summary*, WHC-EP-0567 (WHC 1992). This increase is largely attributed to overall volume increases expected by a majority of the Hanford Site's generators.

HAZ waste is expected to be shipped primarily in 55-gal drums or odd drums (typically 30-gal capacity), as shown in Figure 4-16. The HAZ waste is mainly sludges and absorbed liquids, compactible-combustible solids, and labpacks. A breakdown of the major physical characteristics within each of the major container types is presented in Figure 4-17.

Figure 4-16. Annual Solid Waste Volume 30-Year Forecast for Nonradioactive Hazardous Waste and the Containers in Which It Will Be Shipped.

S9303030.29

Figure 4-17. Solid Waste Volume (m³) 30-Year Forecast for Physical Characteristics of Nonradioactive Hazardous Waste by Container Type

S9303030.30

Information supplied by the generators for the RCRA constituents contained in the HAZ waste streams is more detailed than previous forecasts. This year, the generators provided characterization data for roughly 70% of the HAZ waste as compared to the 40% reported in the past. The waste is expected to be primarily flammable materials (18%), combustibles (10%), and toxic metals (10%).

5.0 CONCLUSIONS AND RECOMMENDATIONS

This reference forecast summary provides considerable insight into the solid wastes to be managed at the Hanford Site. Specifically, it shows that approximately 430,000 m³ (15,185,224 ft³) of solid waste will be received over the next 30-year period. Approximately 76% of this waste is LLW and will require minimal or no treatment before disposal. Nearly 23% will require treatment before it can be disposed of at the Hanford Site or shipped to the WIPP. The final 1% is HAZ waste that is shipped offsite for treatment or disposal.

A large portion (29%) of the total volume is expected to be generated from Hanford Site ER activities. Much of the waste is expected to be generated between FY 2003 and FY 2012. Currently, the forecast for these activities includes large quantities of soils. If soils are assumed to be treated in the field, the waste streams from ER could be smaller than those reported. However, there is potential for significant increases in the ER estimates, as indicated by the *Integrated Data Base for 1992* (DOE 1992) estimate of 21,100,000 m³ (745,135,430 ft³) for Hanford Site ER waste. Factors potentially contributing to this increase include retrieval of waste buried at the Hanford Site before 1970, large-scale cleanup of the 100 and 300 Areas (i.e., macro-engineering approach; recovery of single-shell and/or double-shell residual waste), and inclusion of the empty tanks themselves.

An additional 21% of the total volume is expected to come from offsite generators. This volume could significantly increase as D&D activities for these sites become better defined, if additional DOE sites gain approval to ship their waste to the Hanford Site or if the DOE agrees to accept wastes from commercial and DOD sites.

A third significant contributor of waste will be DWM activities, which account for approximately 18% of the total volume of solid waste that has been forecast. This value could increase as planned treatment facilities become operational and as additional facilities are planned.

Data presented in this report establish a starting point from which solid waste management plans for the Hanford Site can be developed. The report identifies the types of waste that must be treated, provides a reasonable approximation of the magnitude of waste volume, establishes a lower bound on the total volume of waste expected over the next 30 years, provides a reasonable estimate of annual volumes and operating levels during different periods, and identifies the need for flexibility to ensure TSD facilities can handle a variety of waste characteristics. Some important forecast observations are the following.

- The total 30-year forecast volume is only 4% greater than the volume forecast in FY 1992. The slight increase is due to the addition of several waste generators since last year as well as increases in individual waste generators' expected waste.

- Approximately 271,200 m³ (9,577,285.7 ft³) of the total volume is expected to be CH LLW 1. This is the same volume (less than 1% difference) of CH LLW 1 as forecast last year. 28% of this waste is compactible.

The primary generating source of this waste is ER activities. In particular, restoration of the single-shell tanks is responsible for large volumes of waste between FY 2003 and FY 2012. Much of the waste generated during this time period is soils, which are expected to be transported in either big boxes or small boxes.

- Approximately 84,500 m³ (2,984,073.1 ft³) of the total volume is expected to be mixed waste (e.g., either LLMW or TRUM) because of the presence of RCRA-regulated materials. Approximately 69% (compared to 65% last year) of the hazardous constituents expected to contaminate the waste are presently unknown by the waste generators.

Typically, waste generators reported that, because of changing missions, they did not know enough about their future waste streams to provide adequate characterization information. In these instances volume estimates are provided and updated annually as missions and facility operations are defined.

- Approximately 17,200 m³ (607,408.97 ft³) of the total volume is expected to be TRU and TRUM waste, which will be processed at the Hanford Site and then shipped to the WIPP for final disposal. This volume is 14% less than forecasted last year. The forecast data received from several generators indicate that this waste will continue to be generated beyond FY 2018, the final date the WIPP will accept waste.
- Approximately 3,700 m³ (130,663.55 ft³) of RH TRU and RH TRUM is expected in boxes; 1,500 m³ (52,971.71 ft³) in small boxes and 2,200 m³ (77,691.84 ft³) in big boxes. The big boxes are used primarily for large pieces of equipment, including thermocouples and mixer pumps, from retrieval operations at the double-shell tank farms.

These observations are a few of the several interesting aspects of the forecast data. Because these data have a variety of applications, it is difficult to concisely summarize and describe the data in a manner thorough enough for each of the many potential users. Therefore, several tabular reports are available from the waste volume forecast database. A brief description of these reports and how they can be acquired is provided in the following section.

5.1 DATABASE REPORTS

A number of standard reports from the forecast database are available to individuals requiring more detailed information about the data summarized in this report. Standard reports presenting the waste volumes by generating source, waste group, waste class, physical characteristics, hazardous constituents, and container types have been defined and can be obtained directly upon

request from WHC, Solid Waste Disposal Division, Restoration Projects Section. The information in these reports can be used to further enhance long-term solid waste management planning at the Hanford Site. A complete list and description of the available reports are summarized in Appendix D, which also includes instructions on how to access these data if desired.

The data contained in these reports have been compared with the most recent estimates provided by the generators. As discussed in Section 3, the data provided by these generators have not been quantitatively validated nor has any task been undertaken to gather more complete characterization information. Such efforts will be required before TSD facility plans are finalized.

These data are also being used as input to the Solid Waste Projection Model. The model can be, and is, used to obtain further insights into the data than are presented in this summary. Again, information on the model may be obtained from WHC, Solid Waste Disposal Division, Restoration Projects Section.

5.2 RECOMMENDATIONS

Generally, it appears the waste generators are providing the best volumetric information possible under the current forecasting system. However, additional waste characterization data could be used to further define future TSD requirements at the Hanford Site, particularly the RCRA-regulated hazardous constituents in the mixed wastes. These data are difficult to acquire because of changing future facility missions and ER activities. Therefore, a somewhat different approach for gathering forecast data, which may prove useful, is recommended.

- Compile more information about waste generating processes and packaging practices, generator planning bases, and the generators' waste management practices.
- Do not request annual forecasts from some of the smaller facilities. There are a total of 75 forecasts that each contribute less than 1% of the total 30-year volume reported in the forecast. Together they contribute less than 10% of the total 30-year waste volume. This approach could significantly reduce the amount of time required to prepare the forecasts, track the generator's progress, enter the data, and report the data. Requiring these small generators to submit a forecast every other year or every 5 years may yield information as good as currently received.
- Request information on shielding material volumes and characteristics. Shielding has been included in only a few forecasts. This volume may be significant and could impact design studies.
- Meet with major waste generators. Personally visit the most significant waste generators, identify their major waste streams, and help them characterize their waste. Requiring the generators to describe the major waste streams, explain how the waste is generated and what the waste is composed of, and in what types of containers the waste will be shipped will help define treatment technology requirements.

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6.0 REFERENCES

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Hughes, M. C., R. K. Wahlen, and R. A. Winship, 1989, *Hanford Surplus Facilities Program Plan — FY 1990*, WHC-EP-0231-2, Westinghouse Hanford Company, Richland, Washington.

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GLOSSARY

DEFINITIONS

Acronym/ abbreviation	Term	Definition
1	Category 1	Low-activity waste with very low concentrations of long-lived radionuclides. This waste will not present an unacceptable hazard to an intruder past the active institutional control period (100 years).
3	Category 3	Moderate- and high-activity waste, with low-to-moderate concentrations of long-lived radionuclides, in stabilized waste form that minimizes subsidence for a period of 1,000 years. This waste cannot pose an unacceptable hazard to an intruder for 1,000 years.
Acid	Acidic material	A solid and/or liquid that combines with a basic material and produces a salt. Acidic material is also defined in <i>Washington Administrative Code</i> , (WAC) 173-303-101(3)(a).
Alkaline,	Alkaline material	Materials or metals having a PH greater than 12.5.
Big boxes	128- to 500-ft ³ box	Box with 3.62- to 14.16-m ³ (128- to 500-ft ³) capacity.
	501- to 1,000-ft ³ box	Box with 14.18- to 28.32-m ³ (501- to 1,000-ft ³) capacity.
	>1,000-ft ³ box	Box with greater than 28.32-m ³ (1,000-ft ³) capacity.
Biological	Biological	Biological materials, primarily consisting of laboratory animal waste and carcasses.
CH	Contact-handled	Waste with a dose rate less than or equal to 200 mrem/h at contact with the waste container.
Combustible	Combustible liquids	Liquids having closed-cup flash points at or above 37.8 °C (100 °F) and below 60 °C (140 °F).
Compactibles	Compactible solids	Solid contaminated material such as plastics, rubber, etc.
Comp/comb sol	Compactible-combustible solids	Solid contaminated material that is also combustible, such as paper.
Concrete	Concrete construction material	Contaminated concrete construction rubble.

Acronym/ abbreviation	Term	Definition
Cyanide	Cyanide	Any substance composed of a cyanogen group in combination with some element or radical, especially potassium cyanide or sodium cyanide.
Drum	55-gal drum	Drum having a 55-gal capacity.
	Odd drum	Drums other than standard 55-gal capacity. Frequently, odd drums are used to designate 30-gal-capacity drums.
Explosive	Explosive material	Any chemical compound, mixture, or device for which the primary purpose is to function by explosion with substantial instantaneous release of gas and heat.
Filters	HEPA filters	High-efficiency particulate air (HEPA) filters removed from service.
Flammable	Flammable liquid or solid	Liquid having a flash point less than 37.8 °C (100 °F) and having a vapor pressure not exceeding 140 lb/in ² or a solid, other than an explosive, which under conditions normally incident to transportation, is liable to cause fire through friction or retained heat from manufacturing or processing, or can be ignited readily and burn vigorously and persistently.
Glass	Glass	Contaminated glass. Before 1991, this physical characteristic was categorized as construction material.
GTC 3	Greater than Category 3	Waste that has radionuclide concentrations greater than Category 3. It is not generally acceptable for near-surface disposal and is called Greater Than Category 3 to meet the intent of DOE Order 5820.2A (DOE 1988).
HAZ	Hazardous	Nonradioactive waste that is also dangerous waste as defined in WAC 173-303.
Labpacks	Labpacks	Various quantities and types of compatible waste within the same U.S. Department of Transportation hazard class, packaged in an outside container in compliance with 49 CFR 173.12.
Lead	Lead and equipment containing lead	Contaminated lead and equipment containing lead components; includes contaminated lead pipes.

Acronym/ abbreviation	Term	Definition
Liquid/sludge	Sludges/absorbed liquids	Semi-liquid material consisting of an unspecified mixture of solids and liquids or liquid waste material absorbed in an absorbent material such as diatomaceous earth.
LLMW	Low-level mixed waste	Any category of LLW which has dangerous constituents as identified by WAC 173-303.
LLW	Low-level waste	Waste that contains radioactivity that is not classified as transuranic waste, radioactive mixed waste or spent nuclear fuel; concentration of transuranic radionuclides is less than or equal to 100 nCi/g of the waste matrix.
Mercury	Elemental mercury	Contaminated materials containing mercury.
Metals	Metal less than 0.5-in. thick	Metal stock, scrap or equipment that is less than 1.27-cm (0.5-in.) thick.
	Metal greater than 0.5-in. thick	Metal stock, scrap, or equipment that is more than 1.27-cm (0.5-in.) thick.
	Stainless metal	Primarily stainless steel.
Other	Other containers	Special containers used to transport waste. These have dimensions and/or capacities that do not correspond with those identified.
Other	Other hazardous constituents	Other chemicals whose descriptions do not correspond with the listed hazardous constituents.
Other	Other wastes	Other waste types whose general characteristics do not correspond to the listed physical characteristics.
Oxidizer	Oxidizer	A substance (e.g., nitrates or chlorates) that readily yields oxygen or other oxidizing gas, or that readily reacts to oxidize combustible materials.
P&U listed	P&U listed material	Any waste with a U.S. Environmental Protection Agency hazardous waste code starting with a "P" or a "U."
Particulate	High particulate	Contaminated particulate matter such as ash, dust, floor sweepings, kitty litter, and vermiculite.

Acronym/ abbreviation	Term	Definition
PCBs	PCB <50 ppm	Polychlorinated biphenyl-contaminated materials where PCB concentration is less than 50 parts per million.
	PCB ≥ 50 , <500 ppm	Polychlorinated biphenyl-contaminated materials where PCB concentration is less than 500 parts per million and greater than or equal to 50 parts per million.
	PCB ≥ 500 ppm	Polychlorinated biphenyl-contaminated materials where PCB concentration is greater than or equal to 500 parts per million.
Reactive	Water reactive	Materials that are normally unstable and readily undergo violent change without detonating; forms an explosive mixture with water.
Remaining	Remaining	This category, used only in the graphics of this document, combines all remaining characteristics not uniquely identified.
RH	Remote-handled	Waste with a dose rate greater than 200 mrem/hr at contact with waste container.
Small boxes	4- by 4- by 8-ft box	Standard transport box having 1.22- by 1.22- by 2.44-m (4- by 4- by 8-ft) dimensions.
	<128-ft ³ box	Box under 3.62-m ³ (128-ft ³) capacity.
	TRUPACT II box	Transuranic packaging and shipping container. This shipping cask is for standard waste boxes.
	Standard box (SWB)	Standard waste box for shipping transuranic waste.
Soil	Soil	Contaminated soils.
Special containers	Plastic wrap	Waste contained (wrapped) in plastic for transport.
	Dump truck	Waste shipped in dump trucks.
	Sealed equipment	Large pieces of equipment that have been sealed for containment.
Spent resins	Spent resins	Contaminated ion exchange resins.
Spent solvent	Spent solvents	Contaminated used solvents such as paint thinner.
Toxic metal	Toxic metal	Toxic characteristic metals.
Toxic pesticide	Toxic pesticide	Toxic characteristic pesticides.

Acronym/ abbreviation	Term	Definition
Toxic organic	Toxic organics	Toxic characteristic organics.
TRU	Transuranic waste	Waste that is contaminated with alpha-emitting transuranic radionuclides with half-lives greater than 20 years and concentrations greater than 100 nCi/g of the waste matrix at the time of the assay. TRU radionuclides are radionuclides having an atomic number greater than 92. In addition to TRU radionuclides, radium sources and ²³³ U in concentrations greater than 100 nCi/g of the waste matrix are managed as TRU waste because of hazards similar to TRU waste per the requirements of DOE Order 5820.2A (DOE 1988).
TRUM	Transuranic mixed waste	Transuranic waste that has dangerous constituents as identified by WAC 173-303.
Wood	Wood	Contaminated wood construction materials and other cellulosic materials (e.g., tumbleweeds).

ACRONYMS AND INITIALISMS

ANL	Argonne National Laboratory
ARCL	allowable residual contamination levels
BAPL	Bettis Atomic Power Laboratory
CC	complexant concentrate
CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act of 1980</i>
D&D	decontamination and decommissioning
DOD	U.S. Department of Defense
DOE	U.S. Department of Energy
DST	double-shell tank
DWM	defense waste management
EIS	environmental impact statement
ER	environmental restoration
FFTF	Fast Flux Test Facility
FMEF	Fuels/Material Examination Facility
FUSRAP	Formerly Utilized Sites Remediation Action Program
FY	fiscal year
HCD	hazardous content descriptor
HEHF	Hanford Environmental Health Foundation
HEPA	high-efficiency particulate air (filter)
HVAC	heating, ventilation, and air conditioning
HWVP	Hanford Waste Vitrification Plant
INEL	Idaho National Engineering Laboratory
IRM	Information Resource Management
KEH	Kaiser Engineers Hanford
LBL	Lawrence Berkeley Laboratory
LETF	Liquid Effluent Treatment Facility
MASF	Maintenance and Storage Facility
NCAW	neutralized current acid waste
NCRWDST	neutral cladding removal waste double-shell tank
ORNL	Oak Ridge National Laboratory
PCD	physical content descriptor
PFP	Plutonium Finishing Plant
PNL	Pacific Northwest Laboratory
POTW	Publicly Owned Treatment Works
PUREX	Plutonium-Uranium Extraction Facility
R	Rad — radiation absorbed dose
RCRA	<i>Resource Conservation and Recovery Act of 1976</i>
SST	single-shell tank
SWPM	Solid Waste Projection Model
TRUEX	Transuranic Extraction Facility
TSD	treatment, storage, and disposal
WAC	<i>Washington Administrative Code</i>
WESF	Waste Encapsulation and Storage Facility
WHC	Westinghouse Hanford Company
WIPP	Waste Isolation Pilot Plant
WGs	waste generators
WMP	Waste Management Plant
WRAP	Waste Receiving and Processing (Plant)

APPENDIX A
ONSITE AND OFFSITE GENERATORS

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FY-1992 WASTE GENERATOR LIST
BY WASTE GENERATOR GROUP

Waste Generator Group Name	Waste Generator Abbreviation	Waste Generator Name
Advanced Reactor	WHC_105DR WHC_306 WHC_308 WHC_FMEF WHC_MASF WHC_RPSF	Large Sodium Fire Facility Development, Fabrication and Testing Laboratory Fuel Development Laboratory Fuel & Materials Examination Facility Maintenance & Storage Facility Radioisotope Power Systems Facility
Chemical Processing	WHC_202A WHC_221T WHC_222S WHC_2345Z WHC_2703E WHC_L045H	PUREX & UO ₃ -224U Facilities T-Plant 222-S Laboratory Plutonium Finishing Plant Chemical Engineering Laboratory 300 Area Water Treatment Project
D&D/Surplus Facility	WHC_202A_D&D WHC_ENV_RES	PUREX & UO ₃ -224U Facilities D&D Environmental Restoration Operations
Defense Waste Management	WHC_225B WHC_2ETF WHC_340 WHC_DSTPSRET WHC_DST_PRT WHC_DST_RET WHC_GROUT WHC_HWVP WHC_LLBG WHC_PX_C018H WHC_TRUSAF	B-Plant and WESF Tank Farms Retention Facility CC,PFP&NCRWDST Pilot Scale Retrieval DST NCAW Process Tests WMP DST Waste Retrieval Hanford Grout Facility Hanford Waste Vitrification Project Low Level Waste Burial Ground PUREX-242A Liquid Effluent Treatment Facility Solid Waste Operations

WHC-EP-0567-1

Defense Reactor Division	WHC_100 WHC_303K	100 Area - N and K Areas 300 Area Waste
Environmental	WHC_ERA_APC WHC_ERA_BG9 WHC_ERA_NSLP WHC_ERA_RVR WHC_ERA_SD WHC_SSTRET WHC_WELL_DRL	Acid Pickling Crib 618-9 Burial Ground North Slope Riverland Sodium Dichromate Single-Shell Tank Retrieval Operations Environmental Projects
Offsite Facilities	AMES ANL_E BAPL BAPL_SHIPYDS BAT_CLBS_LAB BRKHVN B_LEHR_DAV FERMI FUSRAP GEN_ATOM KAPL_SHIPYDS LBL MIT_BATES PADUCAH_GDP PORTSMOUTH PRINCETON RKW_CANOGA STANFORD U_U	Ames Lab Argonne National Laboratory-East Bettis Atomic Power Laboratory BAPL Shipyards Battelle Columbus Laboratory Brookhaven National Laboratory University of California, Davis Fermi National Accelerator Laboratory Formerly Utilized Sites Remediation Action Program General Atomics Knolls Atomic Power Laboratory Shipyards Lawrence Berkeley Laboratory Bates Accelerator - Massachusetts Paducah Gaseous Diffusion Plant Portsmouth Gaseous Diffusion Plant Plasma Physics Laboratory Rockwell Canoga Park Stanford Linear Accelerator Center University of Utah
Other Onsite Generators	HEHF KEH_100 PNL PNL_SH	Hanford Environmental Health Waste Foundation Kaiser Engineering Hanford Pacific Northwest Laboratory PNL - Shielding
Projects	WHC_B_455 WHC_B_W007H WHC_B_W059 WHC_EA_W025 WHC_EA_W026 WHC_EA_W100	K-3 Filter Upgrade B-Plant Process Condensate B-Plant Ventilation Upgrade Solid Waste Project WRAP 1 Project WRAP 2A Project

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WHC_EA_W112	Solid Waste Project
WHC_EA_W113	Solid Waste Project
WHC_EA_W221	Solid Waste Project
WHC_EA_W255	WRAP 2B Project
WHC_L012	1166 Building Demolition
WHC_TWR_151_SH	Tank Farm-101-AZ - Shielding
WHC_TWR_W030	Tank Farm-Ventilation Upgrade
WHC_TWR_W058	Tank Farm Cross Site Transfer Line
WHC_TWR_W151	Tank 101-AZ Retrieval
WHC_TWR_W153	TRUEX Pilot Plant

Support Services

FAB_SVC	Fabrication Service
GS_2061	Graphic Services
WHC_1143N	Remediation Maintenance
WHC_1154_3000	1154 Radio Maintenance - 3000 Area
WHC_1163	Property Management
WHC_1171	Fleet Operations
WHC_1171FSP	Fleet/Site Support Planning
WHC_2101M	Electric Utilities
WHC_2715EA	General Area Services North
WHC_2724W	Laundry/Protective Equipment Decontamination Facility
WHC_272S	Fire Systems Maintenance
WHC_284E	200 East Powerhouse - Building 284E
WHC_305	WHC Engineering Department
WHC_335	Sodium Test Facility
WHC_3707C	Safeguards & Security Maintenance
WHC_384	300 Area Utilities
WHC_4831	FFTF/FMEF Maintenance
WHC_4843	Laydown Area Warehouse
WHC_712	712 Building Reproduction
WHC_FED	IRM Computer Operations - Federal Building
WHC_HFD	Hanford Fire Department
WHC_S300	General Area Services - South

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APPENDIX B
CONTACTS

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Solid Waste Forecast Contacts

<u>Facility/Project</u>	<u>Contact</u>	<u>Phone Number</u>
Rockwell - Canoga Park	Ben Basset	818-586-5556
Liquid Effluent Treatment Facility	Brad Benton	372-3613
300 Area Water Treatment	Brad Benton	372-3613
Tank Farm Operations/ SST Retrieval	Jeff Biagini	372-1238
T-Plant	Jay Bottenus	373-4621
Brookhaven National Laboratory	Mike Clancy	516-282-7651
Maintenance and Storage Facility	Norman Dahl	376-4788
222-S Laboratory	Joe Francik	373-4521
Portsmouth	Charles Gates	614-897-6424
DST Pilot Scale Retrieval	Greg Gauck	373-1779
Hanford Grout Facility	Bill Gretsinger	373-9389
PUREX	Joe Hilliard	373-1782
Tank 101-AZ Retrieval Program	Ed Kohlman	376-3696
Battelle Columbus Laboratory	Larry Lowry	614-424-5052
Low Level Waste Burial Ground	Jim Maier	373-4222
PFP	Eddie Manthos	373-2390
Argonne National Laboratory	Dan McNammee	708-252-6539
University of California, Davis	Dawn Mitchell	916-752-4023
2724-W	Albert Montelongo	373-4039

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Environmental Restoration Operations	Mark Morton	373-5900
FUSRAP	Karen Noey	615-576-2364
SP-100	Bill Phillips	376-3666
308	Dave Rasmussen	376-3288
Hanford Waste Vitrification Project	Bob Rieck	376-5034
Fleet/Site Support Planning	Raymond Robert	376-9502
100 - N/K	Serena Sorenson	373-3285
DST Waste Retrieval	Leslie Stegen	376-5096
Well Drilling	William Tyler	376-5976
Pacific Northwest Laboratory	Kyle Webster	376-7688
Lawrence Berkeley Laboratory	Margaret Wong	510-486-6219

APPENDIX C

VOLUME SUMMARY DATA BY WASTE CATEGORY

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FY-1992 SWPK DATABASE
WASTE CLASS VOLUMES BY WASTE GENERATOR

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Waste Class	Waste Generator	HELD	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
CH_LLW_I	AMES	4.2	4.1	2.8	2.8	2.8	2.8	2.8	2.8	2.8	1.4	1.4	1.4	1.4	1.4	1.4	1.4
	ANL_E		212.5	212.5	212.5	212.5	212.5	212.5	212.5	212.5	212.5	212.5	212.5	212.5	212.5	212.5	212.5
	BAPL_SHIPYDS		65.0														
	BAT_CLBS_LAB		424.9	424.9	849.9	424.9	424.9	141.6									
	BRKXW		198.3	208.2	218.6	229.5	241.0	253.1	265.8	279.0	293.0	307.6	323.0	339.2	356.1	365.0	374.1
	B_LEHR_DAV		190.4	86.7	414.3	265.6											
	FERMI	8.4	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
	FUSRAP		22.9			153.0											
	GEN_ATOM		121.8														
	KAPL_SHIPYDS		237.8	59.5	59.5	59.5	178.3		38.8			272.0					
	KEH_100					125.9											
	LBL		21.2	42.5	1699.7	2832.9	2266.3	1983.0	1133.1	566.6	70.8	56.7	56.7	56.7	56.7	56.7	56.7
	MIT_BATES	2.1	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2
	PADUCAN_GDP	2160.0	450.0	318.5	318.5	318.5	318.5	318.5	318.5	318.5	318.5	318.5	318.5	318.5	318.5	318.5	318.5
	PHL	198.3	424.9	424.9	424.9	424.9	424.9	424.9	424.9	424.9	424.9	424.9	424.9	424.9	424.9	424.9	424.9
	PORTSMOUTH		283.3	255.0	470.3	651.6	606.2	753.5	736.5	736.5	736.5	736.5	736.5	736.5	736.5	736.5	736.5
	PRINCETON		29.7	29.3	57.0	738.4	264.8	55.1	29.0	26.1	26.1	26.1	29.7	29.3	57.0	738.4	264.8
	RCM_CANOGA		603.4	226.6	226.6	226.6	56.7										
	STANFORD		35.4	35.4	35.4	35.4	35.4	35.4	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
	U_U		.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2
	WHC_100		151.6	235.8	410.8	428.9	354.1	213.9	134.6	48.2	48.2	48.2	48.2	48.2	48.2	48.2	48.2
	WHC_105DR		.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6
	WHC_202A	235.1	176.3	100.8	101.6	70.7	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4
	WHC_221T		85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0
	WHC_222S	418.1	504.2	579.9	666.9	666.9	666.9	666.9	666.9	666.9	666.9	666.9	666.9	666.9	666.9	666.9	666.9
	WHC_225B		113.3	113.3	113.3	113.3	113.3	113.3									
	WHC_2345Z	68.6	506.2	506.2	506.2	506.2	506.2	506.2	506.2	506.2	506.2	506.2	506.2	506.2	506.2	506.2	506.2
	WHC_2724W		113.3	85.0	56.7												
	WHC_2E1F		793.2	906.5	453.3	453.3	453.3	453.3	453.3	453.3	453.3	453.3	453.3	453.3	453.3	453.3	453.3
	WHC_303K	81.6	81.6	81.6	40.8	40.8	40.8	40.8	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4
	WHC_306		3.6														
	WHC_308	27.1															
	WHC_340		17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
	WHC_B_W007H		113.3														
	WHC_B_W059		66.6	674.5	614.7												

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FT-1992 SUPM DATABASE
WASTE CLASS VOLUMES BY WASTE GENERATOR

Waste Class	Waste Generator	HELD	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
CH_LLW_I	WHC_ENV_RES		85.0	446.8	229.5	283.3	255.0	2796.0	2813.0	2784.7	2974.5	2954.7	2926.3	2946.2	2923.5	232.3	232.3
	WHC_EPA_RVR		28.3														
	WHC_HUVP																
	WHC_LIRG		34.0	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
	WHC_MASF		11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3
	WHC_RPSF						6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
	WHC_SSTRET			78.0	301.0	301.0	249.0	10.0	10.0	7.0			4771.0	8334.0	8370.0	8654.0	8522.0
	WHC_TUR_M151			12.2							25.0						
	WHC_TUR_M153						1.0										
	WHC_WELL_DRL		22.4	22.4	24.6	16.6	26.1	8.0	22.0	6.0	6.3	19.6	4.6	4.6	4.6	4.6	9.5
Total CH_LLW_I			3176.4	5869.8	6434.2	8433.3	9539.1	7926.7	8912.5	8006.6	7544.2	7269.1	7510.1	12051.5	15650.2	15708.1	13414.5
CH_LLW_III	BAPL		34.1	96.9	111.1	91.7	91.7	14.2	14.2	14.2							
	BAPL_SHIPYDS		117.8														
	BAT_CLBS_LAB			85.0	226.6	170.0	85.0										
	B_LFHR_DAV					.3											
	FUSRAP		141.2	3969.2	4710.3	5800.3	1644.5	1529.7									
	KAPL_SHIPYDS		101.1	59.4	59.4	59.4	59.4	59.4	59.4	59.4	59.4	59.4	59.4	59.4	59.4	59.4	59.4
	PNL	2.1	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
	PORTSHOITH	34.0															
	WHC_207A	7.1	6.3	3.1	2.1	2.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	WHC_222S	46.5	14.2	16.3	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7
CH_LLW_IV	WHC_225B		170.0	283.3	283.3	283.3	283.3										
	WHC_2345Z	42.0	50.4	50.4	50.4	50.4	50.4	50.4	50.4	50.4	50.4	50.4	50.4	50.4	50.4	50.4	50.4
	WHC_2E1F		56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7
	WHC_340		.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
	WHC_DSTPSRET			83.0	83.0	165.0	165.0										
	WHC_DST_PRT			7.0	21.0	14.0	7.0	21.0									
	WHC_GROJIT		8.5	17.0	36.8	87.8	53.8	70.8	87.8	53.8	566.6	566.6	566.6	566.6	566.6	566.6	566.6
	WHC_HUVP																
	WHC_L045H		28.3														
	WHC_TRUSAF		2.3	1.1	1.1	2.3											
CH_LLW_V	WHC_TUR_M030		2.8	8.5	8.5												
	WHC_TUR_M058				5.0	5.7											

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FY-1992 SUPP DATABASE
WASTE CLASS VOLUMES BY WASTE GENERATOR

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Waste Class	Waste Generator	HELD	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
CH_LLW_III	WHC_WELL_DRL		6.2	6.2	6.8	12.2	7.3	2.2	6.1	1.6	1.7	5.4	1.2	1.2	1.2	1.2	2.6
Total CH_LLW_III		131.7	744.5	4747.7	5685.4	6824.5	2528.4	1828.7	298.9	827.0	812.9	791.2	771.8	754.8	788.8	754.8	756.2
CH_LLW_GTCIII	PORTSMOUTH	34.0															
Total CH_LLW_GTCIII		34.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RH_LLW_I	ANL_E			13.6	17.0												
	BRKRVN		1.4	1.4													
	PNL	.4	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
	WHC_100		4.2	44.0	126.0	224.4	174.3	50.0	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
	WHC_221T		85.0	141.6	141.6	141.6	141.6	141.6	141.6								
	WHC_B_W059			191.2	824.4												
	WHC_ENV_RES		2.1	2.1	257.8												
	WHC_TWR_W153		5.2	5.2	11.9	7.3	17.8	5.4	14.9	4.1	4.1	13.6	3.4	3.4	3.4	3.4	2.1
	WHC_WELL_DRL																
Total RH_LLW_I		.4	99.0	400.2	1382.6	402.7	363.1	283.1	268.1	172.3	172.3	68.5	58.3	58.3	58.3	58.3	57.0
RH_LLW_III	BAPL								14.9	14.9							
	PNL	28.3	76.5	70.8	56.7	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3
	WHC_202A	1893.2															
	WHC_225B		124.6	623.2	623.2	311.6	170.0										
	WHC_DSTPSRET				13.0	13.0	13.0										
	WHC_DST_PRT				13.0	10.0	3.0	4.0		9.0							
	WHC_HWVP								85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0
	WHC_MASF		15.9	15.9	15.9	111.2	95.4	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8
	WHC_SSTRET				4.0	4.0											
	WHC_TWR_W151				97.3					43.7							
Total RH_LLW_III		1921.5	217.0	709.9	823.1	461.1	292.7	62.0	58.0	137.1	171.8	128.1	148.1	162.1	162.1	170.1	184.1
RH_LLW_GTCIII	PNL	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3

FY-1992 SUPM DATABASE
WASTE CLASS VOLUMES BY WASTE GENERATOR

Waste Class	Waste Generator	HELD	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total RH_LLW_GICIII		.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
CH_LLHW_I	ANL_F	212.7	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2
	RAPL	21.2	9.7	1.9	2.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
	RAT_CIRS_IAB			.2													
	RREHVN	95.6	2.8	3.0	3.1	3.3	3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.8	5.1	5.3	5.6
	B_IFHR_DAV	3.8															
	FERMI						3.0	.2						6.3	.2		
	FUSRAP	1.0															
	IRL		2.8	5.7		14.2	14.2	14.2	11.3	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
	PNL	33.1	33.0	21.5	21.5	21.4	21.2	21.1	21.0	20.8	20.7	20.5	20.4	20.3	20.1	20.0	19.8
	PORTSMOUTH	286.1	228.9	251.8	343.3	377.7	377.7	251.8	274.7	274.7	274.7	274.7	274.7	274.7	274.7	274.7	274.7
	PRINCETON	.4	.4	.4	.4	7.9	7.9	.4	.3	.4	.4	.4	.1	.4	.4	6.8	6.8
	RYU_CANOGA	113.3															
	STANFORD	.2	.1				.1		.1		.1		.1		.1		.1
	UII	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2
	WHC_100	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	.4	.4	.4	.4	.4	.4	.4	.4
	WHC_105NR	2.1	.4														
	WHC_117IFSP	144.2	259.9	326.3	368.3	368.3	170.0	170.0	352.7	352.7	352.7	352.7	226.6	226.6	226.6	339.9	339.9
	WHC_207A	4.2	3.1	2.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	WHC_221T	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
	WHC_222S	36.8	47.4	48.7	48.7	48.7	48.7	48.7	48.7	48.7	48.7	48.7	53.5	53.5	53.5	53.5	53.5
	WHC_225B	8.4	8.4	8.4	8.4	8.4	8.4										
	WHC_2345Z	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
	WHC_2ETTF	85.0	85.0	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7
	WHC_303K	4.2	4.2	4.2	2.1	2.1	2.1	2.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	WHC_308	7.4															
	WHC_340	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6
	WHC_4843	12.7															
	WHC_FHV_RES		14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2
	WHC_FRA_BG9	.1															
	WHC_FHEF											13.6					13.6
	WHC_HQVF											11.3	11.3	11.3	11.3	11.3	11.3
	WHC_L065H		19.1	229.0	229.0	229.0	229.0	229.0	229.0	229.0	229.0	229.0	229.0	229.0	229.0	229.0	229.0

FY-1992 SIPH DATABASE
WASTE CLASS VOLUMES BY WASTE GENERATOR

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Waste Class	Waste Generator	HELD	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
CH_LLMW_I	WMC_LLUG	.3				.3						.3					
	WMC_MASF	.1		.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
	WMC_PX_C018H		49.7	596.2	596.2	596.2	596.2	596.2	596.2	596.2	596.2	596.2	596.2	596.2	596.2	596.2	596.2
	WMC_SSTRET		26.0	100.0	100.0	100.0	79.0	3.0	3.0	2.0			1599.0	2784.0	2794.0	2803.0	2804.0
Total CH_LLMW_I		116.8	977.7	809.6	1696.9	1840.9	1658.7	1438.1	1639.9	1644.2	1642.2	1656.2	3119.9	4311.5	4315.9	4444.1	4458.9
CH_LLMW_III	FUSRAP	1.3															
	PHL	2.2		2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
	WMC_222S	7.3	1.6	1.8	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.3	2.3	2.3	2.3
	WMC_225B		2.1	2.1	2.1	2.1	2.1										
	WMC_2ETF	22.7	22.7														
	WMC_340	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2
	WMC_GROUT	34.0	70.8	141.6	240.8	240.8	212.5	240.8	240.8	212.5	212.5	240.8	240.8	212.5	240.8	212.5	212.5
	WMC_WWAP									17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
	WMC_TRUSAF	1.1	.6	.6	.6	1.1											
Total CH_LLMW_III		7.3	65.2	100.4	148.8	248.5	219.1	245.3	245.3	234.0	234.0	262.3	262.5	234.2	262.5	234.2	234.2
CH_LLMW_GFCIII	WMC_222S	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.6	.6	.6
Total CH_LLMW_GFCIII		0.0	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.6	.6	.6
RH_LLMW_I	WMC_ENV_RES		5.7	5.7	11.3	5.7	17.0	5.7	14.2	2.8	2.8	14.2	2.8	2.8	2.8	2.8	2.8
	WMC_TWR_W153			1.0													
Total RH_LLMW_I		0.0	0.0	5.7	12.3	5.7	17.0	5.7	14.2	2.8	2.8	14.2	2.8	2.8	2.8	2.8	2.8
RH_LLMW_III	WMC_202A	1.0															
	WMC_B_455	119.7							106.2	56.0	56.0	56.4	128.0	43.0	31.0	53.0	36.0
	WMC_DST_RET		13.0	30.0	13.0	2.8	61.0	12.7	28.3			28.3	12.7		28.3		
	WMC_GROUT																
Total RH_LLMW_III		1.0	119.7	13.0	30.0	15.8	61.0	12.7	134.5	56.0	56.0	56.4	156.3	55.7	31.0	81.3	36.0

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WASTE CLASS VOLUMES BY WASTE GENERATOR

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Waste Class	Waste Generator	HELD	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
RH_LLW_GTC111	WMC_202A	.7															
	WMC_2101N			1.7													

Total RH_LLW_GTC111		.7	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CH_TRU	ANL_E		12.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
	BAT_CLBS_LAB					19.1											
	LBI				.6	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
	PHL	98.9	2.2	2.2	2.2	2.2	2.2	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
	RKV_CANOGA		2.6														
	WMC_202A		3.8	3.8													
	WMC_2345Z	323.3	97.7	97.7	97.7	97.7	73.7	73.7	73.7	73.7	73.7	73.7	73.7	73.7	73.7	73.7	73.7
	WMC_308		11.1														
	WMC_EA_U112				38.3												
	WMC_EA_U113						45.9										
	WMC_EA_U221		.6	3.4	7.1	7.1	119.0	119.0	359.8	181.3	62.3	492.9	589.2	430.6	297.5	297.5	297.5
	WMC_ENV_RES									183.6					85.0	85.0	
	WMC_HAPP		1.0	1.5	.9	1.5	.9	1.5	.5	1.2	.3	.3	1.1	.3	.3	.3	.3
	WMC_WELL_DRL																

Total CH_TRU		422.2	131.5	114.3	152.5	133.4	247.5	200.1	439.9	445.7	142.2	572.8	669.9	510.5	377.4	462.4	462.4

CH_TRUM	ANL_E		.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2
	PHL		.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2
	RKV_CANOGA		.2														
	WMC_202A		1.3														
	WMC_2345Z		6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
	WMC_308		.2														
	WMC_ENV_RES			21.5	28.5	13.4	16.8	30.4	22.5	37.2	20.5	23.3	23.8	5.2	5.2	5.2	5.2

Total CH_TRUM		0.0	11.2	31.0	62.8	36.9	40.3	64.7	37.6	50.2	48.2	35.2	35.7	17.1	29.7	29.7	29.7

RH_TRU	ANL_E		1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
	BAT_CLBS_LAB				20.4	61.2	57.8	4.5									

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Waste Class	Waste Generator	HELD	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
RH_IRU	PNL	3.1	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8
	UNC_100			4.0	113.0	109.1	135.3	26.2									
	UNC_202A	68.0															
	UNC_DSTPSRET			153.0	153.0												
	UNC_DST_PRT			11.0	3.0	3.0		1.0		38.0							
	UNC_ENV_RES											5.7	53.8	48.2	31.2	31.2	31.2
	UNC_WWVP											56.7	56.7	56.7	56.7	198.3	198.3
	UNC_TUR_U151				40.2						87.5						
Total RH_IRU		71.1	2.5	170.5	332.1	175.8	206.9	45.5	42.2	60.3	152.4	113.0	121.5	107.4	90.4	232.0	232.0
RH_TRUM	WHC_221T						7.1	7.1	7.1	7.1							
	UNC_DSTPSRET				306.0	306.0											
	UNC_DST_RET				26.0				99.3	35.0	99.6	144.0	131.0		98.0	281.0	65.0
Total RH_TRUM		0.0	0.0	0.0	0.0	332.0	313.1	7.1	106.4	42.1	99.6	144.0	131.0	0.0	98.0	281.0	65.0
HAZ	FAB_SVC		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	GS_2061	1.0	1.9	.2													
	HEHF		2.8	3.5	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
	KEN_100		27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3
	UNC_100		63.3	63.3	63.3	63.3	63.3	63.3	63.3	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9
	UNC_105DR		6.9	.4													
	UNC_1143W		.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6
	UNC_1154_3000		.1	.1	.1	.1	.1	.1	.1	.1							
	UNC_1163		1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.0	1.0	1.0	1.0	1.0	1.0
	UNC_1171		16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6
	UNC_202A		9.1	6.4	4.2	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
	UNC_2101H		1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
	UNC_221T		2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
	UNC_222S		3.5	4.1	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	5.2	5.2	5.2	5.2	5.2
	UNC_225B		10.5	10.5	10.5	10.5	10.5										
	UNC_2345Z		6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2
	UNC_2703E		2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
	UNC_2715EA		6.1	6.5	6.7	6.5	6.1	5.9	5.4	5.2	5.1	4.8	4.5	4.4	4.2	4.0	3.8

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WASTE CLASS VOLUMES BY WASTE GENERATOR

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Waste Class	Waste Generator	WELD	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
HAZ	WMC_2724W		.4	.4	.4		.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6
	WMC_272S		.6	.6	.6		.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6
	WMC_284E		8.1	8.3	8.3	10.4	12.5	12.5	10.4	8.3	7.3	7.3	28.3	28.3	28.3	28.3	28.3
	WMC_281F		28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3
	WMC_303K		4.2	4.2	4.2	2.1	2.1	2.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	WMC_305		1.8	1.0	1.0	1.0	1.0	1.0	1.0	1.0	.2	.2	.2	.2	.2	.2	.2
	WMC_306		.8	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7
	WMC_335			.4	2.1	.4	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6
	WMC_340		.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6
	WMC_3707C		1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	WMC_384		4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
	WMC_4831		11.2	12.2	13.1	13.8	14.4	15.1	15.8	16.4	15.6	14.8	14.1	13.3	12.7	12.0	11.4
	WMC_4843		.1	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7
	WMC_712		.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7
	WMC_B_W059																
	WMC_EA_W025					1.2		1.5									
	WMC_EA_W026																
	WMC_EA_W100						1.5										
	WMC_EA_W112																
	WMC_EA_W113																
	WMC_EA_W221										2.0						
	WMC_EA_W255										2.9						
	WMC_ENV_RES		1.4	25.5	19.8	19.8	28.3	22.7	25.5	14.2	14.2	17.0	14.2	14.2	2.8	2.8	5.7
	WMC_ERA_APC		56.7														
	WMC_ERA_NSLP		.7														
	WMC_ERA_SD		283.3														
	WMC_FED		1.3	1.3	1.3	1.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
	WMC_FHEF		.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8
	WMC_GROUT		3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
	WMC_HFD		.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
	WMC_HAMP		.2	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6
	WMC_L012		1.3	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
	WMC_MASF		9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
	WMC_S300																
	WMC_TMR_W153					2.1											

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WASTE CLASS VOLUMES BY WASTE GENERATOR

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Waste Class	Waste Generator	HELD	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
HAZ	WHC_WELL_ORL		33.7	33.7	36.7	24.9	39.2	32.9	9.0	9.5	29.4	6.9	6.9	6.9	6.9	6.9	14.3
Total HAZ		2.3	614.9	342.1	295.9	284.0	319.5	284.5	258.4	203.7	225.7	199.7	188.6	187.9	175.7	174.8	184.3

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WASTE CLASS VOLUMES BY WASTE GENERATOR

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Waste Class	Waste Generator	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total	Pct
CH_LLM_I	AMES	1.4	1.4	1.4	1.4	1.4	1.4	.7	.7	.7	.7	.7	.7	.7	.7	.7	51.7	.0
	ANL_E	212.5	212.5	212.5	212.5	212.5	212.5	212.5	212.5	212.5	212.5	212.5	212.5	212.5	212.5	212.5	6375.0	2.4
	BAPL_SHIPYDS																65.0	.0
	BAT_CLBS_LAB																2691.1	1.0
	BRKWN	383.5	393.1	402.9	412.9	423.3	433.9	444.7	455.8	467.2	478.9	490.8	503.1	515.7	528.6	541.8	11127.7	4.1
	B_LEHR_DAV																957.0	.4
	FERMI	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	518.4	.2
	FUSRAP																175.9	.1
	GEN_ATOM																121.8	.0
	KAPL_SHIPYDS																905.4	.3
	KEN_100																125.9	.0
	LBL	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	11806.8	4.4
	MIT_BATES	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	8.1	.0
	PADUCAH_GOP	318.5	318.5	318.5	318.5	318.5	318.5	318.5	318.5	318.5	318.5	318.5	318.5	318.5	318.5	318.5	11846.5	4.4
	PHL	424.9	424.9	424.9	424.9	424.9	424.9	424.9	424.9	424.9	424.9	424.9	424.9	424.9	424.9	424.9	12945.3	4.8
	PORTSMOUTH	170.0	170.0	170.0	155.8	155.8	155.8	155.8	155.8	141.6	141.6	141.6	141.6	141.6	127.5	127.5	10030.9	3.7
	PRINCETON	55.1	199.0	26.1	26.1	26.1	29.7	29.3	57.0	738.4	264.8	55.1	29.0	26.1	26.1	26.1	4014.8	1.5
	RKV_CANOGA																1339.9	.5
	STANFORD	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	620.4	.2
	U_U	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	6.0	.0
	WHC_100	48.2	48.2	48.2	48.2	48.2											2556.3	.9
	WHC_105DR																1.2	.0
	WHC_202A	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	1760.9	.6
	WHC_221T	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	2550.0	.9
	WHC_222S	733.7	733.7	733.7	733.7	733.7	807.1	807.1	807.1	807.1	807.1	807.1	807.1	807.1	807.1	807.1	22245.4	8.2
	WHC_225B																566.5	.2
	WHC_2345Z	506.2	506.2	506.2	506.2	506.2	506.2	506.2	506.2	506.2	506.2	506.2	506.2	506.2	506.2	506.2	15254.6	5.6
	WHC_2724W																255.0	.1
	WHC_2ETF	453.3	453.3	453.3	453.3	453.3	453.3	453.3	453.3	453.3	453.3	453.3	453.3	453.3	453.3	453.3	14392.1	5.3
	WHC_303K	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	724.2	.3
	WHC_306																3.6	.0
	WHC_308																27.1	.0
	WHC_340	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	510.0	.2
	WHC_B_W007H																113.3	.0
	WHC_B_W059																1345.9	.5

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WASTE CLASS VOLUMES BY WASTE GENERATOR

Waste Class	Waste Generator	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total	Pct
CH_LLW_I	WHC_ENV_RES	232.3	232.3	232.3	232.3	226.6	226.6	226.6	226.6	226.6	226.6	226.6	113.3	113.3	113.3	113.3	27849.7	10.3
	WHC_FRA_RVR																28.3	.0
	WHC_HMVP	283.3	283.3	283.3	283.3	283.3	283.3	283.3	283.3	283.3	283.3	283.3	283.3	283.3	283.3	283.3	6515.9	2.4
	WHC_LLBG	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	199.3	.1
	WHC_HASF	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	339.0	.1
	WHC_RPSF	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	169.0	.1
	WHC_SSTRET	9865.0	9865.0	9865.0	9865.0	9865.0	1532.0	1465.0	1465.0	1465.0	1465.0	1465.0					97789.0	36.1
	WHC_TUR_W151																37.2	.0
	WHC_TUR_W153																1.0	.0
	WHC_WELL_ORL	9.5	9.5	15.6	3.0	3.3	3.3	3.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	268.6	.1
Total CH_LLW_I		13965.6	14119.1	13962.1	13945.3	13950.3	5656.0	5599.4	5637.3	6315.9	5856.0	5656.2	4064.1	4073.8	4072.6	4085.8	271236.7	100.0
CH_LLW_III	RAPL																448.1	1.1
	RAPL_SHIPYDS																117.8	.3
	BAT_CLRS_LAB																566.6	1.5
	R_1EHR_DAV																.3	.0
	FUSRAP																17795.2	43.7
	KAPL_SHIPYDS																576.3	1.4
	PNL	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	128.1	.3
	PORTSMOUTH																34.0	.1
	WHC_202A	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	46.7	.1
	WHC_222S	20.5	20.5	20.5	20.5	20.5	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	658.6	1.6
	WHC_225B																1303.2	3.2
	WHC_2345Z	50.4	50.4	50.4	50.4	50.4	50.4	50.4	50.4	50.4	50.4	50.4	50.4	50.4	50.4	50.4	1554.0	3.8
	WHC_2E1F	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	1701.0	4.2
	WHC_340	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	12.0	.0
	WHC_DSTPSRET																496.0	1.2
	WHC_DST_PRT																70.0	.2
	WHC_GROIT	104.8	53.8	53.8	87.8	53.8	90.7	106.8	53.8	28.3	28.3	56.7	85.0	99.2	113.3	127.5	2019.5	5.0
	WHC_HMVP	566.6	566.6	566.6	566.6	566.6	566.6	566.6	566.6	566.6	566.6	566.6	566.6	566.6	566.6	566.6	13031.8	32.0
	WHC_LO45H																28.3	.1
	WHC_TRUSAF																6.8	.0
	WHC_TUR_W030																19.8	.0
	WHC_TUR_W058																10.7	.0

FY-1992 SUPH DATABASE
WASTE CLASS VOLUMES BY WASTE GENERATOR

Waste Class	Waste Generator	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total	Pct
CH_LLW_III	WMC_WELL_DRL	2.6	2.6	4.3	1.0	.8	.7	.8	.7	.7	.7	.7	.7	.7	.7	.7	81.5	.2
Total CH_LLW_III		807.2	756.2	757.9	788.6	754.4	793.4	807.6	756.5	731.0	731.0	759.4	787.7	801.9	816.0	830.2	40726.3	100.0
CH_LLW_GTCIII	PORTSMOUTH																34.0	100.0
Total CH_LLW_GTCIII		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.0	100.0
RH_LLW_I	ANL_E																30.6	.7
	BRKWHN																2.8	.1
	PML																33.4	.8
	WMC_100	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	979.9	23.0
	WMC_221T	25.5	25.5	25.5	25.5	25.5											934.6	21.9
	WMC_B_W059																1015.6	23.8
	WMC_ENV_RES	28.3	28.3	28.3	28.3	28.3	28.3	28.3									880.5	20.6
	WMC_TWR_W153																262.0	6.1
	WMC_WELL_DRL	2.1	2.1	5.9	1.4	1.1	1.1	1.1	.9	.9	.9	.9	.9	.9	.9	.9	127.2	3.0
Total RH_LLW_I		57.0	57.0	60.8	56.3	56.0	30.5	30.5	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4266.6	100.0
RH_LLW_III	BAPL																29.8	.4
	PML	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	537.4	6.5
	WMC_202A																1893.2	23.1
	WMC_225B																1052.6	22.6
	WMC_DSTPSRET																39.0	.5
	WMC_DST_PRT																39.0	.5
	WMC_HWMP	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	1955.0	23.8
	WMC_MASF	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	1049.3	12.8
	WMC_SSTRET	62.0	62.0	62.0	62.0	62.0	28.0	28.0	28.0	28.0	28.0	28.0					672.0	8.2
	WMC_TWR_W151																141.0	1.7
Total RH_LLW_III		190.1	190.1	190.1	190.1	190.1	156.1	156.1	156.1	156.1	156.1	156.1	128.1	128.1	128.1	128.1	8208.3	100.0
RH_LLW_GTCIII	PML	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	9.3	100.0

FY-1992 SUPH DATABASE
WASTE CLASS VOLUMES BY WASTE GENERATOR

Waste Class	Waste Generator	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total	Pct
Total RN_LLW_GTCIII		.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	9.3	100.0
CH_LLMW_I	ANL_E	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	624.5	.9
	BAPL	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	46.0	.1
	BAT_CLBS_LAB																.2	.0
	BRKNVN	5.9	6.2	6.5	6.8	7.1	7.5	7.9	8.3	8.7	9.1	9.6	10.1	10.6	11.1	11.6	283.6	.4
	B_LEHR_DAV																3.8	.0
	FERNI				6.3	.2						6.3	.2			3.1	25.8	.0
	FUSRAP																1.0	.0
	LBL	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	257.9	.4
	PNL	19.7	19.5	19.4	19.3	19.1	19.0	18.8	18.7	18.6	18.4	18.3	18.1	18.0	17.8	17.7	615.3	.8
	PORTSMOUTH	274.7	137.3	137.3	137.3	137.3	137.3	137.3	137.3	137.3	137.3	137.3	137.3	137.3	137.3	137.3	6157.2	8.4
	PRINCETON	.4	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	51.7	.1
	RCV_CANOGA																113.3	.2
	STANFORD		.1		.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	1.7	.0
	U_U	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	6.0	.0
	UNC_100	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	28.3	.0
	UNC_105DR																2.5	.0
	UNC_1171FSP	339.9	170.0	170.0	170.0	226.6	226.6	255.0	283.3	339.9	339.9	339.9	339.9	339.9	339.9	339.9	7806.8	10.7
	UNC_202A	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	36.4	.0
	UNC_221T	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	60.0	.1
	UNC_222S	53.5	53.5	53.5	53.5	53.5	53.5	58.9	58.9	58.9	58.9	58.9	58.9	58.9	58.9	58.9	1592.8	2.2
	UNC_225B																42.0	.1
	UNC_2345Z	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	153.0	.2
	UNC_2ET1F	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	1757.6	2.4
	UNC_303K	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	42.9	.1
	UNC_308																7.4	.0
	UNC_340	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	18.0	.0
	UNC_4843																12.7	.0
	UNC_ENV_RES	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	411.8	.6
	UNC_EPA_BG9																.1	.0
	UNC_FHEF																68.0	.1
	UNC_HAPP	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	259.9	.4
	UNC_1045H	229.0	229.0	229.0	229.0	229.0	229.0	229.0	229.0	229.0	229.0	229.0	229.0	229.0	229.0	229.0	6431.1	8.8

FY-1992 SUPM DATABASE
WASTE CLASS VOLUMES BY WASTE GENERATOR

Waste Class	Waste Generator	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total	Pct
CH_LLMW_I	WMC_LLBG	.3			.3	.3					.3			.3			3.0	.0
	WMC_MASF	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	3.0	.0
	WMC_PX_C018H	596.2	596.2	596.2	596.2	596.2	596.2	596.2	596.2	596.2	596.2	596.2	596.2	596.2	596.2	596.2	16743.3	22.9
	WMC_SSTRET	3005.0	3005.0	3005.0	3005.0	3005.0	220.0	203.0	203.0	203.0	203.0	203.0					29357.0	40.2
Total CH_LLMW_I		4640.3	4332.8	4333.0	4339.9	4403.7	1610.0	1622.1	1627.6	1690.8	1563.4	1549.7	1369.2	1403.6	1460.3	1307.5	73025.6	100.0
CH_LLMW_III	FUSRAP																1.3	.0
	PHL	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	66.0	.9
	WMC_222S	2.3	2.3	2.3	2.3	2.3	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	75.5	1.1
	WMC_225B																10.5	.1
	WMC_2ETF																45.4	.6
	WMC_340	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	6.0	.1
	WMC_GROUT	269.1	212.5	212.5	240.8	212.5	269.1	269.1	212.5	113.3	113.3	226.6	255.0	283.3	311.6	339.9	6507.3	91.6
	WMC_HUVP	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	391.0	5.5
Total CH_LLMW_III		290.8	234.2	234.2	262.5	234.2	291.0	291.0	234.4	135.2	135.2	248.5	276.9	305.2	333.5	361.8	7106.4	100.0
CH_LLMW_IV	WMC_222S	.6	.6	.6	.6	.6	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	17.9	100.0
	Total CH_LLMW_IV	.6	.6	.6	.6	.6	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	17.9	100.0
RH_LLMW_I	WMC_ENV_RES	2.8	2.8	5.7	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	138.3	99.3
	WMC_TMR_U153																1.0	.7
Total RH_LLMW_I		2.8	2.8	5.7	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	139.3	100.0
RH_LLMW_III	WMC_202A																1.0	.1
	WMC_B_455																119.7	7.0
	WMC_DST_RET	30.0	30.0	61.0	121.0	91.0	92.0	61.0									1263.6	73.5
	WMC_GROUT	41.1			28.3		25.5	41.1					14.2	14.2	28.3	28.3	334.1	19.4
Total RH_LLMW_III		71.1	30.0	61.0	149.3	91.0	117.5	102.1	0.0	0.0	0.0	0.0	14.2	14.2	28.3	28.3	1718.4	100.0

FY-1992 SUPM DATABASE
WASTE CLASS VOLUMES BY WASTE GENERATOR

Waste Class	Waste Generator	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total	Pct
RH_LLW_GTC111	WHC_202A																.7	29.2
	WHC_2101M																1.7	70.8

Total RH_LLW_GTC111		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	100.0
CH_TRU	ANL_E	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	178.0	1.6
	BAT_CLBS_LAB																19.1	.2
	LBL	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	3.3	.0
	PNL	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	112.4	1.0
	RKV_CANOGA																2.4	.0
	WHC_202A																7.6	.1
	WHC_2345Z	73.7	73.7	73.7	73.7	73.7	73.7	73.7	73.7	73.7	73.7	73.7	73.7	73.7	73.7	73.7	2630.3	23.5
	WHC_308																11.1	.1
	WHC_EA_U112																38.3	.3
	WHC_EA_U113																45.9	.4
CH_TRU	WHC_EA_U221																183.6	1.6
	WHC_ENV_RES	297.5	297.5	297.5	297.5	297.5	297.5	297.5	255.0	226.6	226.6	141.6	141.6	56.7	56.7	56.7	6508.8	58.1
	WHC_INVP	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	1445.0	12.9
	WHC_WELL_DRL	1.0	1.0	1.0	1.0	.3	.3	.3	.2	.2	.2	.2	.2	.2	.2	.2	18.5	.2
	Total CH_TRU	463.1	463.1	463.1	463.1	462.4	462.4	462.4	419.9	391.4	391.4	306.4	306.4	221.5	221.5	221.5	11204.3	100.0
CH_TRU	ANL_E	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	6.0	.7
	PNL	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	6.0	.7
	RKV_CANOGA																.2	.0
	WHC_202A																1.3	.1
	WHC_2345Z	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	189.0	21.6
	WHC_308																.2	.0
	WHC_ENV_RES	17.8	17.8	17.8	27.6	6.3	5.2	5.2	5.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	391.0	44.6
	WHC_WELL_DRL	27.6	6.3	6.3	5.2	5.2	5.2	5.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	282.2	32.2
	Total CH_TRU	52.1	24.5	30.8	39.5	18.2	17.1	11.9	16.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1	875.9	100.0
RH_TRU	ANL_E	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	51.0	1.5
	BAT_CLBS_LAB																143.9	4.1

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WASTE CLASS VOLUMES BY WASTE GENERATOR

Waste Class	Waste Generator	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total	Pct
RH_IRU	PWL	.7	.7	.7	.7	.7	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	26.7	.8
	WMC_100																387.6	11.1
	WMC_202A																68.0	2.0
	WMC_DSIPSRET																306.0	8.8
	WMC_DST_PRT																56.0	1.6
	WMC_ENV_RES	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2	646.5	18.5
	WMC_HWP	198.3	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	1672.2	48.0
<hr/>																		
Total RH_IRU		231.9	90.3	90.3	90.3	90.3	90.4	90.4	90.4	90.4	73.4	73.4	64.9	64.9	64.9	59.2	3485.6	100.0
RH_TRIM	WMC_221T																28.4	1.8
	WMC_DSIPSRET																612.0	37.8
	WMC_DST_RET																978.9	60.5
<hr/>																		
Total RH_TRIM		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1619.3	100.0
HAZ	FAB_SVC																	
	GS_2061	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	75.0	1.2
	HEHF	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	121.9	2.0
	KEM_100	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	819.0	13.0
	WMC_100	18.9	18.9	18.9	18.9	18.9											688.8	10.9
	WMC_105DR																7.3	.1
	WMC_1143W	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	18.0	.3
	WMC_1154_3000																.8	.0
	WMC_1163	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	32.7	.5
	WMC_1171	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	498.0	7.9
	WMC_202A	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	95.3	1.5
	WMC_2101W	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	54.1	.9
	WMC_221T	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	84.0	1.3
	WMC_222S	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	154.2	2.4
	WMC_225B																52.5	.8
	WMC_2165Z	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	186.0	2.9
	WMC_2703E	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	69.0	1.1
	WMC_2715EA	3.5	3.4	3.1	3.0	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	121.9	1.9

FY-1992 SUPN DATAS*
WASTE CLASS VOLUMES BY WASTE GENERATOR

Waste Class	Waste Generator	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total	Pct
HAZ	WMC_2724U																1.2	.0
	WMC_272S	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	18.0	.3
	WMC_284E																93.4	1.5
	WMC_2E1F	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	849.0	13.7
	WMC_303K	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	42.9	.7
	WMC_305	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	13.2	.2
	WMC_306	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	21.1	.3
	WMC_335																2.9	.0
	WMC_340	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	18.0	.3
	WMC_3707C	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	45.0	.7
	WMC_384	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	126.0	2.0
	WMC_4831	10.6	10.3	9.8	9.3	9.0	8.4	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	337.1	5.3
	WMC_4843																.1	.0
	WMC_712	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	21.0	.3
	WMC_8_W059																38.2	.6
	WMC_EA_W025																.5	.0
	WMC_EA_W026																1.2	.0
	WMC_EA_W100																1.5	.0
	WMC_EA_W112																1.5	.0
	WMC_EA_W113																.5	.0
	WMC_EA_W221																2.0	.0
	WMC_EA_W255																2.9	.0
	WMC_ENV_RES	5.7	8.5	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	278.7	4.4
	WMC_EEA_APC																56.7	.9
	WMC_EEA_NSLP																.7	.0
	WMC_EEA_SD																283.3	4.5
	WMC_FED																7.0	.1
	WMC_FHEF	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	37.6	.6
	WMC_GROUT	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	93.0	1.5
	WMC_HFO	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	12.0	.2
	WMC_MAPP	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	68.2	1.1
	WMC_L012																1.3	.0
	WMC_MASF	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	63.0	1.0
	WMC_S300	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	297.0	4.7
	WMC_TMR_V153																2.1	.0

APPENDIX D
STANDARD DATABASE REPORTS

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APPENDIX D

STANDARD DATABASE REPORTS

A number of standard reports are available from the database upon request. Please call Westinghouse, Waste Characterization at (509) 372-2601 for assistance in obtaining a report. It is helpful if requests for reports are made by identification number. A brief description of each report and its identification number is described in this Appendix.

<u>Report Number</u>	<u>Description</u>
<u>C107</u>	Summarizes forecast waste volumes by container type, grouped and totaled by waste category, (e.g., CH LLW 1, CH TRU, and HAZ). The report includes columns for held waste, FY-1993 shipments, and 5- or 10-year averages for the remainder of the forecast period.
<u>C108</u>	Summarizes forecast waste volumes by container type, grouped and totaled by waste generator group, e.g., Advanced Reactor, Defense Waste Management, and Projects. The report includes columns for held waste, FY-1993 shipments, and 5- or 10-year averages for the remainder of the forecast period.
<u>C109</u>	Summarizes forecast waste volumes by physical content descriptor (PCD) type, grouped and totaled by waste category. The report includes columns for held waste, FY-1993 shipments and 5- or 10-year averages for the remainder of the forecast period.
<u>C110</u>	Summarizes forecast waste volumes by PCD type, grouped and totaled by waste generator group. The report includes columns for held waste, FY-1993 shipments, and 5- or 10-year averages for the remainder of the forecast period.
<u>C111</u>	Summarizes forecast mixed waste volumes by hazardous content descriptor (HCD) type, grouped and totaled by waste category. The report includes columns for held waste, FY-1993 shipments, and 5- or 10-year averages for the remainder of the forecast period.
<u>C112</u>	Summarizes forecast mixed waste volumes by HCD type, grouped and totaled by waste generator group. The report includes columns for held waste, FY-1993 shipments, and 5- or 10-year averages for the remainder of the forecast period.
<u>C113</u>	Summarizes forecast mixed waste volumes by HCD type, grouped and totaled by PCD type and waste category. The report includes columns for held waste, FY-1993 shipments, and 5- or 10-year averages for the remainder of the forecast period.

- C114 Summarizes forecast waste volumes by PCD type, grouped and totaled by container type and waste category. The report includes columns for held waste, FY-1993 shipments, and 5- or 10-year averages for the remainder of the forecast period.
- C115 Summarizes forecast waste volumes by container type, grouped and totaled by PCD type and waste category. The report includes columns for held waste, FY-1993 shipments, and 5- or 10-year averages for the remainder of the forecast period.
- C116 Summarizes forecast waste volumes by waste generator, grouped and totaled by waste category. The report includes columns for held waste, FY-1993 shipments, and 5- or 10-year averages for the remainder of the forecast period.
- X101 The content of this spreadsheet is forecast waste volumes by waste category with columns for each year of the forecast period.
- X102 The content of this spreadsheet is forecast waste volumes by waste generator group with columns for each year of the forecast period.
- X103 The content of this spreadsheet is forecast waste volumes, in cubic feet, by waste category for each waste generator with columns for each year of the forecast period.
- X107 The content of this spreadsheet is forecast waste volumes by container type for each waste category with columns for each year of the forecast period.
- X108 The content of this spreadsheet is forecast waste volumes by container for each waste generator group with columns for each year of the forecast period.
- X109 The content of this spreadsheet is forecast waste volumes by PCD type for each waste category with columns for each year of the forecast period.
- X110 The content of this spreadsheet is forecast waste volumes by PCD type for each waste generator group with columns for each year of the forecast period.
- X111 The content of this spreadsheet is forecast waste volumes by HCD type for each waste category with columns for each year of the forecast period.
- X112 The content of this spreadsheet is forecast waste volumes by HCD type for each waste generator group with columns for each year of the forecast period.
- X115 The content of this spreadsheet is forecast waste volumes by waste generator for each waste category with columns for each year of the forecast period.

X116 This report contains forecast waste volumes by special waste category and container consolidations showing detail for the four largest PCD volumes for each waste category/container combination with all other PCDs shown as "OTHER." A single column displaying the 30-year forecast total is displayed.

X117 The content of this spreadsheet is forecast waste volumes for each PCD type, grouped and totaled by waste generator for each waste category with columns for each year of the forecast period.

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