OVERVIEW OF THE WASTE RECEIVING AND PROCESSING (WRAP) FACILITY PROJECT

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ABSTRACT

The Waste Receiving and Processing (WRAP) Facility will provide treatment and temporary storage (consisting of in-process storage) for radioactive and radioactive/hazardous mixed waste. This facility must be constructed and operated in compliance with all appropriate U.S. Department of Energy (DOE) orders and Resource Conservation and Recovery Act (RCRA) regulations. The WRAP Facility will examine and certify, segregate/sort, and treat for disposal suspect transuranic (TRU) wastes in drums and boxes placed in 20-yr retrievable storage since 1970; low-level radioactive mixed waste (RMW) generated and placed into storage at the Hanford Site since 1987; designated remote-handled wastes; and newly generated TRU and RMW wastes from high-level waste (HLW) recovery and processing operations.

In order to accelerate the WRAP Project, a partitioning of the facility functions was done in two phases as a means to expedite those parts of the WRAP duties that were well understood and used established technology, while allowing more time to better define the processing functions needed for the remainder of WRAP. The WRAP Module 1 (WRAP-I), phase one, is to provide the necessary nondestructive examination (NDE) and nondestructive assay (NDA) services, as well as all transuranic package transporter (TRUPACT-II) shipping for both WRAP Project phases, with heating, ventilation, and air conditioning (HVAC); change rooms; and administrative services. Phase two of the project, WRAP Module 2 (WRAP-II), will provide all necessary waste treatment facilities for disposal of solid wastes (comply with the appropriate waste disposal criteria).

INTRODUCTION

The WRAP Facility is an integral part of the Overall Solid Waste Management Program for the Hanford Site. Responsibility for all the stored and newly generated radioactive and radioactive hazardous (mixed) solid waste on the Hanford Site lays with the Westinghouse Hanford Company Solid Waste Management function (Solid/Liquid Waste Remediation Department). Regulatory changes in the last 20 yr have provided the emphasis for better management of all wastes. Therefore, all solid waste treatment, storage, and disposal (TSD) facilities on the Hanford Site must be constructed and operated in compliance with all appropriate DOE orders, RCRA regulations, and the State of Washington Administrative Code regulations.

The WRAP Facility will be an essential part of the Hanford Central Waste Complex (HCWC). The HCWC is to provide storage and treatment of solid waste at the Hanford Site. The HCWC will perform waste receipt, storage, repackaging, volume reduction, certification, treatment, and offsite shipment capability for a high percentage of solid TRU and low-level RMW generated, stored, and received at the Hanford Site. All waste will be certified for disposal onsite or shipped to an offsite facility for disposal.

DISCUSSION

The WRAP Facility will examine and certify, segregate/sort, and treat for disposal suspect TRU wastes in drums and boxes placed in 20-yr retrievable storage since 1970; RMW generated and placed into storage at the Hanford Site since 1987; designated remote-handled wastes; and newly generated TRU and RMW wastes from HLW recovery and processing operations. The WRAP Facility will employ treatment technologies that meet the Best Demonstrated Available Technology (BDAT) treatment standards established for land disposal restricted wastes.

The solid waste strategy is to aggressively pursue treatment and disposal facilities to end the indefinite storage of wastes. In order to do this the acceleration of the WRAP Project was done by partitioning the facility functions into two phases as a means to expedite those parts of the WRAP duties that were well understood and used established technology, while allowing more time to better define the processing functions needed for the remainder of WRAP. The WRAP-I, phase one, is to provide the necessary NDE and NDA services, as well as all TRUPACT-II shipping for both WRAP Project phases, with HVAC; change rooms; and administrative services. Phase two of the project, WRAP-II, will provide all necessary waste treatment facilities for disposal of solid wastes (comply with the appropriate waste disposal criteria).

The following are the key HCWC activities for 1991 associated with and in support of the WRAP Facility:

- Initiate WRAP-I Definitive Design — January 1991
- Initiate operation of Phase I RMW Storage Building — March 1991

Initiate construction of RMW Disposal Trench — May 1991

- Submit WRAP RCRA Part B Application — September 1991
- Submit the HCWC Part B Application — September 1991.

The following are the prominent WRAP Facility functions and functional requirements:

- WRAP-I is to be operational by March 1997
- WRAP-II is to be operational by September 1999
- The WRAP Facility will provide examination and treatment of solid waste before certified storage and disposal. Located within the HCWC
- The WRAP Facility will be the central facility for future management of the following stored and newly generated wastes: low-level wastes, mixed wastes, TRU wastes, and remote-handled wastes.

It is currently projected that WRAP-I, at a cost of ~$53,600,000, will have approximately 52,000 ft^2 of floor space and will have the primary mission of processing and certifying contact-handled (CH) TRU drummed waste. The WRAP-II will have approximately 100,000 ft^2 of floor space, at a projected cost of ~$300,000,000, and will process the remainder of the Hanford Site waste not included in the scope of WRAP-I. The WRAP-II will have ancillary facilities to decontaminate, size reduce, treat, and package waste compliant with the waste acceptance criteria for the designated disposal facility.

A TRU waste characteristics record study was conducted to determine the waste type and relative percentages of the types of waste in drums and in large metal and fiberglass-reinforced polyester boxes. The record study formulated the basis for sizing and determining processing (treatment) options for the WRAP Facility. Table I provides a summary of the TRU waste characteristics resulting from the record study.

On the last note, in the recent past the newly generated waste volumes of all categories have been decreasing. Projected waste volumes for the Hanford Site are showing a

TABLE I

Transuranic Waste Characteristics.

Waste Type	Drum Percentage	Metal Box Percentage	Fiberglass-Reinforced Polyester Box Percentage
Foam	--	--	1.7
Metal	19.0	52.3	73.7
Stainless steel	3.0	12.5	--
Lead	Trace	Trace	--
Dirt	4.0	--	--
Filters	1.0	2.3	--
Wood	1.0	3.2	12.0
Rubber	8.0	0.6	--
Plastic	27.0	11.9	5.3
Paper	20.0	3.3	2.8
Cloth	6.0	0.8	0.8
Concrete	1.0	3.6	0.8
Cement	1.0	0.8	--
Oxide	1.0	--	--
Plexiglass	--	--	1.0
Glass	2.0	4.0	0.3
Adsorbent	1.0	0.5	--
Other	4.0	4.2	2.2
% of total container	49.0	62.0	65.0

Note: No data available before January 1978.

steady decrease in volume of waste generated until remediation activities begin at earnest during the first decade of the next century. At the beginning of the next century the volume of waste generated will become significant and will formulate the need for a waste treatment operation, the WRAP Facility.