U.S. Department of Energy
Office of River Protection
P.O. Box 450
Richland, Washington 99352

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Mr. Michael A. Wilson, Program Manager
Nuclear Waste Program
State of Washington
Department of Ecology
P.O. Box 47600
Olympia, Washington 98504

Dear Mr. Wilson:

TRANSMITTAL OF THE U.S. DEPARTMENT OF ENERGY, OFFICE OF RIVER PROTECTION (ORP) OPERATIONAL WASTE VOLUME PROJECT (OWVP) CASE STUDY 1 TO THE STATE OF WASHINGTON DEPARTMENT OF ECOLOGY (ECOLOGY)

References:

1. Ecology letter from M. J. Brown to C. E. Clark, RL, dated October 6, 2000. ✓
2. ORP letter from C. E. Clark to M. A. Wilson, Ecology, "Path Forward for Submittal of Waste Volume Special Case Studies as Agreed Upon in an October 16, 2000, Meeting Between the State of Washington Department of Ecology (Ecology) and the U.S. Department of Energy (DOE)," 00-OSD-135, dated October 31, 2000. 56129
3. ORP letter from C. E. Clark to M. A. Wilson, Ecology, "Request for an Extension Regarding the Transmittal of Case Study 1 as Agreed Upon in an October 31, 2000, Letter Between the State of Washington Department of Ecology (Ecology) and the U.S. Department of Energy (DOE), Office of River Protection (ORP)," 00-OSD-167, dated November 27, 2000. 56131

Reference 1 requested that a special scenario be evaluated to aid in the analysis of the latest OWVP report submitted in accordance with the Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) Interim Milestones M-46-00G and M-46-01G. Attached is Case Study 1, as agreed upon in References 2 and 3. This Case Study was developed per Ecology's request and is not the current baseline scenario.

Results from this Case Study indicate four new Double-Shell Tanks (DST) will be needed starting in Fiscal Year (FY) 2007, with an additional 76 new DSTs by FY 2017. This Case Study did not consider some DST space-saving options that could eliminate the need for new tanks. The space-saving options under consideration are:

- Concentrating retrieved liquids to a higher specific gravity than currently assumed;
- consolidating insoluble solids and placing them in fewer tanks than currently planned;
- evaluating what waste segregation rules can be relaxed to allow waste consolidations; and

- concentrating retrieved liquids to precipitate salts and storing those salts with Non-Complex Aging Waste sludge solids.

The assumption used in this Case Study included Ecology's requirement for the following:

- Retrieve waste from Tanks 241-S-112 and 241-S-102 to meet proposed Milestones M-45-03C and M-45-05A.

- Retrieve waste from the rest of the Single-Shell Tanks (SST) using the same sequence reported in the SST Retrieval Sequence document (HNF-7087) and on a compressed schedule that meets the remaining M-45 milestones. This was interpreted to include the M-45-05-T05 through M-45-05-T15, and the M-45-06-T03 and M-45-06-T04 target milestones.

- No optimization of the use of DST space.

In addition to the constraints listed above, assumptions were made consistent with past planning scenarios. The primary assumptions used to model the special Ecology Case 1 are:

- Phase 1 low-activity waste (LAW) feed deliveries start in May 2007 and the LAW feed is processed at an average rate equivalent to 18 metric tons (MT) glass per day after a two-year ramp up period.

- Phase 1 high-level waste (HLW) feed deliveries start in July 2008 and HLW feed is processed at an average rate equivalent to 120 canisters per year (1.5 MT glass per day) after a one-year ramp up.

- Balance of mission treatment and immobilization operations start in 2018.

At this time, ORP recommends no new DSTs be built. ORP is placing a high priority on developing space-saving measures to prevent the need for additional DSTs. This issue will be re-evaluated with the FY 2001 OWVP Report due to Ecology September 30, 2001.

The ORP point-of-contact for this letter is Russell G. Harwood, (509) 376-2348.

Sincerely,

Clifford E. Clark, Acting Program Manager
Office of Regulatory Liaison

OSD:RGH

Attachment

cc: See page 3

cc: W. Burke, CTUIR
P. Sobotta, NPT
R. Jim, YN
M. J. Riess, CHG
M. J. Brown, Ecology
R. F. Stanley, Ecology
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Administrative Record

Analysis of FY 2001 Ecology Case 1

1.0 INTRODUCTION

Since 1944, approximately 204,400 m^3 (54 Mgal) of highly radioactive waste have accumulated in 177 large underground tanks at the Hanford Site as a byproduct of spent nuclear fuel reprocessing. One-hundred forty-nine of the 177 tanks are single-shell tanks (SSTs) and they contain 126,800 m^3 (33.5 Mgal) of the waste. These SSTs were built before 1964, are now past their design lifetimes, and are deteriorating. Approximately 3,800 m^3 (1 Mgal) of waste have leaked into the ground from 67 of the SSTs. Radionuclides from past tank leaks have moved through the soil and now have reached the groundwater that flows under the Hanford Site and into the Columbia River, approximately seven miles away.

In 1989, DOE, the U.S. Environmental Protection Agency (EPA), and the Washington State Department of Ecology (Ecology) entered into an enforceable compliance agreement (Ecology et al 1996) (commonly called the Tri-Party Agreement) that set milestones for cleanup of the tank waste. The problems with wastes in the SSTs and their potential for leakage into the ground are to be resolved by retrieving the waste from the SSTs and placing it into the DSTs until it can be processed into an immobilized product for final disposal. The M-45-05-Txx series of milestones set a schedule for retrieval of waste from the SSTs with retrieval of all the wastes from the SSTs to be completed by September 30, 2018 (milestone M-45-05). A key element to meeting the M-45-05 milestone is having enough DST space available to receive the retrieved SST waste. This in turn is dependent on the capacity and schedule of the processing plants that treat and immobilize the waste.

In 1996, in accordance with the *National Environmental Policy Act*, DOE and Ecology issued the *Tank Waste Remediation System Final Environmental Impact Statement* (DOE 1996), which assessed the full range of reasonable alternatives for continued safe management and remediation of the wastes. DOE subsequently issued a Record of Decision (62 FR 8693) which documented the selection of a "Phased Implementation" alternative. Ecology concurred in the selection of this alternative.

The Phased Implementation alternative (as currently defined) consists of two major phases of work for retrieving and immobilizing the double-shell tank (DST) and single-shell tank (SST) wastes and closing the tank farms:

- Phase 1 is an initial production phase, lasting until about 2018, during which the efficiency and effectiveness of the processes selected to treat the tank waste will be verified.
- The Balance of Mission (formerly called Phase 2) is the full production phase when the majority of the waste will be treated.

The current schedule and capacity for the Phase 1 treatment and immobilization plants do not empty the existing DSTs in time to support completion of the M-45-05 target milestones for initiating retrieval of waste from SSTs or to support retrieval of all SST wastes by September 30, 2018. Present analyses show that one or more of the following must occur: 1) the treatment and processing plant capacities must be increased to meet the M-45-05 milestone date, 2) new DSTs must be built, 3) the SST waste retrieval milestones must be renegotiated based on current treatment and processing schedules and/or 4) other measures must be taken that have not yet been identified.

However, construction of new DSTs will divert money from efforts to treat and immobilize the waste for final disposal and increase the scope of number of tanks requiring closure. Furthermore, it is not considered technically or financially feasible to build sufficient treatment and immobilization capacity to handle the mass of retrieved SST waste and avoid the need to construct new DSTs. The Hanford Tank Waste Operation Simulator (HWTOS) and Operational Waste Volume Projection (OWVP) computer codes were used to analyze these conditions.

2.0 OBJECTIVE AND APPROACH

The following sections describe the objectives for this scenario, the assumptions that define the scenario, and the approach used to perform the analysis and obtain results.

2.1 OBJECTIVE FOR SCENARIO

This scenario was defined and analyzed to determine how many new DSTs would be needed to receive waste retrieved from all of the SSTs to meet the M-45-05 Tri-Party Agreement milestone date of September 30, 2018. This scenario and analysis were requested by the Washington State Department of Ecology as a part of an effort to renegotiate the M-45 milestones. Section 2.2.1 describes the changes to the Tri-Party Agreement milestones.

2.2 MAJOR ASSUMPTIONS FOR ECOLOGY CASE 1

The Washington State Department of Ecology (Ecology) requested a special scenario be evaluated to determine how many new DSTs would be required to meet the September 30, 2018 Tri-Party Agreement milestone to retrieve all the waste from the SSTs. Ecology requested this special scenario evaluate:

- Waste retrieval from Tanks 241-S-112 and 241-S-102 as listed in the proposed Hanford Federal Facility and Consent Order (Tri-Party Agreement) M-45 Milestones (completed by 2006) with subsequent waste retrieval activities using the existing Tri-Party Agreement Milestone M-45 (post 2006) to meet new milestones M-45-03C and M-45-05A.
- The order of tanks listed in the Fiscal Year (FY) 2000 single-shell (SST) retrieval sequence update beginning with Tank 241-C-104.
- No tank space optimization.

This scenario was modeled as Ecology Case 1. In addition to the constraints listed above, assumptions were made consistent with those used to develop a "Budget-Constrained" scenario that was issued by CHG to ORP on August 4, 2000 is accordance with the M45-02 milestones. The primary assumptions used to model the special Ecology Case 1 are:

- Phase 1 LAW feed deliveries start by May 2007 and the LAW feed is processed at an average rate equivalent to 18 MT glass per day after a two-year ramp up period.
- Phase 1 HLW feed deliveries start by November 2007 and HLW feed is processed at an average rate equivalent to 120 canisters per year (1.5 MT glass per day) after a one-year ramp up.

- Balance of mission treatment and immobilization operations begin in 2018.

Details about specific assumptions are provided in the following sections.

2.2.1 SST Retrieval Assumptions

Milestones M-45-05-T01 through M-45-0T04 were deleted and replaced with new milestones. The new milestones (M-45-03C through M-45-03I and M-45-05A through M-45-05F) involve retrieval demonstrations in tanks 241-S-112, 241-S-102, and 241-C-104. Target milestones M-45-05-T01 through M-45-05-T04 were deleted. Target milestones M-45-05-T05 through M-45-05-T15 remain. An assumption was made to initiate waste retrieval in more SSTs than required by the target milestones. This assumption was necessary to establish an overall retrieval schedule that met the M-45-05 retrieval completion milestone. The relevant Tri-Party Agreement milestones and adjustments made to the retrieval schedule are listed in Table 1. The basic conclusion from Table 1 is that for this scenario approximately 1 SST over and above the milestone requirements had to be retrieved in the years 2010 through 2017.

Table 1. Tri-Party Agreement SST Milestones.

TPA Milestone	Initiate retrieval from X additional SSTs	Date	HTWOS Assumption: Initiate retrieval from X additional SSTs
M-45-03C	Complete retrieval technology demonstration of S-112	9/30/05	--
M-45-05A	Complete initial waste retrieval of S-112	9/30/06	--
M-45-05-T05	5	9/30/07	5
M-45-05-T06	5	9/30/08	5
M-45-05-T07	7	9/30/09	7
M-45-05-T08	8	9/30/10	9
M-45-05-T09	10	9/30/11	11
M-45-05-T10	12	9/30/12	13
M-45-05-T11	14	9/30/13	15
M-45-05-T12	17	9/30/14	18
M-45-05-T13	20	9/30/15	21
M-45-05-T14	20	9/30/16	21
M-45-05-T15	20	9/30/17	21
M-45-05	Retrieve waste from all SSTs	9/30/18	--

2.2.2 Initial Waste Inventories

The tank waste inventories used as input to the Hanford Tank Waste Operation Simulator (HTWOS) are identical to those used for the August 4, 2000 "Budget Constrained" scenario. The waste inventories were extracted from the Best Basis Inventory Maintenance tool (BBIM) on January 10 and 11, 2000. The Best-Basis Inventory input to HTWOS reflects waste transfer updates up through October 1, 1999

and sample data updates though January 11, 2000. Waste transfers between October 1, 1999 and November 2000 are accounted for by the HTWOS model.

A revision to the HTWOS waste inventory inputs is currently in progress. Individual tank inventories have changed due to waste transfers and incorporation of new data; however, the sum of the tank chemical inventories has remained essentially unchanged. The tank summation for sodium, the key chemical constituent for LAW feeds to the treatment facilities, was revised downward by only 0.2% (by mass). The revisions to the tank waste inventories would not be expected to significantly impact projections of the tank space required for SST retrieval.

The tank waste inventories used as input to the Operational Waste Volume Projection (OWVP) model came from draft data used to prepare the September 30, 2000 Waste Tank Summary Report (Hanlon 2000; HNF-EP-0182-150).

2.2.3 Salt Well Liquid Pumping

Salt well liquid pumping will occur for single-shell tanks (SSTs) which have 50,000 gallons or more of drainable interstitial liquid. Pumping is scheduled to stop when the output rate decreases to 0.05 gallons per minute. Salt well liquid pumping assumptions for the Ecology Case 1 projection are basically the same as those used in the OWVP (Strode and Boyles 2000) but have been updated to reflect actual pumping volumes for FY 2000 and additional changes are summarized below.

In the 2000 OWVP document, it was recognized that a re-evaluation of the drainable porosity has occurred based on actual pumping experience and core sample analytical results (Fort 2000). This re-evaluation reduced the average saltcake drainable porosity to 25 percent and the average sludge drainable porosity to 15 percent. These re-evaluations of the drainable porosity had decreased the estimated (as of June 1998) salt well liquid volume from 4.0 Mgal to 3.6 Mgal without flush and dilution.

The waste volume reduction factor for evaporation of dilute non-complexed salt well liquid to double-shell slurry feed is 47% (Sederburg 1995). The waste volume reduction factor for evaporation of dilute complexed salt well liquid to complexant concentrate waste is 10% (Sederburg 1995). Historical pumping volumes and the projected pumping volumes for the Ecology Case 1 projection are presented in Table 2. The basic conclusion that is demonstrated in Table 2 is that from the date of this publication approximately 2.6 million gallons of SWL is expected to enter the DST system in the future.

Table 2. Salt Well Pumping Schedule for the Ecology Case 1 Projection

Salt Well Pumping Schedule for 25% Saltcake/15% Sludge Porosity (Fort 2000)					
FISCAL YEAR	EAST AREA		WEST AREA		TOTALS
	DN (KGAL)	DC (KGAL)	DN (KGAL)	DC (KGAL)	(KGAL)
Historical Salt Well Liquid Pumping 1989-2000					
1989	55	0	0	17	72
1990	44	0	0	0	44
1991	227	0	0	0	227
1992	121	0	0	0	121
1993	0	0	37	0	37
1994	189	0	32	0	221
1995	194	105	18	0	317
1996	22	0	218	0	240
1997	23	0	140	0	163
1998	0	0	98	0	98
1999	1	0	872	22	895
2000	82	0	327	800	1,209
1989-2000 Total	958	105	1,742	839	3,644
Projected Salt Well Liquid Pumping 2001-2004 (without flush)					
2001	957	0	591	98	1,646
2002	267	63	528	24	882
2003	14	20	91	0	125
2004	0	0	0	0	0
2001-2004 Total	1,238	83	1,210	122	2,653
GRAND TOTAL	2,196	188	2,952	961	6,297

Notes:

DC = dilute complexed waste
DN = dilute non-complexed waste

2.2.4 Near Term Transfer Plans

The assumptions made regarding the near-term transfer plans were the same as was assumed in the most recent revision of the OWVP document (Strode 2000).

2.2.5 Phase I Processing

The LAW processing schedule used in the Ecology Case 1 projection was based on information received for the "8/04 Baseline" projection. The LAW treatment schedule is restricted by the phosphate loading in the glass and additional budget constraints and is much slower than the treatment schedule used in last year's OWVP and HTWOS (Kirkbride 2000) projections. This has delayed treatment of some LAW batches by several years. The processing schedule, sequence of waste processed, and the approximate delivery date for tank waste is listed in Table 3.

Table 3. Projected LAW and HLW Processing Schedule for the Ecology Case 1 Projection

Tank	Waste Type	Envelope	Volume With solids (Kgal)	Approximate Quantity of Na Delivered (MT Na)	Existing or Future Waste	Modeled Waste Transfer Windows
AP-101	DSSF	A	1114	~615	Existing	3/01/2007
Vendor	NCAW Supernate	B	~900	~503	Existing	See dates below for AZ-101 and AZ-102
AN-102	CC	C	1056	~968	Existing	12/23/2009 to 9/29/2012
AN-104	DSSF	A	1053	~845	Existing	12/13/2005 to 7/31/2014
AN-107	CC	C	1042	~703	Existing	3/05/2015
AN-105	DSSF	A	1126	~839	Existing	10/03/2012 to 2/18/2017
SY-101	CC	A	~2169	~827	Existing	2/12/2000 to 5/15/2018
AN-103	DSS	A	956	~1084	Existing	6/11/2016 to 2/09/2019
AW-101	DSSF	A	1126	~1070	Existing	2/21/2017 to 11/09/2019
AW-104	DSSF	A	1118	~390	Future	11/21/2017 to 3/21/2020
SY-103	CC	C	744	~258	Existing	5/17/2018 to 8/06/2020
AZ101	NCAW	D	~910	NA	Existing	7/01/2007 to 11/10/2007
AZ-102	NCAW	D	~995	NA	Existing	12/01/2008 to 5/15/2009
AY-102 / C-106	NA	D	~588	NA	Existing	3/01/2010 to 12/28/2010
AY-101 /C104	NCAW	D	~787	NA	Future	4/29/2011 to 1/22/2013
SY-102	NA	D	~997	NA	Existing	11/14/2013 to 4/24/2015

Notes:

CC = complexant concentrate waste
DSS = double-shell slurry
DSSF = double-shell slurry feed
NCAW = neutralized current acid waste
NA = not applicable
Waste Transfer windows include staging to other DSTs

3.0 RESULTS

The modeling for Case 1 resulted in retrieval of Tank S-112 by 9/30/05, retrieval of Tank S-102 by 9/30/06, initiation of waste retrievals meeting TPA milestones M-45-05-T05 through –T15, and retrieval of waste from all SSTs by 9/30/18. The retrieval of all the SSTs will require the storage space of 106 DSTs. Therefore, accounting for the existing 28 DSTs, approximately 78 DSTs would need to be constructed..

3.1 DST SPACE NEEDS

The schedule for the retrieval of SST wastes is presented in Figure 1 This figure shows the start and finish dates of each SST retrieval along with the associated TPA milestones. The tanks are listed in order of the retrieval initiation assumed in completing this analysis. The thick black line running across the figure indicates the due date for TPA Milestone M-45-05, the agreement to complete retrieval of all SSTs by 9/30/18. The first two TPA milestones indicated on the far left of the figure indicate the retrieval completion milestones M-45-03C and M-45-05A, for Tanks S-112 and S-102, respectively. The remainder of the indicated milestones are the dates that SST waste retrievals need to be initiated by (TPA Milestones M-45-05-T05 through –T15). All of these milestones are achieved in this scenario.

The retrieval of SSTs by 9/30/18 requires additional storage space beyond the present 28 DSTs to store the waste. This storage space could take the form of additional DSTs. The modeling of this Case yields a prediction that an additional 78 DSTs will need to be built to store the retrieved SST waste. Also, the need for additional DST space beyond what is available in the existing 28 DSTs is realized as early as 2007. These conclusions are shown in Figures 2 and 3.

Inconsistencies within the assumptions used to complete this special Ecology Case 1 involve:

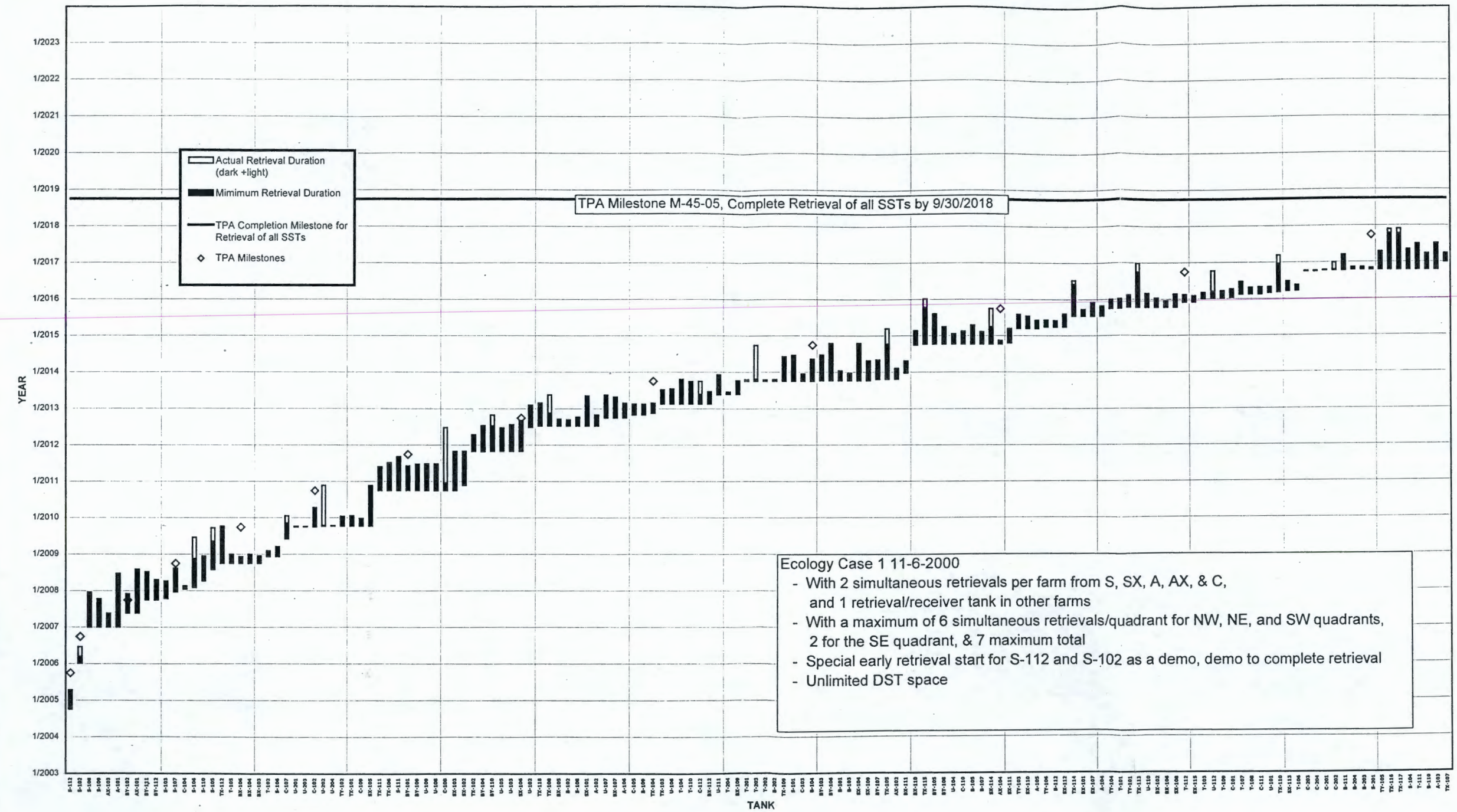
- To the maximum extent possible, FY 2000 Update Sequence Document was based on a risk reduction strategy which prioritized high risk and high volume tanks early in the retrieval sequence. This was not the approach employed in development of the TPA target milestones schedule that is driven by tank count rather than content.
- Compliance with the existing TPA M-45 series milestones after 2006, creates a perceived need for new tanks. The resources required to complete construction of the waste treatment processing plant(s) will compete with construction of tanks, however, the WTP will be more beneficial in the long run at dealing with the SST waste remediation by providing a permanent solution.
- It is beyond the scope of this analysis to determine whether waste can be retrieved from one tank farm in time to meet the M-45-06-T04 target milestone to close one operable unit or tank by 3/31/2014.
- The assumption that balance-of-mission treatment and immobilization operations start in 2018 is inconsistent with the basis of the TPA target milestone schedule, which assumed an earlier processing schedule. Limiting processing capability to only that of the Phase I Immobilization plant during the entire duration of SST retrievals necessitates that greater

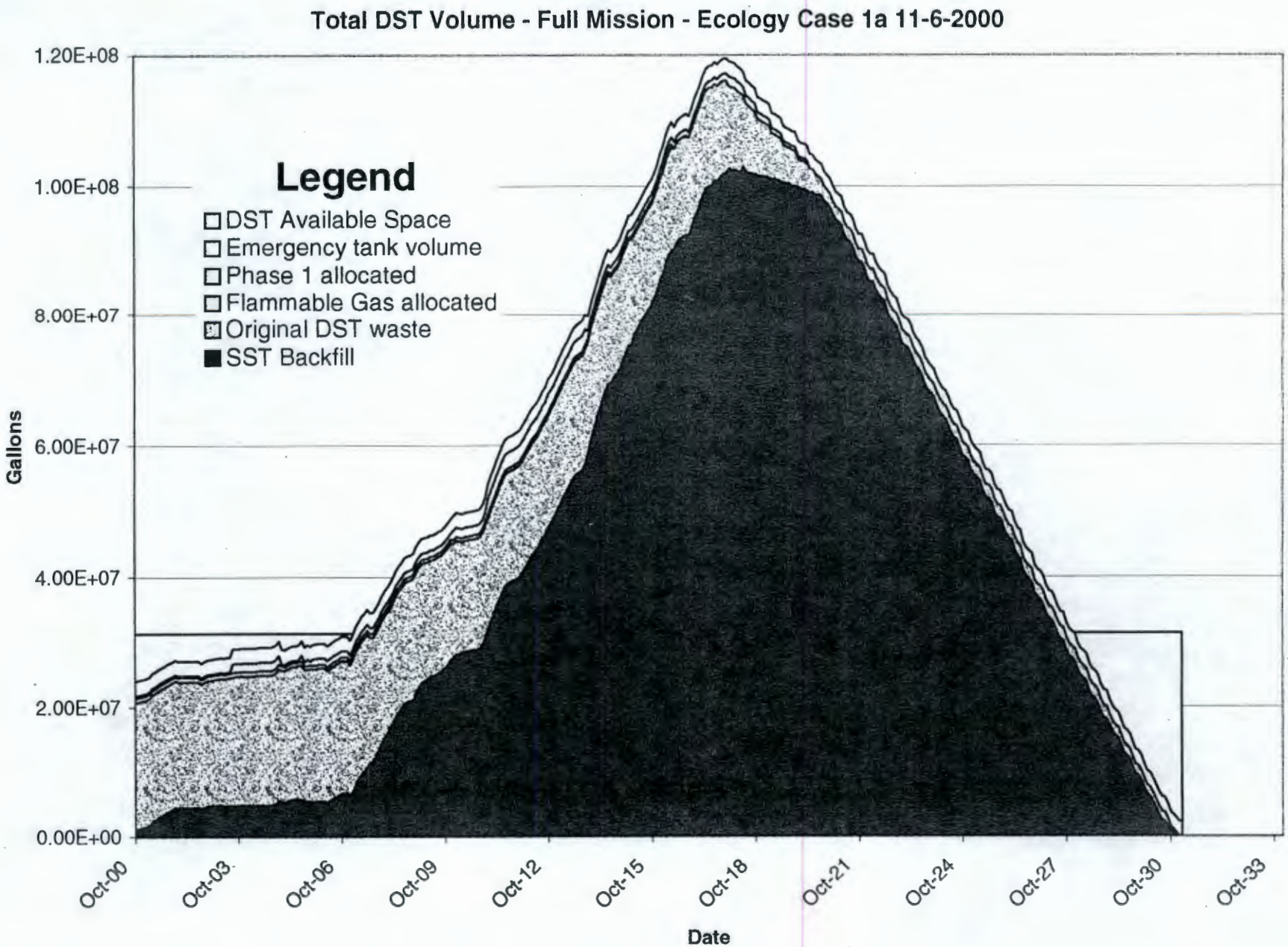
than 90% of retrieved wastes from SST's would require interim storage in new DSTs pending balance-of-mission treatment and immobilization operations. Additionally, the current baseline assumes a balance of mission treatment and immobilization operation capability which will significantly reduce the estimated need for DSTs.

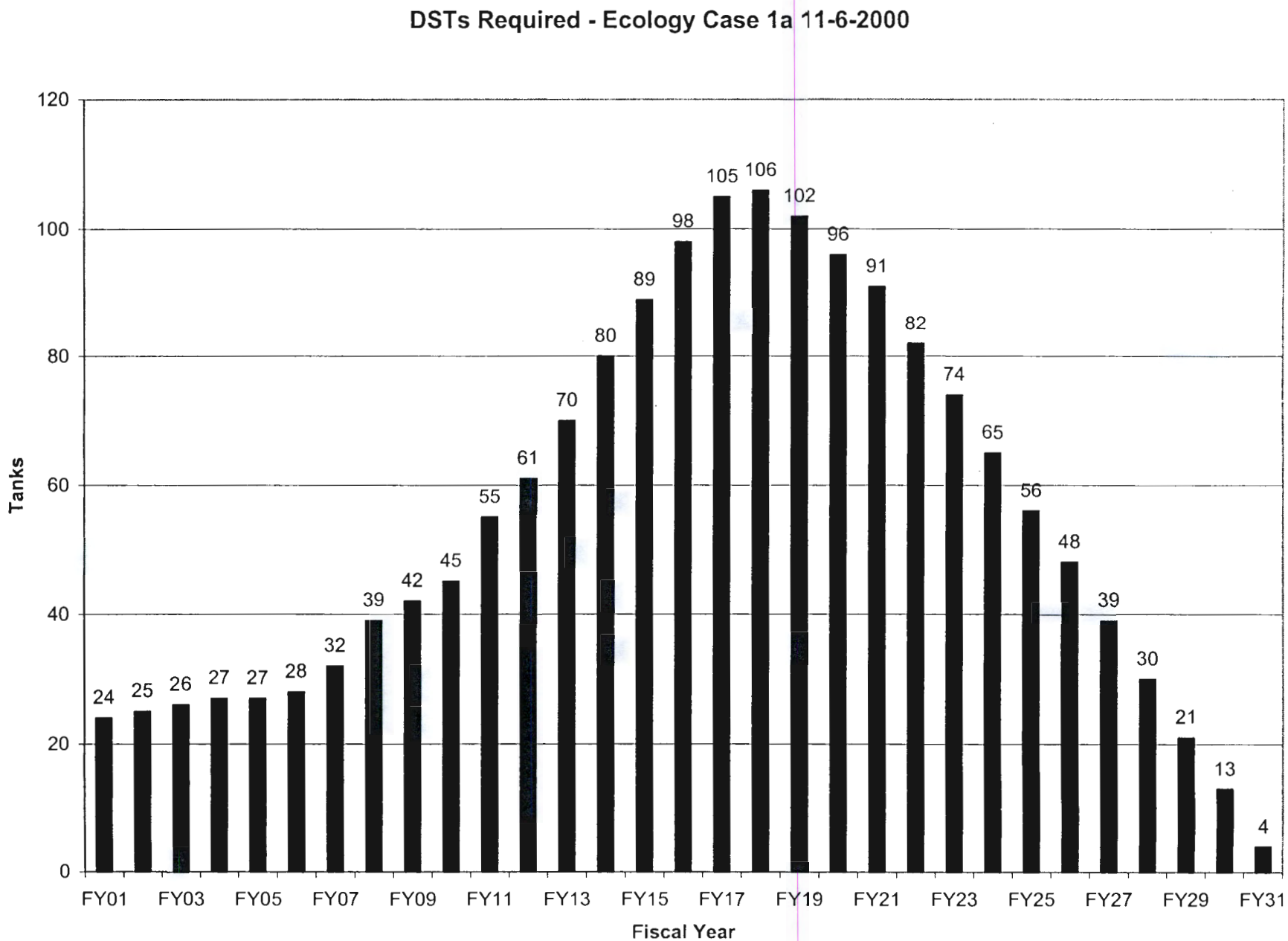
3.2 TANK CLOSURE

It is beyond the scope of this analysis to determine whether waste can be retrieved from one tank farm in time to meet the M-45-06-T04 target milestone to close one operable unit (or tank farm) by 3/31/2014. Retrieval of waste from AX-Farm is projected to complete on 2/8/2014, leaving less than two months to complete closure activities.

Single-Shell Tank Retrieval Sequence and Schedule




Total DST Volume - Full Mission - Ecology Case 1a 11-6-2000
Legend
DST Available Space
Emergency tank volume
Phase 1 allocated
Flammable Gas allocated
Original DST waste
SST Backfill
Gallons
1.20E+08
1.00E+08
8.00E+07
6.00E+07
4.00E+07
2.00E+07
0.00E+00
Oct-00
Oct-03
Oct-06
Oct-09
Oct-12
Oct-15
Oct-18
Oct-21
Oct-24
Oct-27
Oct-30
Oct-33
Date


DSTs Required - Ecology Case 1a 11-6-2000
Tanks
Fiscal Year
0
20
40
60
80
100
120
FY01
FY03
FY05
FY07
FY09
FY11
FY13
FY15
FY17
FY19
FY21
FY23
FY25
FY27
FY29
FY31
24
25
26
27
27
28
32
39
42
45
55
61
70
80
89
98
105
106
102
96
91
82
74
65
56
48
39
30
21
13
4

4.0 REFERENCES

Fort, L. A., June 2000, HNF-2978, Rev. 2, "Updated Pumpable Liquid Volume Estimates and Jet Pump Durations for Interim Stabilization of Remaining Single-Shell Tanks."

Kirkbride, R. A., et. al., April 20, 2000, HNF-SD-WM-SP-012 Rev. 2, *Tank Farm Contractor Operation and Utilization Plan.*

Sederburg, J. P., April 1995, WHC-SD-WM-TI-690, Rev. 0, *Waste Volume Reduction Factors for Potential 242-A Evaporator Feed.*

Strode, J. N. and Boyles, V. C., September 22, 2000, HNF-SD-WM-ER-029, Rev. 26A, "Operational Waste Volume Projection."

APPENDIX A. DETAILED ASSUMPTIONS

Subject Area	Title	Ecology Case 1 Assumptions
Phase 1 LAW Feed Staging	LAW Feed Delivery Sequence and Envelope Designation	Source Tank / Envelope AP-101 / A AZ-101 / B AZ-102 / B AN-102 / C AN-104 / A AN-107 / C AN-105 / A SY-101 / A AN-103 / A AW-101 / A
	LAW Process Annual Capacity	1,100 Units/year
	LAW Melter Design Capacity	30 MT glass/day
	LAW Treatment Ramp Up	From - To / Units/yr 10/16/07-10/15/08 / 2.7 10/16/08-10/15/09 / 6.1 Through 2/28/18 / 18.0
	WTP Sulfate Removal	None
	ILAW Na_2O Loading	$[wt\% Na_2O][wt\% SO_3] \leq 5$ and $Na_2O \leq 20$ wt%
Phase 1 HLW Feed Staging	HLW Feed Delivery Sequence and Retrieval Efficiencies	Source tank / Retrieval Efficiency AZ-101 / 90% AZ-102 / 80% AY-102 / 90% C-104 / 85% /AY-101 / 95% SY-102 / 80%
	HLW Process Annual Capacity	120 canisters/yr
	HLW Melter Design Capacity	1.5 MT glass/d
	HLW Treatment Ramp Up	From - To / Cans/year 7/2/08-7/1/09 / 26 Through 2/28/18 / 120
	Method for Estimating HLW Waste Oxide Loading	Glass Properties Model
SST Retrieval	WRF Availability Dates	B WRF: 8/1/07 T WRF: 8/1/08 U WRF: 8/1/10 (Note: These dates were assumed so they would not constrain SST retrieval.)
	Early Retrieval Sequence and Durations	S-112: Start: 10/1/04, 196 d S-102: Start: 1/3/06, 69 d C-104: 1/16/08, 185d

Subject Area	Title	Ecology Case 1 Assumptions
	Availability Dates for Tank Farms Upgrades	A Farm: 8/1/07 AX Farm: 8/1/05 C Farm (100): 8/1/09 C Farm (200): 8/1/16 S Farm: 8/1/06 SX Farm: 8/1/10 (Note: These dates were assumed so they would not constrain SST retrieval.)
	SST TPA Milestone Dates	See SST Milestone Table
	Basis for Rest of SST Retrieval Sequence	Give priority retrieve the following 19 High-risk SSTs first: S-112, S-102, C-104, S-106, S-105, S-108, S-109, C-107, S-103, S-107, S-110, AX-103, A-101, AX-101, BY-102, BY-111, BY-112, C-102, TX-112. Follow the Risk-Based Sequence after that. (Note: This scenario will use the SST retrieval sequence from RPP-7087, Rev. 0; see SST Milestone Table)
Balance of Mission (BOM)	Overall Phase 2 Design Capacity	120 MT LAW glass/d 12 MT HLW glass/d
	BOM Start Date	3/1/2018
	Method for Estimating HLW Glass WOL	Glass Properties Model
	ILAW Na_2O Loading	20 wt%Na_2O
	Sulfate Removal	None
	Cs and Sr Capsule Processing Start Date	March 2018
	Duration to Process Cs and Sr Capsules	5 years