



Department of Energy
 Albuquerque Operations Office
 Los Alamos Area Office
 Los Alamos, New Mexico 87544

Janice

APR - 1 1996

CERTIFIED MAIL - RETURN RECEIPT REQUESTED



Mr. Benito Garcia, Bureau Chief
 Hazardous and Radioactive Materials Bureau
 New Mexico Environment Department
 2044 Galisteo Street, Building A
 P. O. Box 26110
 Santa Fe, New Mexico 87505

Dear Mr. Garcia:

Subject: Transmittal of Site Treatment Plan (STP) Fiscal Year (FY) 1995 Update for the Los Alamos National Laboratory (LANL)

The purpose of this letter is to submit an Annual STP Update as required by the Federal Facility Compliance Order (FFCO), Section VII, Annual STP Updates (Update), issued by the New Mexico Environment Department (NMED), October 4, 1995. The FFCO requires the Department of Energy (DOE) and the Regents of the University of California (the University) to submit this Update of the STP to NMED by March 31 of each calendar year for the previous Federal Fiscal Year (FY) operations. This Update of the STP is for FY 1995, except where noted to reflect activities in FY 1996.

The LANL STP FY 1995 Update, enclosed herewith, consists of two volumes: the Background Volume (BV) Update, and the Compliance Plan Volume (CPV) Update. Its focus is on activities during FY 1995, as required by Section VII of the FFCO. Only the BV Update may contain discussion of activity occurring since FY 1995 or planned for the near term, as related to technology development. The following points should be kept in mind by all reviewing this document.

1. Shift in Emphasis to Off-Site Treatment Technology. As the FFCO requires, the text in the BV Update provides a detailed discussion of treatment technology development during FY 1995. However, as we have discussed with NMED, due to the increase in availability of commercial and DOE off-site treatment and disposal capacity in FY 1995, resources have been shifted away from development of on-site mobile treatment units to the preparation and shipment of STP covered wastes to these off-site facilities in FY 1996. We requested a revision to the STP to reflect this

Recd LANL FFCO/96



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change in direction on March 1, 1996. As discussed in the BV Update, future waste work-off will rely largely on off-site shipment, but we are requesting that on-site treatment technologies be retained as options for all covered waste treatability groups, to be employed for the residual wastes should off-site treatment not be developed. Some treatment technology development, particularly in the form of treatability studies, is expected to continue on-site as part of LANL's overall mission.

2. Changes to the Covered Waste Inventory. It should be carefully noted that the inventory presented in the STP was believed to represent all Low Level Mixed Waste (LLMW) in storage before October 1994, and all MTRU in storage as of December 1992, regardless of its time of generation or its state of compliance with the Land Disposal Restrictions (LDR) storage requirements at the time of reporting of the STP inventory. In the BV Update, unlike the STP inventory, only changes to the *covered waste inventory* - specifically, changes that *occurred in FY 1995*, are being reported. The inventories presented in Tables 2-1 and 2-2 of the BV Update reflect additions to or work-off of covered waste during FY 1995 through shipment off-site, recycling, treatability studies, or shifts to other treatability groups. They also reflect updating of waste volumes inadvertently omitted from the inventory previously, in part due to ongoing modifications of both the LLMW and MTRU databases as knowledge of the wastes has improved.

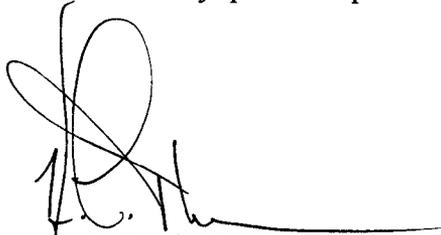
Mixed waste that was generated in FY 1995 is not included in the BV Update, because it is not a covered waste under the FFCO until it no longer complies with the CDR storage requirements. Furthermore, the volumes of waste reported in this BV Update may not be the same as the volumes of waste reported in other documents, such as LANL's *Biennial Report*, or data calls prepared to meet other DOE or Waste Isolation Pilot Plant requirements.

3. Key Events Since FY 1995, as specified in Section VII of the FFCO, largely are not discussed in the Update itself. These include milestones met, and several issues arising since the issuance of the FFCO (i.e., the shift in emphasis from on- to off-site treatment discussed above). Timely completion of the generator interviews required in Activity 3.3A, page 15 of the CPV (due October 30, 1995) and the sampling and analysis plan required in Activity 3.3B, page 15 of the CPV (due January 30, 1996), occurred. Two shipments of covered wastes have been completed: the FY 1995 shipment of scintillation fluids (treatability group LA-W902, CPV Section 3.1.1) to Diversified Scientific Services, Inc., in Tennessee, discussed in the BV Update, and the FY 1996 shipment of Environmental Restoration soils (treatability group LA-W905, CPV Section 3.1.2) to the Envirocare facility in Utah (on March 19, 1996). In addition, we notified you of DOE's funding concerns by letter on November 9, 1995, and requested removal of 1,228 drums of low-level radioactive wastewater treatment sludge from the STP inventory (treatability group LA-W928, CPV Section 3.3) by letter on January 12, 1996. We requested a revision facilitating covered waste shipment to off-site facilities on March 1, 1996.

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Finally, we wish to notify you that we are planning to submit several amendment/revision requests in the near future. During the summer of 1996, following completion of modifications to the TRU waste database, it is anticipated that a revision to adopt the most current MTRU inventory data in the STP will be requested, as well as for addition of covered waste newly generated during FY 1995. Other amendments and revisions will be requested as necessary.

A certification statement prepared in accordance with the requirements of Section XX, "Documents, Information, and Reporting Requirements," of the FFCO is enclosed. If there are any questions please feel free to contact us.



H. L. "Jody" Plum
STP Project Manager
Office of Environment
and Projects
Los Alamos Area Office

Sincerely,

Kenneth M. Hargis for
Micheline Devaurs
STP Project Manager
Los Alamos National Laboratory

LAAMEP:2JP-033

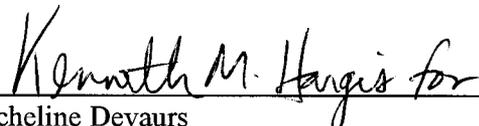
2 Enclosures

cc w/enclosures:

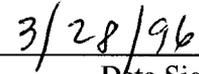
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CERTIFICATION

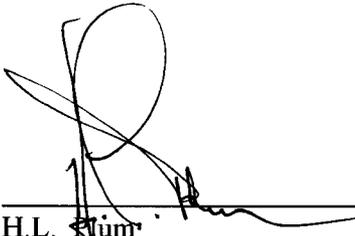
I certify that I am the project manager responsible for overseeing the implementation of the Site Treatment Plan for the Los Alamos National Laboratory. To the best of my knowledge and belief, the information in this document is true, accurate, and complete.



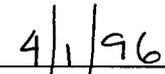
Micheline Devaurs
Project Manager, EM Division
Los Alamos National Laboratory
Operator



Date Signed



H.L. Kim
Regulatory Permitting and Compliance Manager
Los Alamos Area Office
U.S. Department of Energy
Albuquerque Operations
Owner/Operator



Date Signed

Los Alamos National Laboratory

Federal Facility Compliance Order

***Annual Site Treatment Plan Update
for Fiscal Year 1995
Background Volume***

March 31, 1996

Los Alamos
NATIONAL LABORATORY

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ACRONYMS

BV	Background Volume
CPV	Compliance Plan Volume
CRD	Cylinder Recontainerization Device
DOE	Department of Energy
DOE/AL	DOE Albuquerque Operations Office
DSSI	Diversified Scientific Services, Inc.
EM	Environmental Restoration and Waste Management
EPA	Environmental Protection Agency
FFCAgreement	EPA Federal Facility Compliance Agreement
FFCAct	Federal Facility Compliance Act
FFCO	Federal Facility Compliance Order
FY	Fiscal Year
GJPO	Grand Junction Project Office
HEPA	high-efficiency particulate air
IPAs	Isopropyl Alcohols
LANL	Los Alamos National Laboratory
LDRs	Land Disposal Restrictions (RCRA)
LLMW	Low-Level Mixed Waste
LLW	Low-Level Waste
MTRU	Mixed Transuranic
MWIR	Mixed Waste Inventory Report
MWTP	Mixed Waste Treatment Plan
NEPA	National Environmental Policy Act
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NMED	New Mexico Environment Department
RCRA	Resource Conservation and Recovery Act
RD&D	Research, Development, and Demonstration
RLWTF	Radioactive Liquid Waste Treatment Facility
S&A	Sampling and Analysis
STP	Site Treatment Plan
TCLP	Toxicity Characteristic Leaching Procedure
TRU	Transuranic
TSCA	Toxic Substances Control Act
TWBIR	Transuranic Waste Baseline Inventory Report
UC	University of California
WIPP	Waste Isolation Pilot Plant

EXECUTIVE SUMMARY

The Los Alamos National Laboratory (LANL) Site Treatment Plan (STP) Fiscal Year 1995 (FY95) Update (Update) has been prepared in accordance with the requirements of Section VII, "Annual Site Treatment Plan Updates," of the October 4, 1995, Federal Facility Compliance Order (FFCO). The FFCO was issued jointly to the Department of Energy (DOE) and its management and operating contractor, the University of California (UC) Regents, for LANL by the New Mexico Environment Department (NMED). By definition, the STP refers to both the Background Volume (BV) and the Compliance Plan Volume (CPV). This FY95 Update consists of two volumes: the BV Update and the CPV Update. Unless otherwise specified, its focus is on FY95 (October 1, 1994, through September 30, 1995), as required by Section VII of the FFCO.

Background Volume Update

Section 2.0 of the BV Update brings the STP BV current to the end of the previous federal fiscal year with respect to

- the inventory of covered waste in storage and projections of the inventory of covered waste expected to be placed into storage for the next five FYs;
- progress reports on treatment and treatment technology development;
- a report on the funding of STP-related activities;
- the status of the Waste Isolation Pilot Plant (WIPP) "No-Migration Variance Petition," which currently is the only treatment variance applicable to LANL's covered waste for which a petition is pending; and
- a progress report for the treatment of mixed transuranic (MTRU) waste at the WIPP.

Covered Waste

It should be noted that the inventory presented in the Final Proposed STP (March 1995) was for low-level mixed waste (LLMW) in storage before October 1, 1994 and MTRU in storage before December 1992, regardless of its time of generation or its state of compliance with the Land Disposal Restrictions (LDRs) storage requirements. Unlike the inventory reported in the Final Proposed STP, this Update includes changes to the covered waste inventory that occurred in FY95. Mixed waste that was generated in FY95 is not included in this inventory update because it is not a covered waste under the FFCO until it no longer complies with the LDR storage requirements.

Because other documents published by the DOE require different reporting parameters and periods, the volumes of waste reported in this Update may not be the same as the volumes of waste reported in other documents, such as the "1995 Hazardous Waste Report for Los Alamos National Laboratory, Volumes I and II," (Biennial Report) and the Transuranic Waste Baseline Inventory Report (TWBIR). Table ES-1 summarizes the changes in the LLMW covered waste inventory occurring in FY95. Table ES-2 shows the volume of MTRU covered waste currently in storage and the generation rate of MTRU waste by FY for FY92-FY94.

Table ES-1. Volume Totals and Changes in FY95 for LLMW

Total Volumes	
Total STP reported volume	608.6 m ³
Total covered waste in storage at end of FY95	608.9 m ³
Volume Changes in FY95	
Volume treated in treatability studies	0.22 m ³
Volume shipped off-site	2.24 m ³
Volume of lead decontaminated and released under the Environmental Protection Agency Federal Facility Compliance Agreement (EPA FFC Agreement) Milestone LD200 prior to issuance of FFCO	37.92 m ³
Volume of lead returned from LD200 lead decontamination effort	38.34 m ³
Volume increase for waste that was inadvertently omitted from the STP inventory	2.36 m ³

Table ES-2. MTRU Covered Waste Volumes and Generation

Year	Waste Stream	Volume (m³)
FY92	LA-W049, TA-55 Combustibles	12.48
	LA-W050, TA-55 Noncombustibles	14.352
	total	26.832
FY93	LA-W047, TA-50 Solidified Sludge	2.912
	LA-W049, TA-55 Combustibles	0.624
	LA-W050, TA-55 Noncombustibles	4.992
	LA-W051, TA-55 Solidified Process Solids	83.478
	LA-W052, Glove Boxes and Ductwork	142.2513
	total	234.2573
FY94	LA-W051, TA-55 Solidified Process Solids	22.656
	total	22.656

Treatment Progress and Treatment Technology Development

LANL and other DOE Albuquerque Operations Office (DOE/AL) sites were heavily involved in the design or fabrication of mixed waste treatment capacities that could be brought to LANL. Technology development was coordinated under a comprehensive plan called the AL Mixed Waste Treatment Plan (MWTP). Work progressed during FY95 on all technologies identified in the STP for treatment of mixed waste. However, the progress was significantly impacted by funding reductions during the year and by the changing focus of the DOE from on- to off-site treatment.

Since the FFCO was issued, the availability of commercial off-site treatment and disposal capacity for LLMW has significantly increased. Other sites in the DOE complex have been aggressively pursuing the development and permitting of mixed waste treatment facilities that may offer viable alternatives to the current optimum treatment options for many covered wastes in the LANL STP. DOE and UC are continuing to evaluate commercial and DOE off-site treatment facilities for their appropriateness to treat LANL's covered waste.

Table ES-3 shows a summary of treatment progress in FY95 and the current status of treatment technology development.

Table ES-3. Summary of Treatment Progress and Status*

Treatment Technology	Status as of January 1996
Evaporative Oxidation (MWIR Treatment ID GJ-S801C)	Detailed design 70% complete
Thermal Desorption (MWIR Treatment ID GJ-S801B)	Detailed design 75% complete
Macroencapsulation (MWIR Treatment ID PX-S803)	Proposals to build the unit have been received
Lead Decontamination Trailer (MWIR Treatment ID LA-S0001)	Operational
Chemical and Plating Waste Skid (MWIR Treatment ID LA-S004)	Bench-scale unit in place
Hydrothermal Processing of Waste Organic	Alternative technology selected: Packed Bed Reactor and Silent Discharge Plasma
Detox Process	Alternative technology selected: Packed Bed Reactor and Silent Discharge Plasma
Gas Cylinder Recontainerization (MWIR Treatment ID LA-S801)	Construction complete
Gas Cylinder Scrubbing Skid (MWIR Treatment ID LA-S801)	Alternative technology selected: Packed Bed Reactor and Silent Discharge Plasma
Reactive Waste Treatment Skid (MWIR Treatment ID LA-S003)	Title II design initiated
Amalgamation of Mercury (MWIR Treatment ID PI-S801)	Studies show the sulfur and zinc process do not meet Toxicity Characteristic Leaching Procedure (TCLP); process improvements are being studied
Sort, Survey, and Decontamination (MWIR Treatment ID GJ-S804)	Initiated in June 1995, the project is ongoing
Distillation of Mercury (MWIR Treatment ID LA-S701)	Bench-scale tests conducted to demonstrate radionuclide removal efficiencies; analytical results are pending
Packed Bed Reactor and Silent Plasma Discharge (MWIR Treatment ID LA-S801) and technology adaptation	Sandia National Laboratory is developing; the conceptual design is 50% complete
Waste Work off	See Table ES-1

*Note: The table shows the status as of January 1996; however, in FY96 the DOE has shifted focus to off-site treatment (see Sections 2.2.2, 2.3, and 2.4 of the BV Update).

Funding

In FY95, the DOE fully funded LANL operations and all the milestones were met as required by the STP issued on October 4, 1995. The budget received for FY96 and the requested budget for FY97 and FY98 are sufficient to cover compliance activities requested in the March 1, 1996 revision package. Should funding reductions occur, the Respondents will notify the NMED.

TRU Waste Characterization and Treatment

The DOE is scheduled to submit its No-Migration Variance Petition for the WIPP Disposal Phase Operations in December 1996. To date, the DOE has met its schedule for submittal of regulatory documents related to opening WIPP, including submittal of a draft No-Migration Variance Petition in May 1995. No treatment variances were requested or granted in FY95.

At the WIPP facility, no capabilities for characterizing TRU waste for hazardous waste constituents, or treatment of MTRU to meet the LDR standards, were developed or planned to be developed as of the end of FY95. As of the end of September 1995, no treatment technologies had been developed at LANL for MTRU waste. Additional characterization capabilities were brought on line and characterization of TRU and MTRU, which is necessary before assessing treatment needs, has begun. While funding for further treatment technology development has been requested to begin work in FY97, it may not be possible to begin treatment of MTRU in 1999.

Compliance Plan Volume Update

Section 2.0 of the CPV Update is intended to bring the STP CPV current to the end of the previous fiscal year. However, no revisions or amendments to the CPV were requested or granted in FY95 that have changed the compliance dates, added or deleted treatability groups, or in any other way changed the schedules or other requirements of the STP. Because the FFCO was not issued until after the end of FY95, there could not have been any changes requested under the FFCO in FY95.

Revisions or amendments or other changes to the STP requested, or expected to be requested, after FY95 will be addressed in the FY96 Update, as required by Section VII of the FFCO.

1.0 INTRODUCTION

On October 4, 1995, the New Mexico Environment Department (NMED) issued a Federal Facility Compliance Order (FFCO) to the Department of Energy (DOE) and its management and operating contractor, the University of California (UC) Regents, requiring Los Alamos National Laboratory (LANL) to implement the Site Treatment Plan (STP). The FFCO contains many provisions for implementation of the STP. Section VII of the FFCO requires LANL to submit an Annual Site Treatment Plan Update (Update) to the NMED each year on or before March 31.

Section 2.0 of this Update will bring the STP Background Volume (BV) current to the end of the previous federal fiscal year as required by the FFCO. This March 1996 submittal of the Update to the STP BV provides information about changes to the LANL program for mixed waste treatment that occurred in FY95 (October 1, 1994, through September 30, 1995). This BV Update includes the following:

- the inventory of covered waste in storage and projections of the inventory of covered waste expected to be placed into storage for the next five fiscal years;
- progress reports on treatment and treatment technology development;
- a report on the funding of STP-related activities;
- the status of any treatment variances being applied for; and
- a progress report for the treatment of mixed transuranic waste (MTRU) capabilities at the DOE Waste Isolation Pilot Plant (WIPP) near Carlsbad, New Mexico.

Section 2.1 of the BV Update focuses on the inventory of covered waste in storage at LANL and brings the inventory information current to the end of FY95. Section 2.1 also contains estimates of the volume of covered waste anticipated to be placed into storage in the next five FYs, i.e., covered waste to be placed in the inventory under the FFCO from FY96 through FY00. Mixed waste that is expected to be generated and treated before it becomes a covered waste under the FFCO will not be reflected in this Update. Section 2.2 of the BV Update presents a progress report on treatment progress and treatment technology development for each treatment facility and activity scheduled in the STP. Section 2.3 covers any anticipated alternative technology that is being evaluated for use in place of the treatment technologies or capacities identified in the STP, in particular potential alternative commercial treatment and off-site DOE treatment capacity or technology that has become available since the end of FY95 or will become available in the near term. Section 2.4 describes LANL's funding expectations for STP-related activities and funding issues that may affect the schedule. Section 2.5 presents the status of the "No-Migration Variance Petition" expected to be filed by the DOE for the WIPP. It also includes the status of any other treatment variances in progress. Section 2.6 is a progress report on the WIPP facilities' characterization and/or treatment capabilities, or planned capabilities, for treating MTRU.

The FFCO also requires that the Update bring the STP Compliance Plan Volume (CPV) current to the end of the previous federal fiscal year by describing any revisions or amendments requested or granted in that FY that change the compliance dates, add or delete treatability groups, or in any other way change the schedules of the STP. The STP CPV Update is submitted under a separate volume, "Annual Site Treatment Plan Update for Fiscal Year 1995, Compliance Plan Volume."

Because the FFCO was not issued until after the end of FY95, there could not have been any changes requested under the FFCO in FY95. Revisions, amendments, or other changes to the STP requested, or expected to be requested, after FY95 are not addressed in this Update.

The following outline describes information that may be included in future Updates. Section 2.1 of future CPV Updates will include a description of any proposed or approved revisions and amendments involving compliance date changes that were submitted in the previous FY. Section 2.2 will describe requests submitted in the previous FY for revisions or amendments due to additions or deletions of treatability groups. Such requests must be made in accordance with the requirements of Section VIII (Addition of New Covered Waste) or Section IX (Deletion of Waste) of the FFCO. Section 2.3 will include information regarding any other changes to the overall schedule in the CPV of the STP that occurred in the previous FY. Section 2.4 will include information regarding any other requested or granted changes to the STP that occurred in the previous FY.

2.0 BACKGROUND VOLUME UPDATE

2.1 Inventory Report

The following Inventory Update Summary Tables (Tables 2-1 and 2-2) present a summary of LANL covered waste streams by treatability groups for low-level mixed waste (LLMW) and MTRU, respectively. The volumes given in Table 2-1 reflect changes to the individual treatability group volumes due to increases or decreases, as noted. As stated previously, mixed waste that was generated in FY95 is not reported in this inventory update because it is not a covered waste under the FFCO.

In general, increases may be attributed to the:

- reassignment of covered waste from one existing treatability group to another existing treatability group based on LANL's ongoing reevaluation of characterization information;
- reassignment of stored TRU waste to the MTRU inventory, based on LANL's ongoing reevaluation of characterization information;
- addition of waste that became covered waste since preparing the Mixed Waste Inventory Report (MWIR), whose data served as the basis for the covered waste inventories reported in the STP;
- addition of waste in inventory before October 1, 1994, that was inadvertently omitted from the STP inventory; or
- addition of waste that became covered waste during FY95.

Decreases may be attributed to the:

- reassignment of waste to another existing treatability group based on reevaluating the characterization information;
- shipment of waste to an off-site facility for treatment;
- other compliant management activity, such as recycling;
- treatment of waste in a treatability study; or
- removal of waste from the inventory prior to the issuance of the FFCO, based on the reasons noted in the tables.

2.1.1 LLMW Inventory Summary

Changes in the volume of LLMW covered waste inventory at LANL are summarized in Table ES-1 for all treatability groups combined. Table 2-1 presents the more detailed inventory, showing changes in the volumes of LLMW covered waste for each treatability group. A clarification of the lead inventory immediately follows Table 2-1.

Table 2-1. FY95 LLMW Inventory Update Summary

CPV Section	MWIR Waste ID and Treatability Group	CPV Volume (m ³)	Change in Covered Waste Inventory (m ³) ^a	Comments	Covered Vol. End of FY95 (m ³)	Projection FY96-FY00 (m ³)
3.1.1	LA-W901 IPA Wastes	15.89 ✓	NC ^b		15.89	0.0
3.1.1	LA-W902 Scintillation Fluids	2.47 ✓	Decreased 2.24	Shipped to Diversified Scientific Services, Inc. (DSSI) before issuance of the FFCO	0.23	0.0
3.1.2	LA-W903 Lead Blankets	0.74 ✓	NC		0.74	0.0
3.1.2	LA-W904 Soil with Heavy Metals	10.53 ✓	NC		10.53	21.0
3.1.2	LA-W905 ER Soils	39.32 ✓	NC		39.32	0.0
3.1.3	LA-W906 Aqueous Organic Liquids	1.65 ✓	Increased 0.43	Waste in inventory before October 1, 1994, that was inadvertently omitted from STP inventory	2.08	16.0

CPV Section	MWIR Waste ID and Treatability Group	CPV Volume (m ³)	Change in Covered Waste Inventory (m ³) ^a	Comments	Covered Vol. End of FY95 (m ³)	Projection FY96-FY00 (m ³)
3.1.4	LA-W911 Organic-Contaminated Combustible Solids	28.32 ✓	Decreased 0.11 Increased 0.17	Shipped to Grand Junction Projects Office (GJPO) for treatability study prior to issuance of FFCO Waste in inventory before October 1, 1994, that was inadvertently omitted from STP inventory	28.38	6.5
3.1.4	LA-W919 Organic-Contaminated Noncombustible Solids	7.82	Decreased 0.11 Increased 0.001	Shipped to GJPO for treatability study prior to issuance of FFCO Waste in inventory before October 1, 1994, that was inadvertently omitted from STP inventory	7.71	44.4
3.1.5	LA-W912 Combustible Debris	13.82	NC		13.82	22.2

CPV Section	MWIR Waste ID and Treatability Group	CPV Volume (m ³)	Change in Covered Waste Inventory (m ³) ^a	Comments	Covered Vol. End of FY95 (m ³)	Projection FY96-FY00 (m ³)
3.1.5	LA-W921 Activated or Inseparable Lead	15.60	Decreased 7.42 Increased 10.11	Processed in lead decontamination effort in accordance with EPA FFC Agreement Milestone LD200, before issuance of FFCO Received from LD200 lead decontamination effort (refer to text in Section 2.1.1)	18.29	44.4
3.1.5	LA-W922 Noncombustible Debris	5.62	Decreased 0.0002 Increased 1.25	Shipped to GJPO for treatability study prior to issuance of FFCO Waste in inventory before October 1, 1994, that was inadvertently omitted from STP inventory	6.87	28.4
3.1.6	LA-W913 Aqueous Wastes with Heavy Metals	1.85	Increased 0.32	Waste in inventory before October 1, 1994, that was inadvertently omitted from STP inventory	1.85	0.6
3.1.6	LA-W914 Corrosive Solutions	1.36	Increased 0.04	Waste in inventory before October 1, 1994, that was inadvertently omitted from STP inventory	1.40	0.2

CPV Section	MWIR Waste ID and Treatability Group	CPV Volume (m ³)	Change in Covered Waste Inventory (m ³) ^a	Comments	Covered Vol. End of FY95 (m ³)	Projection FY96-FY00 (m ³)
3.1.6	LA-W915 Aqueous Cyanides, Nitrates, Chromates, and Arsenates	0.13	Decreased 0.0003	Shipped to GJPO for treatability study prior to issuance of FFCO	0.13	0.2
3.1.7	LA-W916 Water-Reactive Wastes	6.03	Increased 0.02	Waste in inventory before October 1, 1994, that was inadvertently omitted from STP inventory	6.05	0.0
3.1.8	LA-W917 Compressed Gases Requiring Scrubbing	0.35	NC		0.35	0.0
3.1.9	LA-W918 Compressed Gases Requiring Oxidation	0.08	NC		0.08	0.5
3.1.10	LA-W920 Elemental Mercury	0.50	NC		0.50	7.5
3.2.1	LA-W907 Halogenated Organic Liquids	16.58	Increased 0.04	Waste in inventory before October 1, 1994, that was inadvertently omitted from STP inventory	16.62	0.9
3.2.1	LA-W908 Nonhalogenated Organic Liquids	14.34	Increased 0.08	Waste in inventory before October 1, 1994, that was inadvertently omitted from STP inventory	14.42	10.7

CPV Section	MWIR Waste ID and Treatability Group	CPV Volume (m ³)	Change in Covered Waste Inventory (m ³) ^a	Comments	Covered Vol. End of FY95 (m ³)	Projection FY96-FY00 (m ³)
3.2.1	LA-W909 Bulk Oils	3.75	NC		3.75	10.6
3.2.1	LA-W-910 PCB Wastes with RCRA Components	0.74	NC		0.74	0.0
3.2.1	LA-W923 Inorganic Solid Oxidizers	0.20	NC		0.20	0.0
3.3 ✓	LA-W924 Lead Wastes-TBD	51.44	Decreased 11.28	Processed in lead decontamination effort in accordance with EPA FFC Agreement Milestone LD200, before issuance of FFCO	40.16	0.0
3.3 ✓	LA-W925 Mercury Wastes-TBD	18.30	NC		18.30	0.0
3.3 ✓	LA-W926 Compressed Gases-TBD	1.25	NC		1.25	0.0
3.3 ✓	LA-W927 Biochemical Laboratory Wastes	1.34	NC		1.34	0.0

CPV Section	MWIR Waste ID and Treatability Group	CPV Volume (m ³)	Change in Covered Waste Inventory (m ³) ^a	Comments	Covered Vol. End of FY95 (m ³)	Projection FY96-FY00 (m ³)
3.3	LA-W928 Dewatered Treatment Sludge	268.17	NC		268.17	0.0
3.4.1 3.4.2	LA-W930 Lead for Surface Decontamination	56.20	Decreased 14.64 Increased 22.50	Processed in lead decontamination effort in accordance with EPA FFC Agreement Milestone LD200, before issuance of FFCO Received from LD200 lead decontamination effort (refer to text in Section 2.1.1)	64.06	71.3
3.4.2 3.4.1	LA-W929 Nonradioactive or Suspect Waste Items to be Surveyed	14.24	Decreased 0.002 Increased 0.00002	Decontaminated and released as material, in accordance with the EPA FFC Agreement Milestone LD200 Waste in inventory before October 1, 1994, that was inadvertently omitted from STP inventory	14.24	0.0



CPV Section	MWIR Waste ID and Treatability Group	CPV Volume (m ³)	Change in Covered Waste Inventory (m ³) ^a	Comments	Covered Vol. End of FY95 (m ³)	Projection FY96-FY00 (m ³)
None ^c	LA-W931 Lead Requiring Sorting	9.97	Decreased 4.58 Increased 5.73	Processed in lead decontamination effort in accordance with EPA FFC Agreement Milestone LD200, before issuance of FFCO Received from LD200 lead decontamination effort (refer to text in Section 2.1.1)	11.12	0.0

^aThese changes in covered waste volume are based on work off and corrections to data error.

^bNC means No Change during FY95 in the covered waste (refer to the text for additional information).

^cThis treatability group (LA-W931, Lead Requiring Sorting) is not listed in the CPV; however, it is discussed in Section 3.4.3 of the BV.

Prior to the issuance of the FFCO, LANL was decontaminating lead in accordance with the FFC Agreement Milestone LD200. LANL successfully completed the LD200 Milestone. There is a small net increase (0.42 m^3) in the volume of lead waste in Table 2-1, even though over 140,000 lb of lead was removed from the LLMW inventory prior to FY96 due to LANL's lead decontamination project.

Drums potentially containing lead bricks were opened to examine the drum contents. If one or more lead bricks were found, they were removed to be decontaminated. The remaining contents of these drums were sorted into physical forms, such as lead pigs, lead sheets, lead shot/shavings, odd lead pieces, etc., recontainerized, and returned to storage as mixed waste. In addition, lead waste which was unsuccessfully decontaminated was returned for long-term storage at TA-54; this lead waste will require a treatment such as macroencapsulation and disposal. Some lead product also was returned even though it was successfully decontaminated. All of these waste items were removed from the treatability groups initially assigned in the STP CPV, as shown in Table 2-1. This lead waste, as it is a covered waste, was then assigned to the applicable treatability groups, shown as additions in Table 2-1.

2.1.2 MTRU Inventory Summary

The MTRU covered waste inventory at LANL is summarized in Table 2-2. The table shows the volumes of MTRU covered waste for each treatability group. After the enactment of the Federal Facility Compliance Act (FFCA) in 1992, efforts were made to identify all mixed waste in storage at the Laboratory. Because much of the TRU inventory was generated prior to the existence of the Resource Conservation and Recovery Act (RCRA) regulations, identification of MTRU as a subset of TRU necessarily relied largely on existing records. As stated in Section 1.5.1 of the STP BV, until recently, the best available data for MTRU was published in the April 1993 Interim MWIR which was used to provide the MTRU waste inventory data in Section 4.1 of the STP BV. While as much as possible of the MTRU and potential MTRU was identified early on to fulfill FFCA reporting requirements, a more in depth study of the inventory has taken place in the last two years, resulting in a more conservative assumption of the processes generating the waste, and thus, the identification of more potential MTRU. As better process knowledge becomes available, it is being incorporated into the LANL TRU waste database. Therefore, differences in total MTRU inventory between Table 2-2 and the MTRU waste inventory data in Section 4.1 of the STP BV are due in part to better knowledge of the legacy MTRU inventory since the Interim MWIR report was published.

The DOE relies primarily on two complex-wide data reports to provide information concerning mixed waste generation and disposition: the MWIR and the Transuranic Waste Baseline Inventory Report (TWBIR). The MWIR is published by the DOE in response to the FFCAct requirement to submit to the EPA and to the State of New Mexico a report containing a national inventory of mixed waste and treatment capacities and technologies for mixed waste. Specific information regarding each waste stream is given for mixed waste generated from facility operations and the Environmental Restoration Project. The TWBIR summarizes the DOE TRU waste inventory, projections, and characteristics. The purpose of the TWBIR is to document the total inventory of DOE TRU as defined by the waste generator/storage sites, including waste that will not be sent to WIPP. As these data reports have matured, new information needs and new uses for the data have been identified, resulting in additions to or changes in parameters used to define MTRU waste streams across the DOE complex. Thus, the LANL TRU waste database is evolving to address DOE complex requirements, the most notable revision is the ongoing changes in MTRU treatability groups.

DOE Headquarters has recently decided to merge the MWIR and the TWBIR databases. The information provided in Table 2-2, FY95 TRU Inventory Update Summary, reflects the changes made to the waste treatability groups as a result of the combined MWIR/TWBIR data. Table ES-2 reports the volumes of MTRU waste generated at LANL for FY92–FY94 using the new, combined MWIR/TWBIR treatability groups. Therefore, differences in total MTRU inventory between Table 2-2 and the MTRU waste inventory data in Section 4.1 of the STP BV are also partly due to the actual generation of MTRU since the Interim MWIR report was published.

Revision 3 of the combined MWIR/TWBIR will be used for the DOE WIPP Performance Assessment. Unfortunately, Revision 3 of the combined WMIR/TWBIR will not be completed until June 1996 and could not be incorporated into this FY95 Update, nor could any resulting changes to the treatability groups or to the LANL TRU waste database be reported. Revision 3 of the combined MWIR/TWBIR will be used as the basis for submission of a proposed LANL STP revision for MTRU inventories that is planned to be submitted to the NMED within the next six months.

It is important to recognize that some inconsistencies in waste volumes reported here and in future STP Updates will continue to exist because of the variations in update cycles (reporting periods) for the Update versus other documents reporting mixed waste inventories published by the DOE (i.e., the MWIR and TWBIR). Because the STP Update requires reporting of covered waste only, the volumes published will be as of the previous fiscal year. Finally, because characterization of the TRU inventory through sampling and analysis is ongoing, DOE and UC anticipate some further changes to waste volumes reported as newer and more accurate data become available.

Table 2-2. FY95 TRU Inventory Update Summary

MWIR Waste ID and Treatability Group ^a	Estimated Vol. End of FY95 (m ³)	Projection FY96-FY00 (m ³)
LA-W046 Metallic Waste	1472.9336	2,231
LA-W047 TA-50 Solidified Sludge	152.450	3,153
LA-W048 TA-50 Solidified Aqueous Waste	1089.6214	1,377
LA-W049 TA-55 Combustibles	184.179	377
LA-W050 TA-55 Noncombustible	211.184	340
LA-W051 TA-55 Solidified Process Solids	449.8609	680
LA-W052 Glove Boxes and Ductwork	142.2513	192

^aMWIR waste identification and treatability groups for MTRU are not listed in the CPV; however, they are found in Section 4.1 of the BV (as given in the April 1993 Interim MWIR). New treatability groups in this table correspond to the current MWIR/TWBIR.

2.2 Progress Report on Treatment and Treatment Technology Development

This section reports on the progress during FY95 of on- and off-site treatment of covered waste and on the development of treatment technologies needed by LANL. Also addressed briefly in this section is a description of the progress or status of the activities scheduled in the STP.

Work progressed on all technologies identified in the STP for treatment of mixed waste. However, the progress was significantly impacted by funding reductions during the year and by a shift in emphasis by the DOE from on- to off-site treatment options to reduce cost and to work off legacy LLMW more rapidly.

2.2.1 Treatment Progress

Treatability Studies

During FY95, LANL actively pursued treatability studies for several treatability groups. Treatability studies were conducted at the DOE GJPO in Colorado involving the following waste:

- 0.11 m³ of organic-contaminated combustible solids (MWIR LA-W911, CPV Section 3.1.4);
- 0.11 m³ of organic-contaminated noncombustible solids (MWIR LA-W919, CPV Section 3.1.4);
- 0.0002 m³ of noncombustible debris (MWIR LA-W922, CPV Section 3.1.5); and
- 0.04 m³ of corrosive solutions (MWIR LA-W914, CPV Section 3.1.6).

Off-Site Treatment

In addition to the off-site shipments for treatability studies, 15 drums of covered waste were shipped off site during FY95 to DSSI in Tennessee prior to the issuance of the FFCO. The waste contained 2.24 m³ of scintillation fluids (MWIR LA-W902, CPV Section 3.1.1).

Other Types of Mixed Waste Activities

LANL significantly reduced its LLMW lead inventory by decontamination prior to issuance of the FFCO. This effort was undertaken largely to comply with Milestone LD200 in the EPA FFC Agreement, as discussed in Section 2.1.1. Lead in the following categories was processed:

- 7.42 m³ of activated or inseparable lead (MWIR LA-W921, CPV Section 3.1.5);
- 11.28 m³ of lead wastes—TBD (MWIR LA-W924, CPV Section 3.3);
- 14.64 m³ of lead for surface decontamination (MWIR LA-W930, CPV Section 3.4.1);
- 0.002 m³ of lead as nonradioactive or suspect waste items to be surveyed (MWIR LA-W929, CPV Section 3.4.2); and
- 4.58 m³ of lead requiring sorting (MWIR LA-W931, CPV Section 3.4.3).

Volume additions associated with this decontamination effort are discussed in Section 2.1.1.

2.2.2 Progress Report on Treatment and Treatment Technology Development

LANL and other DOE Albuquerque Operations Office (DOE/AL) sites were heavily involved in the design or fabrication of mixed waste treatment capacities that could be brought to LANL. This effort has been focused on developing the Mobile Treatment Unit (MTU) concept that is the basis of most of the preferred treatment options currently identified in LANL's STP.

Technology development at LANL and other sites for the mixed waste streams at LANL was coordinated under a comprehensive plan called the DOE/AL Mixed Waste Treatment Plan (MWTP). The plan includes recommendations for treating most treatability groups at LANL as well as other DOE/AL sites. Work which occurred during FY95 under this plan, as identified in the STP and the FFCO, is described in this section.

Work progressed on all technologies identified in the STP for treatment of mixed waste, but at a slower rate due to funding reductions. However, the availability of commercial off-site treatment and disposal capacity for LLMW has significantly increased. In addition, many sites of the DOE complex have been aggressively pursuing development and permitting of mixed waste treatment facilities. It is conceivable that these off-site facilities could be used for timely treatment of newly generated waste as well as covered waste. Thus, the inventory of mixed waste that would otherwise become covered waste under the STP (while awaiting the development of the MTUs) could be significantly reduced.

The following subsections report on the development progress of each treatment technology discussed in the LANL STP.

Evaporative Oxidation (MWIR Treatment ID GJ-S801C)

The GJPO is developing the evaporative oxidation process in accordance with the MWTP. This process combines evaporation and vapor catalytic oxidation to destroy volatile organic compounds and concentrate nonvolatile contaminants into a thick liquor or slurry. The aqueous waste is concentrated in an evaporator by boiling off most of the water and the volatile compounds. Air or oxygen is added to the vaporized fraction and forced through a catalyst bed, where organic and inorganic compounds are oxidized. The Evaporative Oxidation unit can be used to treat the MWIR LA-W906 stream.

Demonstration of this process was completed in 1995. Conceptual design of the unit is complete and the detailed design is 70% complete. Preliminary budgeting and scheduling has begun. The design effort is scheduled to resume in April 1996.

The present schedule should allow for meeting all compliance deadlines unless funding is reduced. DOE/AL determined it will retain this unit in its Albuquerque Operations Office Mixed Waste Treatment Plan Evaluation and Identification of Treatment Options for MTUs, which was completed in September 1995.

Thermal Desorption (MWIR Treatment ID GJ-S801B)

The GJPO is developing the thermal desorption process in accordance with the MWTP. This process is a batch-drying process that separates organic and other volatile contaminants from solids, soils, and sludges. In the process, the organic contaminants are vaporized under a vacuum in an indirectly heated vessel and passed through an off-gas treatment system. Volatile organics are condensed and collected for subsequent treatment by a process that treats organic liquids. Solid "debris" can be disposed of as low-level waste (LLW). Nondebris solids remaining after treatment must meet land disposal restriction (LDR) standards and must be disposed of in a RCRA-permitted facility. The Thermal Desorption unit can be used to treat MWIR LA-W911 and LA-W919 streams.

Treatability testing is complete and the treatability test report should be issued by the end of November 1996. The conceptual design is complete. The detailed design is currently 75% complete and is scheduled to be 100% complete in April 1996.

Macroencapsulation (MWIR Treatment ID PX-S803)

The Pantex Plant is developing the macroencapsulation process in accordance with the MWTP. This technology encloses solid wastes in an inert envelope to reduce their exposure to potential leaching media in a landfill. This minimizes the risk of contaminants transferring to the environment and is the LDR treatment standard for debris and radioactive lead solids. The Macroencapsulation unit can be used to treat MWIR LA-W912, LA-W921, and LA-W922 streams.

Requests for proposal for procurement of the stabilization and macroencapsulation units have been issued. As a result of the prebid conference, the requests have been revised and reissued. Bid submittals must be received by November 1996.

DOE/AL determined it will retain this unit in its Albuquerque Operations Office Mixed Waste Treatment Plan Evaluation and Identification of Treatment Options for MTUs, which was completed in September 1995.

Lead Decontamination Trailer (MWIR Treatment ID LA-S0001)

The Lead Decontamination Trailer uses a wet-abrasive blasting system to clean radioactive contamination from the exterior of the lead form. The liquid and abrasive are collected and reused until radioactive contamination of the slurry becomes excessive. The slurry is then recovered and encapsulated in concrete with a polymer additive. The clean lead is surveyed and reused.

The Lead Decontamination Trailer has completed processing of all applicable lead as identified in the EPA FFC Agreement, Milestone LD200 prior to issuance of the FFCO.

A total of 29.3 m³ has been recycled and removed from the LLMW inventory. The Lead Decontamination Trailer remains operational and may be used at other DOE/AL sites.

Chemical and Plating Waste Skid (MWIR Treatment ID LA-S004)

The Chemical and Plating Waste Skid treats waste including cyanide, ammonia, heavy metals, and sulfide-containing metals. A kynar-lined tank is used to hold the solutions where pH adjustments and chemical additives can be mixed with the wastes. Cyanide and ammonia can be removed through pH control and the addition of oxidizers. Heavy metals are precipitated by controlling the pH and sulfide addition. The precipitated metals are then filtered, encapsulated, and disposed of in a landfill. Off gas from the operation is fed to a scrubber and all gas discharge is vented through high-efficiency particulate air (HEPA) filters.

Title II design has been completed and a revised RCRA Part B Permit Application has been prepared. However, updated information regarding the waste volume to be treated by this unit indicates that a smaller unit would be more appropriate. Further action on fabrication, permitting, and design review is pending DOE direction regarding the skid size and scope.

During 1995 the skid design was completed, permit applications were submitted for National Emissions Standards for Hazardous Air Pollutants (NESHAP), and National Environmental Policy Act (NEPA) and preliminary safety documentation were completed. Laboratory testing and process verification was initiated to operate, if possible, under safer conditions than outlined in the Environmental Protection Agency's (EPA's) Best Demonstrated Available Technology Background Document. An acquisition plan was prepared for fabrication of the skid. Further work on the skid has been delayed by funding reductions and scope changes. Updated information on waste volume and characteristics indicate that a smaller skid is warranted.

DOE/AL determined it will retain this unit as a bench scale unit in its Albuquerque Operations Office Mixed Waste Treatment Plan Evaluation and Identification of Treatment Options for MTUs, which was completed in September 1995.

Hydrothermal Processing of Waste Organic *(Technology adaptation for streams where technology does not exist)*

The process uses high-temperature (400–600°C) water with low concentrations of waste (<20%) to break down compounds. Under these conditions, water is a fluid with fluid-like densities and gas-like transport properties. This benefits throughput and a rapid chemical reaction. Reactor volumes are small because the reactions occur in seconds to minutes. Development of this process continued in 1995 according to the MWTP.

LANL has a research, development, and demonstration (RD&D) permit to treat waste on-site using hydrothermal treatment and is in the process of developing this technology to treat waste included in the mixed waste inventory. Development of this technology was conducted through the evaluation of process performance on surrogate wastes at bench scale. Potential MWIR streams which this technology has been targeted to address include LA-W907, LA-W908, LA-W909, LA-W910, and LA-W923.

The objective of the project is to determine the feasibility of the technology for treating organic-containing LLMW accumulated at LANL. A treatability study of various waste organics on LANL's waste inventory lists was initiated in FY95 and will be completed in FY96.

As described in the Albuquerque Operations Office Mixed Waste Treatment Plan Evaluation and Identification of Treatment Options for MTUs, the Hydrothermal Processing of Waste Organic Treatment Unit will be eliminated. An alternate technology, Packed Bed Reactor and Off-Gas Treatment by Silent Discharge Plasma, was identified for treatment of the candidate MWIR streams.

Detox Process

(Technology adaptation for streams where technology does not exist) *planned by 1997*

The Detox Process uses an iron chloride solution to catalyze reactions in a liquid phase. The technology is not a primary treatment for any MWIR stream but is considered an alternate option for various streams. The process uses iron(III) in an acid solution as the primary oxidant. Iron(II) formed during the reactions with the waste is turned back into iron(III) by a second catalyzed reaction with oxygen. The main benefit of the process is the ability to oxidize organic materials at relatively low temperatures (250°C).

LANL was developing this process to treat waste included in the mixed waste inventory. Potential MWIR streams for which this technology has been targeted include LA-W907, LA-W908, LA-W909, LA-W910, and LA-W923.

A value engineering study on the Detox Process identified the lack of laboratory data needed for process design, and the corrosivity of the hydrochloric acid/ferric chloride Detox solution as major concerns. As a result of this study, an adjusted schedule was prepared and submitted to DOE/AL for approval.

DOE/AL determined it will eliminate this unit in its Albuquerque Operations Office Mixed Waste Treatment Plan Evaluation and Identification of Treatment Options for MTUs, which was completed in September 1995. An alternate technology, Packed Bed Reactor and Silent Discharge Plasma, was identified for treatment of the candidate MWIR streams.

Gas Cylinder Recontainerization (MWIR Treatment ID LA-S801)

A gas recontainerization and analysis system has been designed and is being built at LANL to safely open damaged gas cylinders, analyze the unknown gas, and compress the gas into a new cylinder. The system encloses the cylinder in a larger high-pressure vessel and then pierces the cylinder, allowing the gas to vent into the larger surrounding vessel. The gas is then sampled and analyzed. Construction of the unit is 90% complete. The gas cylinder recontainerization skid was originally designed to be used with the gas cylinder scrubbing skid. After safely containing the waste gases, the gas cylinder scrubbing skid is used to treat the waste gases.

Existing commercial options do not fully address sampling and analysis (S&A), handling of radioactive gases, and final disposal of some cylinder contents. Development of a transportable S&A and cylinder recontainerization device (CRD), which could be used at LANL for in-house identification and any necessary recontainerization of cylinder contents, would increase handling safety, reduce indirect disposal costs, and avoid potential liabilities related to radioactive contamination of commercial equipment at DOE sites. It could support corrective action, ongoing waste operations, and future environmental restoration activities.

DOE/AL determined it will eliminate the Gas Scrubbing unit but requires the use of the gas cylinder recontainerization skid in its Albuquerque Operations Office Mixed Waste Treatment Plan Evaluation and Identification of Treatment Options for MTUs, which was completed in September 1995. An alternate technology, Packed Bed Reactor combined with Silent Discharge Plasma, was identified for treatment of the candidate MWIR streams. This gas cylinder recontainerization skid will not be ready for treatment of LANL wastes unless funding is reinstated.

Gas Cylinder Scrubbing Skid (MWIR Treatment ID LA-S801)

This skid will treat the LA-W917 MWIR stream. The gas-scrubbing skid will treat many but not all gases. Flammable hydrocarbon gases will need to be oxidized in a yet-to-be-developed treatment skid for use on LA-W918 MWIR stream.

This project would result in a transportable waste gas treatment unit to treat toxic and hazardous gases not selected for recontainerization and off-site treatment. The unit will complete the gas cylinder analysis/recontainerization system currently being constructed. Gases will be treated by scrubbing with acid or caustic, liquid-phase oxidation and other treatments proven to destroy the hazardous components of the compressed gas. A transportable analysis/recontainerization treatment unit can reduce the inventory of problem cylinders and thus reduce the number of leaking cylinders.

Title I and Title II design packages have been completed. The Title I system design was oversized, so the Title II design includes a smaller system. DOE/AL determined it will eliminate the Gas Scrubbing unit in its Albuquerque Operations Office Mixed Waste Treatment Plan Evaluation and Identification of Treatment Options for MTUs, which was completed in September 1995. An alternate technology, Packed Bed Reactor and Silent Discharge Plasma, was identified for treatment of the candidate MWIR streams.

Packed Bed Reactor and Silent Discharge Plasma

Sandia National Laboratory is developing a combined Packed Bed Reactor and Silent Discharge Plasma treatment unit. Liquid waste is injected into the Packed Bed Reactor, volatilized, and hazardous off-gases are destroyed in the Silent Discharge Plasma unit. The technology is also applicable to some combustible solids. The Packed Bed Reactor is a thermal treatment unit and is not classified as an incinerator. The Silent Discharge Plasma unit is a nonthermal plasma system. Although the gas remains at ambient temperatures, effective electron temperatures greater than 50,000 K are generated in the discharge plasma, efficiently producing free radical species that oxidize the target organics.

The conceptual design for RCRA mixed waste and Toxic Substances Control Act (TSCA) waste is 50% complete. LANL, the original developers of the combined unit, is fabricating the prototype plasma treatment unit and consulting with GJPO on the design of the Packed Bed Reactor. The detailed design for the prototype unit is complete.

Reactive Waste Treatment Skid (MWIR Treatment ID LA-S003)

The Water Reactive Metals Skid treats metals which are very reactive with water. These wastes are reacted with water in a controlled system. The metal or metal hydride reacts to form the metal hydroxide and hydrogen. The metal hydroxide is then neutralized to make a simple salt solution that is discharged to the Radioactive Liquid Waste Treatment Facility (RLWTF). Hydrogen is produced as part of the reaction and is diluted with nitrogen below flammability limits and vented through HEPA filters.

The conceptual design (Title I) is complete and the detailed engineering design (Title II) has been initiated. Further work on this skid has been delayed by funding reductions. DOE/AL determined it will retain this unit in its Albuquerque Operations Office Mixed Waste Treatment Plan Evaluation and Identification of Treatment Options for MTUs, which was completed in September 1995.

Amalgamation of Mercury (MWIR Treatment ID PI-S801)

A mercury amalgamation unit is being developed at the Pinellas Plant located in Florida. The technology is a treatment required under the LDR for liquid elemental mercury contaminated with radioactive materials. Amalgamation is achieved by mixing the liquid metal with powdered reagents such as copper, zinc, tin, nickel, gold, and sulfur to yield a metal alloy with no free mercury.

The mercury amalgamation system is complete. Both the sulfur and zinc processes are not working as anticipated (the amalgam fails the RCRA toxicity characteristic leaching procedure [TCLP]). A draft plan to resolve the problems was initiated.

DOE/AL determined it will retain this unit in its Albuquerque Operations Office Mixed Waste Treatment Plan Evaluation and Identification of Treatment Options for MTUs, which was completed in September 1995.

Sort, Survey, and Decontamination (MWIR Treatment ID GJ-S804)

The GJPO has initiated this project. Sort, survey, and decontamination is a preferred option for lab-packed reagent chemicals from radioactive material management areas, bulk chemicals, and selected chemicals in other treatability groups. Over 1200 items are potential candidates for review by this process. These items include MWIR waste stream LA-W929.

The survey was started in 1995 and is progressing. This activity should continue to examine LANL wastes through 1996.

Distillation of Mercury (MWIR Treatment ID LA-S701)

Triple distillation is an alternative treatment for amalgamation in treating mercury wastes. The objective of the project was to investigate triple distillation as a means of decontaminating mercury from the radioactive contaminants and for reuse. Bench-scale tests were conducted to determine the efficiency of radionuclide removal. Because of the shielding properties of mercury, attempts were made to demonstrate the design using cerium, but they failed. It was then decided to test the unit directly with depleted uranium, which was done in September 1995. Analytical results are pending.

No further work on mercury distillation or radioactivity detection is planned for FY96. A final report will be issued when uranium analyses are available.

DOE/AL did not evaluate this unit in its Albuquerque Operations Office Mixed Waste Treatment Plan Evaluation and Identification of Treatment Options for MTUs, which was completed in September 1995.

2.3 Alternative Treatment Technologies Being Considered

2.3.1 Off-Site Commercial Treatment Facilities

LANL shipped 2.24 m³ of liquid scintillation fluids (CPV Section 3.1.1) to DSSI in FY95. In FY96, LANL also shipped 39.32 m³ of Environmental Restoration (ER) soils (CPV Section 3.1.2) to Envirocare of Utah. LANL expects to ship isopropyl alcohols (IPAs), pending DOE approval, to DSSI in FY96.

LANL expects lead blanket shipments in July 1996 pending sampling, characterization, DOE approval, and acceptance at Envirocare. Soils with heavy metals are planned for shipment in June 1996 pending sampling, characterization, DOE approval, and acceptance at Envirocare. No other shipments are planned before August 1996. LANL hopes to ship activated and inseparable waste in August 1996 pending sampling, characterization, DOE approval, and acceptance at Envirocare.

DOE and UC continue to evaluate a number of commercial off-site treatment facilities for their appropriateness to treat LANL's covered waste, as new information about these facilities becomes available.

2.3.2 Off-Site DOE Treatment Facilities

Recent changes at the Idaho National Engineering Laboratory (INEL), Oak Ridge National Laboratory (ORNL), and Savannah River Site (SRS) indicate a potential for treatment capacity, possibly providing alternatives to the current preferred treatment options, to be become available to LANL in the near term. INEL, ORNL, and SRS facilities run thermal destruction operations that could provide excellent compliant treatment for many of the types of mixed waste that LANL generates. Currently there are preliminary plans to ship applicable portions of LANL's inventory of covered waste to other DOE sites for treatment, pending approval of LANL's revision request (submitted March 1, 1996) by the NMED.

2.4 Funding

In FY95, the DOE fully funded LANL operations and all the milestones were met as required by the STP issued on October 4, 1995 (which was the beginning of FY96). The budget received in FY96 and requested for FY97 and FY98 would allow STP compliance-driven activities to be fully funded. This requested funding level would include the new approach for off-site treatment and disposal of waste at DOE and commercial facilities as reflected in discussions with NMED in December 1995 and through a formal revision request submitted in March 1996. Respondents in that case could continue to meet all planned activities as requested by the revision package. Should reductions occur that alter the projected funding for STP activities, Respondents will notify NMED to amend compliance schedules and activities accordingly. Currently, if budgets are awarded at the request levels, no noncompliance with the STP activities is anticipated through FY98. It should be further noted that this new direction in the management of LLMW at LANL is to preferentially treat and dispose of these wastes off site, and to continue the development of mobile treatment units only after it is determined that no other alternatives are available for the remaining residual waste in off-site treatment and disposal facilities.

2.5 Treatment Variances

The RCRA allows certain case-by-case variances of LDR standards. Among these variance options is a "No-Migration Variance Petition" that can be issued if there is appropriate evidence to show that no hazardous constituents will be released from a land disposal unit or permanent repository. Other variances that may be sought under the RCRA relate to requests for substitution of an alternative treatment technology in place of the LDR-required treatment technology. Planned or requested treatment variances are described below.

2.5.1 WIPP No-Migration Variance Petition

The WIPP is a DOE facility being developed near Carlsbad, New Mexico, as a planned repository for the TRU waste that was generated by the nation's defense-related activities. Some of the TRU waste contains hazardous constituents regulated under the RCRA and is therefore MTRU, and subject to the FFCAct for planning and regulation of appropriate treatment prior to disposal in the land.

The WIPP repository is considered a deep geologic repository rather than a shallow landfill, as are most hazardous waste disposal sites. It is wholly sited in a salt bed 2,100 ft below the land surface. Because salt has the advantageous characteristic of slow plastic deformation, it is predicted that the salt will entomb the waste and seal it from the human environment, making potential release of hazardous constituents a low-probability event.

The DOE is scheduled to submit its No-Migration Variance Petition for the WIPP Disposal Phase Operations in December 1996. To date, the DOE has met its schedule for submittal of regulatory documents related to opening WIPP, including submittal of a draft No-Migration Variance Petition in May 1995.

2.5.2 Other Treatment Variance(s)

No treatment variances were requested or granted in FY95. It is likely that in the future there may be requests submitted to the NMED to consider substituting alternative treatment technologies for waste streams that are not amenable to the LDR-required treatment technology because of their radioactive nature (for example, recycling/reuse of radioactive lead-acid batteries would be inappropriate, and approval to use an immobilization technology such as macroencapsulation may be requested).

2.6 WIPP Facility Capabilities

The DOE is planning to dispose of their TRU waste, both mixed and nonhazardous, in a deep geologic repository at the WIPP near Carlsbad, New Mexico. This facility is planned to be a disposal facility without capability of routine opening and repackaging of waste. This facility is not a generator of TRU waste, and therefore will receive all of the TRU waste in shipments from off site. Described below is the status of the characterization and treatment capabilities at the WIPP facility.

2.6.1 Characterization Capabilities at WIPP

No capabilities for characterization of TRU waste for hazardous waste constituents regulated by the RCRA were developed or planned to be developed at the WIPP facility.

2.6.2 MTRU Treatment Capabilities at WIPP

No capabilities for treatment of MTRU to meet the LDR standards were developed or planned to be developed at the WIPP facility.

As of the end of September 1995, no treatment technologies had been developed for MTRU waste. Additional characterization capabilities were brought on line and characterization of TRU and MTRU, which is necessary prior to assessing treatment needs and treatment technology development, continued. TRU and MTRU is being characterized to meet RCRA storage permit requirements and to prepare waste for certification for shipment to the WIPP. In order to meet the treatment milestones for MTRU specified in the CPV of the FFCO issued in October 1995, evaluation of treatments needed and development of treatment technologies to treat MTRU to meet LDR is planned beginning in FY97. While funding for these activities has been requested to begin work in FY97, it may not be possible to begin treatment of MTRU in 1999.

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“Transuranic Waste Baseline Inventory Report Revision 3,” US Department of Energy, Carlsbad Area Office (December 1995).

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Los Alamos National Laboratory

Federal Facility Compliance Order

***Annual Site Treatment Plan Update
for Fiscal Year 1995
Compliance Plan Volume***

March 31, 1996

Los Alamos
NATIONAL LABORATORY

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ACRONYMS

BV	Background Volume
CPV	Compliance Plan Volume
DOE	Department of Energy
DOE/AL	DOE Albuquerque Operations Office
EM	Environmental Restoration and Waste Management
EPA	Environmental Protection Agency
FFCO	Federal Facility Compliance Order
FY	Fiscal Year
LANL	Los Alamos National Laboratory
LDR	Land Disposal Restriction
LLMW	Low-Level Mixed Waste
MTRU	Mixed Transuranic
MWTP	Mixed Waste Treatment Plan
NMED	New Mexico Environment Department
STP	Site Treatment Plan
TCLP	Toxicity Characteristic Leaching Procedure
TRU	Transuranic
TWBIR	Transuranic Waste Baseline Inventory Report
UC	University of California
WIPP	Waste Isolation Pilot Plant

EXECUTIVE SUMMARY

The Los Alamos National Laboratory (LANL) Site Treatment Plan (STP) Fiscal Year 1995 (FY95) Update (Update) has been prepared in accordance with the requirements of Section VII, "Annual Site Treatment Plan Updates," of the October 4, 1995, Federal Facility Compliance Order (FFCO). The FFCO was issued jointly to the Department of Energy (DOE) and its management and operating contractor, the University of California (UC) Regents, for LANL by the New Mexico Environment Department (NMED). By definition, the STP refers to both the Background Volume (BV) and the Compliance Plan Volume (CPV). This FY95 Update consists of two volumes: the BV Update and the CPV Update. Unless otherwise specified, its focus is on FY95 (October 1, 1994, through September 30, 1995), as required by Section VII of the FFCO.

Background Volume Update

The STP BV Update is submitted under a separate volume, "Annual Site Treatment Plan Update for Fiscal Year 1995, Background Volume." Section 2.0 of the BV Update brings the STP BV current to the end of the previous federal fiscal year with respect to

- the inventory of covered waste in storage and projections of the inventory of covered waste expected to be placed into storage for the next five FYs;
- progress reports on treatment and treatment technology development;
- a report on the funding of STP-related activities;
- the status of the Waste Isolation Pilot Plant (WIPP) "No-Migration Variance Petition," which currently is the only treatment variance applicable to LANL's covered waste for which a petition is pending; and
- a progress report for the treatment of mixed transuranic waste (MTRU) at the WIPP.

Covered Waste

It should be noted that the inventory presented in the Final Proposed STP (March 1995) was for low-level mixed waste (LLMW) in storage before October 1, 1994 and MTRU in storage before December 1992, regardless of its time of generation or its state of compliance with the Land Disposal Restrictions (LDRs) storage requirements. Unlike the inventory reported in the Final Proposed STP, this Update includes changes to the covered waste inventory that occurred in FY95. Mixed waste that was generated in FY95 is not included in this inventory update because it is not a covered waste under the FFCO until it no longer complies with the LDR storage requirements.

Because other documents published by the DOE require different reporting parameters and periods, the volumes of waste reported in this Update may not be the same as the volumes of waste reported in other documents, such as the "1995 Hazardous Waste Report for Los Alamos National Laboratory, Volumes I and II," (Biennial Report) and the Transuranic Waste Baseline Inventory Report (TWBIR). Table ES-1 summarizes the changes in the LLMW covered waste inventory occurring in FY95. Table ES-2 shows the volume of MTRU covered waste currently in storage and the generation rate of MTRU waste by FY for FY92–FY94.

Table ES-1. Volume Totals and Changes in FY95 for LLMW

Total Volumes	
Total STP reported volume	608.6 m ³
Total covered waste in storage at end of FY95	608.9 m ³
Volume Changes in FY95	
Volume treated in treatability studies	0.22 m ³
Volume shipped off-site	2.24 m ³
Volume of lead decontaminated and released under the Environmental Protection Agency Federal Facility Compliance Agreement (EPA FFC Agreement) Milestone LD200 prior to issuance of FFCO	37.92 m ³
Volume of lead returned from LD200 lead decontamination effort	38.34 m ³
Volume increase for waste that was inadvertently omitted from the STP inventory	2.36 m ³

Table ES-2. MTRU Covered Waste Volumes and Generation

Year	Waste Stream	Volume (m³)
FY92	LA-W049, TA-55 Combustibles	12.48
	LA-W050, TA-55 Noncombustibles	14.352
	total	26.832
FY93	LA-W047, TA-50 Solidified Sludge	2.912
	LA-W049, TA-55 Combustibles	0.624
	LA-W050, TA-55 Noncombustibles	4.992
	LA-W051, TA-55 Solidified Process Solids	83.478
	LA-W052, Glove Boxes and Ductwork	142.2513
	total	234.2573
FY94	LA-W051, TA-55 Solidified Process Solids	22.656
	total	22.656

Treatment Progress and Treatment Technology Development

LANL and other DOE Albuquerque Operations Office (DOE/AL) sites were heavily involved in the design or fabrication of mixed waste treatment capacities that could be brought to LANL. Technology development was coordinated under a comprehensive plan called the AL Mixed Waste Treatment Plan (MWTP). Work progressed during FY95 on all technologies identified in the STP for treatment of mixed waste. However, the progress was significantly impacted by funding reductions during the year and by the changing focus of the DOE from on- to off-site treatment.

Since the FFCO was issued, the availability of commercial off-site treatment and disposal capacity for LLMW has significantly increased. Other sites in the DOE complex have been aggressively pursuing the development and permitting of mixed waste treatment facilities that may offer viable alternatives to the current optimum treatment options for many covered wastes in the LANL STP. DOE and UC are continuing to evaluate commercial and DOE off-site treatment facilities for their appropriateness to treat LANL's covered waste.

Table ES-3 shows a summary of treatment progress in FY95 and the current status of treatment technology development.

Table ES-3. Summary of Treatment Progress and Status*

Treatment Technology	Status as of January 1996
Evaporative Oxidation (MWIR Treatment ID GJ-S801C)	Detailed design 70% complete
Thermal Desorption (MWIR Treatment ID GJ-S801B)	Detailed design 75% complete
Macroencapsulation (MWIR Treatment ID PX-S803)	Proposals to build the unit have been received
Lead Decontamination Trailer (MWIR Treatment ID LA-S0001)	Operational
Chemical and Plating Waste Skid (MWIR Treatment ID LA-S004)	Bench-scale unit in place
Hydrothermal Processing of Waste Organic	Alternative technology selected: Packed Bed Reactor and Silent Discharge Plasma
Detox Process	Alternative technology selected: Packed Bed Reactor and Silent Discharge Plasma
Gas Cylinder Recontainerization (MWIR Treatment ID LA-S801)	Construction complete
Gas Cylinder Scrubbing Skid (MWIR Treatment ID LA-S801)	Alternative technology selected: Packed Bed Reactor and Silent Discharge Plasma
Reactive Waste Treatment Skid (MWIR Treatment ID LA-S003)	Title II design initiated
Amalgamation of Mercury (MWIR Treatment ID PI-S801)	Studies show the sulfur and zinc process do not meet Toxicity Characteristic Leaching Procedure (TCLP); process improvements are being studied
Sort, Survey, and Decontamination (MWIR Treatment ID GJ-S804)	Initiated in June 1995, the project is ongoing
Distillation of Mercury (MWIR Treatment ID LA-S701)	Bench-scale tests conducted to demonstrate radionuclide removal efficiencies; analytical results are pending
Packed Bed Reactor and Silent Plasma Discharge (MWIR Treatment ID LA-S801) and technology adaptation	Sandia National Laboratory is developing; the conceptual design is 50% complete
Waste Work off	See Table ES-1

*Note: The table shows the status as of January 1996; however, in FY96 the DOE has shifted focus to off-site treatment (see Sections 2.2.2, 2.3, and 2.4 of the BV Update).

Funding

In FY95, the DOE fully funded LANL operations and all the milestones were met as required by the STP issued on October 4, 1995. The budget received for FY96 and the requested budget for FY97 and FY98 are sufficient to cover compliance activities requested in the March 1, 1996 revision package. Should funding reductions occur, the Respondents will notify the NMED.

TRU Waste Characterization and Treatment

The DOE is scheduled to submit its No-Migration Variance Petition for the WIPP Disposal Phase Operations in December 1996. To date, the DOE has met its schedule for submittal of regulatory documents related to opening WIPP, including submittal of a draft No-Migration Variance Petition in May 1995. No treatment variances were requested or granted in FY95.

At the WIPP facility, no capabilities for characterizing TRU waste for hazardous waste constituents, or treatment of MTRU to meet the LDR standards, were developed or planned to be developed as of the end of FY95. As of the end of September 1995, no treatment technologies had been developed at LANL for MTRU waste. Additional characterization capabilities were brought on line and characterization of TRU and MTRU, which is necessary before assessing treatment needs, has begun. While funding for further treatment technology development has been requested to begin work in FY97, it may not be possible to begin treatment of MTRU in 1999.

Compliance Plan Volume Update

Section 2.0 of the CPV Update is intended to bring the STP CPV current to the end of the previous fiscal year. However, no revisions or amendments to the CPV were requested or granted in FY95 that have changed the compliance dates, added or deleted treatability groups, or in any other way changed the schedules or other requirements of the STP. Because the FFCO was not issued until after the end of FY95, there could not have been any changes requested under the FFCO in FY95.

Revisions or amendments or other changes to the STP requested, or expected to be requested, after FY95 will be addressed in the FY96 Update, as required by Section VII of the FFCO.

1.0 INTRODUCTION

On October 4, 1995, the New Mexico Environment Department (NMED) issued a Federal Facility Compliance Order (FFCO) to the Department of Energy (DOE) and its management and operating contractor, the University of California (UC) Regents, requiring Los Alamos National Laboratory (LANL) to implement the Site Treatment Plan (STP). The FFCO contains many provisions for implementation of the STP. Section VII of the FFCO requires LANL to submit an Annual Site Treatment Plan Update (Update) to the NMED each year on or before March 31.

The FFCO requires that the Update bring the STP Compliance Plan Volume (CPV) current to the end of the previous federal fiscal year by describing any revisions or amendments requested or granted in that FY that change the compliance dates, add or delete treatability groups, or in any other way change the schedules of the STP.

Because the FFCO was not issued until after the end of FY95, there could not have been any changes requested under the FFCO in FY95. Revisions, amendments, or other changes to the STP requested, or expected to be requested, after FY95 are not addressed in this Update.

The following describes information that may be included in future Updates. Section 2.1 of future CPV Updates will include a description of any proposed or approved revisions and amendments involving compliance date changes that were submitted in the previous FY. Section 2.2 will describe requests submitted in the previous FY for revisions or amendments due to additions or deletions of treatability groups. Such requests must be made in accordance with the requirements of Section VIII (Addition of New Covered Waste) or Section IX (Deletion of Waste) of the FFCO. Section 2.3 will include information regarding any other changes to the overall schedule in the CPV of the STP that occurred in the previous FY. Section 2.4 will include information regarding any other requested or granted changes to the STP that occurred in the previous FY.

2.0 COMPLIANCE PLAN VOLUME UPDATE

The purpose of this section is to provide information about changes to the CPV of the LANL STP requested or approved as revisions, amendments, or other changes under the FFCO that occurred in FY95. Because the FFCO was not issued until after the end of FY95, there could not have been any changes requested or approved under the FFCO in FY95. The following outline describes the types of information that will be included in future Updates.

2.1 Compliance Date Changes

There were no proposed or approved revisions or amendments submitted in the previous FY.

2.2 Additions and Deletions of Wastes

No requests were submitted in the previous fiscal year for a revision or amendment due to additions or deletions of treatability groups. Such requests are to be made in accordance with the requirements of Section VIII (Addition of New Covered Waste) or Section IX (Deletion of Waste) of the FFCO, including any documentation of new covered waste required by the FFCO.

2.3 Other Changes Affecting the Schedule

There were no changes to the overall schedule in the CPV of the STP during FY95.

2.4 Other Requests

No changes to the STP occurred in the previous FY.

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“AL Mixed Waste Treatment Plan,” Los Alamos National Laboratory (March 1994).

“1995 Hazardous Waste Report for Los Alamos National Laboratory,” Volumes I and II, ESH-19, Los Alamos National Laboratory.

“Transuranic Waste Baseline Inventory Report Revision 3,” US Department of Energy, Carlsbad Area Office (December 1995).

“Mixed Waste Inventory Report,” US Department of Energy, Office of Environmental Management (1995).

ENCLOSURE B

SUGGESTED REPLACEMENT PAGES FOR LANL STP BACKGROUND
VOLUME UPDATE (PAGES 12-19a)

(Clean text version)

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Table 2-1. FY95 LLMW Inventory Update Summary

CPV Section	MWIR Waste ID and Treatability Group	CPV Volume (m ³)	Change in Covered Waste Inventory (m ³) ^a	Comments	Covered Vol. End of FY95 (m ³)	Projection FY96-FY00 (m ³)
3.1.1	LA-W901 IPA Wastes	15.89	NC ^b		15.89	0.0
3.1.1	LA-W902 Scintillation Fluids	2.47	Decreased 2.24	Shipped to Diversified Scientific Services, Inc. (DSSI) before issuance of the FFCO	0.23	0.0
3.1.2	LA-W903 Lead Blankets	0.74	NC		0.74	0.0
3.1.2	LA-W904 Soil with Heavy Metals	10.53	NC		10.53	21.0
3.1.2	LA-W905 ER Soils	39.32	NC		39.32	0.0
3.1.3	LA-W906 Aqueous Organic Liquids	1.65	Increased 0.43	Waste in inventory before October 1, 1994, that was inadvertently omitted from STP inventory	2.08	16.0

CPV Section	MWIR Waste ID and Treatability Group	CPV Volume (m ³)	Change in Covered Waste Inventory (m ³) ^a	Comments	Covered Vol. End of FY95 (m ³)	Projection FY96-FY00 (m ³)
3.1.4	LA-W911 Organic-Contaminated Combustible Solids	28.32	Decreased 0.11 Increased 0.17	Shipped to Grand Junction Projects Office (GJPO) for treatability study prior to issuance of FFCO Waste in inventory before October 1, 1994, that was inadvertently omitted from STP inventory	28.38	6.5
3.1.4	LA-W919 Organic-Contaminated Noncombustible Solids	7.82	Decreased 0.11 Increased 0.001	Shipped to GJPO for treatability study prior to issuance of FFCO Waste in inventory before October 1, 1994, that was inadvertently omitted from STP inventory	7.71	44.4
3.1.5	LA-W912 Combustible Debris	13.82	NC		13.82	22.2

CPV Section	MWIR Waste ID and Treatability Group	CPV Volume (m ³)	Change in Covered Waste Inventory (m ³) ^a	Comments	Covered Vol. End of FY95 (m ³)	Projection FY96-FY00 (m ³)
3.1.5	LA-W921 Activated or Inseparable Lead	15.60	Decreased 7.42 Increased 10.11	Processed in lead decontamination effort in accordance with EPA FFC Agreement Milestone LD200, before issuance of FFCO Received from LD200 lead decontamination effort (refer to text in Section 2.1.1)	18.29	44.4
3.1.5	LA-W922 Noncombustible Debris	5.62	Decreased 0.0002 Increased 1.25	Shipped to GJPO for treatability study prior to issuance of FFCO Waste in inventory before October 1, 1994, that was inadvertently omitted from STP inventory	6.87	28.4
3.1.6	LA-W913 Aqueous Wastes with Heavy Metals	1.85	NC		1.85	0.6
3.1.6	LA-W914 Corrosive Solutions	1.36	Increased 0.04	Waste in inventory before October 1, 1994, that was inadvertently omitted from STP inventory	1.40	0.2

CPV Section	MWIR Waste ID and Treatability Group	CPV Volume (m ³)	Change in Covered Waste Inventory (m ³) ⁿ	Comments	Covered Vol. End of FY95 (m ³)	Projection FY96-FY00 (m ³)
3.1.6	LA-W915 Aqueous Cyanides, Nitrates, Chromates, and Arsenates	0.13	Decreased 0.0003 Increased 0.02	Shipped to GJPO for treatability study prior to issuance of FFCO Waste in inventory before October 1, 1994, that was inadvertently omitted from STP inventory	0.15	0.2
3.1.7	LA-W916 Water-Reactive Wastes	6.03	Increased 0.02	Waste in inventory before October 1, 1994, that was inadvertently omitted from STP inventory	6.05	0.0
3.1.8	LA-W917 Compressed Gases Requiring Scrubbing	0.35	NC		0.35	0.0
3.1.9	LA-W918 Compressed Gases Requiring Oxidation	0.08	NC		0.08	0.5
3.1.10	LA-W920 Elemental Mercury	0.50	NC		0.50	7.5
3.2.1	LA-W907 Halogenated Organic Liquids	16.58	Increased 0.04	Waste in inventory before October 1, 1994, that was inadvertently omitted from STP inventory	16.62	0.9

CPV Section	MWIR Waste ID and Treatability Group	CPV Volume (m ³)	Change in Covered Waste Inventory (m ³) ^a	Comments	Covered Vol. End of FY95 (m ³)	Projection FY96-FY00 (m ³)
3.2.1	LA-W908 Nonhalogenated Organic Liquids	14.34	Increased 0.08	Waste in inventory before October 1, 1994, that was inadvertently omitted from STP inventory	14.42	10.7
3.2.1	LA-W909 Bulk Oils	3.75	NC		3.75	10.6
3.2.1	LA-W-910 PCB Wastes with RCRA Components	0.74	NC		0.74	0.0
3.2.1	LA-W923 Inorganic Solid Oxidizers	0.20	Increased 0.32	Waste in inventory before October 1, 1994, that was inadvertently omitted from STP inventory	0.52	0.0
3.3	LA-W924 Lead Wastes-TBD	51.44	Decreased 11.28	Processed in lead decontamination effort in accordance with EPA FFC Agreement Milestone LD200, before issuance of FFCO	40.16	0.0
3.3	LA-W925 Mercury Wastes-TBD	18.30	NC		18.30	0.0
3.3	LA-W926 Compressed Gases-TBD	1.25	NC		1.25	0.0

CPV Section	MWIR Waste ID and Treatability Group	CPV Volume (m ³)	Change in Covered Waste Inventory (m ³) ^a	Comments	Covered Vol. End of FY95 (m ³)	Projection FY96-FY00 (m ³)
3.3	LA-W927 Biochemical Laboratory Wastes	1.34	NC		1.34	0.0
3.3	LA-W928 Dewatered Treatment Sludge	268.17	NC		268.17	0.0
3.4.1	LA-W930 Lead for Surface Decontamination	56.20	Decreased 14.64 Increased 22.50	Processed in lead decontamination effort in accordance with EPA FFC Agreement Milestone LD200, before issuance of FFCO Received from LD200 lead decontamination effort (refer to text in Section 2.1.1)	64.06	71.3
3.4.2	LA-W929 Nonradioactive or Suspect Waste Items to be Surveyed	14.24	Decreased 0.002 Increased 0.00002	Decontaminated and released as material, in accordance with the EPA FFC Agreement Milestone LD200 Waste in inventory before October 1, 1994, that was inadvertently omitted from STP inventory	14.24	0.0

Background Volume Specified Treatability Groups in Addition to Listed CPV Section Treatability Groups

BV Section	MWIR Waste ID and Treatability Group	CPV Volume (m ³)	Change in Covered Waste Inventory (m ³) ^a	Comments	Covered Vol. End of FY95 (m ³)	Projection FY96-FY00 (m ³)
3.4.3 ^c	LA-W931 Lead Requiring Sorting	9.97	Decreased 4.58	Processed in lead decontamination effort in accordance with EPA FFC Agreement Milestone LD200, before issuance of FFCO	11.12	0.0
			Increased 5.73	Received from LD200 lead decontamination effort (refer to text in Section 2.1.1)		

^aThese changes in covered waste volume are based on work off and corrections to data error.

^bNC means No Change during FY95 in the covered waste (refer to the text for additional information).

^cThis treatability group (LA-W931, Lead Requiring Sorting) is not listed in the CPV; however, it is discussed in Section 3.4.3 of the BV.

Prior to the issuance of the FFCO, LANL was decontaminating lead in accordance with the FFC Agreement milestone LD200. LANL successfully completed the LD200 milestone and removed over 140,000 pounds of lead from the LLMW inventory. This lead decontamination effort was conducted in two campaigns, the first of which was completed in early 1995 and the second was conducted between July and September, 1995. The first campaign focused on drums of lead waste that were acceptable for decontamination in the lead decontamination trailer and the second focused on any lead bricks in inventory when the FFC Agreement was signed (March, 1994).

During the second campaign, drums potentially containing lead bricks were opened to examine the drum contents, even if the drum contents were not primarily lead bricks. If one or more lead bricks were found, they were removed to be decontaminated. The remaining contents of these drums were sorted into physical forms, such as lead pigs, lead sheets, lead shot/shavings, odd lead pieces, etc., recontainerized, and returned to storage as mixed waste. The sorting effort was completed by September 30, 1995; however, due to processing time for the paperwork, some of the drums were not received at TA-54 for long-term storage until November 29, 1995. In addition, lead waste which was unsuccessfully decontaminated was returned for long-term storage at TA-54; this lead waste will require a different treatment such as macroencapsulation and disposal. Some lead product also was returned to TA-54 even though it was successfully decontaminated.

To ensure that the lead waste that was processed in the LD200 lead decontamination effort and returned to long-term storage is assigned to the proper treatability groups, all of these waste items were removed from the treatability groups initially assigned in the STP CPV, as shown in Table 2-1. For instance, unsuccessfully decontaminated lead bricks were assigned to LA-W921, *Activated or Inseparable Lead*, and LA-W931, *Lead Requiring Sorting*. Much of the sorted lead wastes were assigned to LA-W930, *Lead for Surface Decontamination* because they may be decontaminated through other processes than the lead decontamination trailer. Similarly, the lead waste returned from the first campaign, which was not sorted, was removed from the initial treatability groups and was re-assigned to the treatability group LA-W924, *Lead TBD*. For the treatability group LA-W929, *Nonradioactive or Suspect Waste Items to be Surveyed*, this effort resulted in very small changes in inventory volume as shown in Table 2-1, but due to rounding, the total volume did not show a change (since these values are reported to two decimal places).

Table 2-1 reports a small apparent net increase (0.42 m³) in the volume of lead waste shown, even though over 140,000 pounds of lead was removed from the LLMW inventory prior to FY96 due to LANL's LD200 lead decontamination project. This apparent increase in volume resulted from the sorting operations. Many of the legacy drums were packed full while in storage at TA-54, and contained over 2,000 pounds of lead waste each when removed for decontamination. However, current transportation requirements limit the maximum weight of a 55-gal. drum to 800 pounds. Therefore,

when unsuccessfully decontaminated lead bricks were repacked and returned to TA-54, they were received (and recorded in inventory) as full drums containing 55 gal. (0.208m³ of waste), even though the drums were now only one-third full. Therefore, the volume is reported in Table 2-1 as showing an apparent increase, even though the actual quantity of lead waste did not increase.

2.1.2 MTRU Inventory Summary

The MTRU covered waste inventory at LANL is summarized in Table 2-2. The table shows the volumes of MTRU covered waste for each treatability group. After the enactment of the Federal Facility Compliance Act (FFCA) in 1992, efforts were made to identify all mixed waste in storage at the Laboratory. Because much of the TRU inventory was generated prior to the existence of the Resource Conservation and Recovery Act (RCRA) regulations, identification of MTRU as a subset of TRU necessarily relied largely on existing records. As stated in Section 1.5.1 of the STP BV, until recently, the best available data for MTRU was published in the April 1993 Interim MWIR which was used to provide the MTRU waste inventory data in Section 4.1 of the STP BV. While as much as possible of the MTRU and potential MTRU was identified early on to fulfill FFCA reporting requirements, a more in depth study of the inventory has taken place in the last two years, resulting in a more conservative assumption of the processes generating the waste, and thus, the identification of more potential MTRU. As better process knowledge becomes available, it is being incorporated into the LANL TRU waste database. Therefore, differences in total MTRU inventory between Table 2-2 and the MTRU waste inventory data in Section 4.1 of the STP BV are due in part to better knowledge of the legacy MTRU inventory since the Interim MWIR report was published.

Prior to the issuance of the FFCO, LANL was decontaminating lead in accordance with the FFC Agreement milestone LD200. LANL successfully completed the LD200 milestone and removed over 140,000 pounds of lead from the LLMW inventory. This lead decontamination effort was conducted in two campaigns, the first of which was completed in early 1995 and the second was conducted between July and September, 1995. The first campaign focused on drums of lead waste that were acceptable for decontamination in the lead decontamination trailer and the second focused on any lead bricks in inventory when the FFC Agreement was signed (March, 1994).

During the second campaign, drums potentially containing lead bricks were opened to examine the drum contents, even if the drum contents were not primarily lead bricks. If one or more lead bricks were found, they were removed to be decontaminated. The remaining contents of these drums were sorted into physical forms, such as lead pigs, lead sheets, lead shot/shavings, odd lead pieces, etc., recontainerized, and returned to storage as mixed waste. The sorting effort was completed by September 30, 1995; however, due to processing time for the paperwork, some of the drums were not received at TA-54 for long-term storage until November 29, 1995. In addition, lead waste which was unsuccessfully decontaminated was returned for long-term storage at TA-54; this lead waste will require a different treatment such as macroencapsulation and disposal. Some lead product also was returned to TA-54 even though it was successfully decontaminated.

To ensure that the lead waste that was processed in the LD200 lead decontamination effort and returned to long-term storage is assigned to the proper treatability groups, all of these waste items were removed from the treatability groups initially assigned in the STP CPV, as shown in Table 2-1. For instance, unsuccessfully decontaminated lead bricks were assigned to LA-W921, *Activated or Inseparable Lead*, and LA-W931, *Lead Requiring Sorting*. Much of the sorted lead wastes were assigned to LA-W930, *Lead for Surface Decontamination* because they may be decontaminated through other processes than the lead decontamination trailer. Similarly, the lead waste returned from the first campaign, which was not sorted, was removed from the initial treatability groups and was re-assigned to the treatability group LA-W924, *Lead TBD*. For the treatability group LA-W929, *Nonradioactive or Suspect Waste Items to be Surveyed*, this effort resulted in very small changes in inventory volume as shown in Table 2-1, but due to rounding, the total volume did not show a change (since these values are reported to two decimal places).

Table 2-1 reports a small apparent net increase (0.42 m³) in the volume of lead waste shown, even though over 140,000 pounds of lead was removed from the LLMW inventory prior to FY96 due to LANL's LD200 lead decontamination project. This apparent increase in volume resulted from the sorting operations. Many of the legacy drums were packed full while in storage at TA-54, and contained over 2,000 pounds of lead waste each when removed for decontamination. However, current transportation requirements limit the maximum weight of a 55-gal. drum to 800 pounds. Therefore,

Sorter
LA-W930
LA-W931
LA-W924
LA-W929

when unsuccessfully decontaminated lead bricks were repacked and returned to TA-54, they were received (and recorded in inventory) as full drums containing 55 gal. (0.208m³ of waste), even though the drums were now only one-third full. Therefore, the volume is reported in Table 2-1 as showing an apparent increase, even though the actual quantity of lead waste did not increase.

Prior to the issuance of the FFCO, LANL was decontaminating lead in accordance with the FFC Agreement Milestone LD200. LANL successfully completed the LD200 Milestone. There is a small net increase (0.42 m³) in the volume of lead waste in Table 2-1, even though over 140,000 lb of lead was removed from the LLMW inventory prior to FY96 due to LANL's lead decontamination project.

~~Drums potentially containing lead bricks were opened to examine the drum contents. If one or more lead bricks were found, they were removed to be decontaminated. The remaining contents of these drums were sorted into physical forms, such as lead pigs, lead sheets, lead shot/shavings, odd lead pieces, etc., recontainerized, and returned to storage as mixed waste. In addition, lead waste which was unsuccessfully decontaminated was returned for long-term storage at TA-54; this lead waste will require a treatment such as macroencapsulation and disposal. Some lead product also was returned even though it was successfully decontaminated. All of these waste items were removed from the treatability groups initially assigned in the STP CPV, as shown in Table 2-1. This lead waste, as it is a covered waste, was then assigned to the applicable treatability groups, shown as additions in Table 2-1.~~

2.1.2 MTRU Inventory Summary

The MTRU covered waste inventory at LANL is summarized in Table 2-2. The table shows the volumes of MTRU covered waste for each treatability group. After the enactment of the Federal Facility Compliance Act (FFCA) in 1992, efforts were made to identify all mixed waste in storage at the Laboratory. Because much of the TRU inventory was generated prior to the existence of the Resource Conservation and Recovery Act (RCRA) regulations, identification of MTRU as a subset of TRU necessarily relied largely on existing records. As stated in Section 1.5.1 of the STP BV, until recently, the best available data for MTRU was published in the April 1993 Interim MWIR which was used to provide the MTRU waste inventory data in Section 4.1 of the STP BV. While as much as possible of the MTRU and potential MTRU was identified early on to fulfill FFCA reporting requirements, a more in depth study of the inventory has taken place in the last two years, resulting in a more conservative assumption of the processes generating the waste, and thus, the identification of more potential MTRU. As better process knowledge becomes available, it is being incorporated into the LANL TRU waste database. Therefore, differences in total MTRU inventory between Table 2-2 and the MTRU waste inventory data in Section 4.1 of the STP BV are due in part to better knowledge of the legacy MTRU inventory since the Interim MWIR report was published.

Handwritten notes and a signature in the right margin, including the name "R. R. R. R." and other illegible markings.