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Federal Facility Compliance Act Resource Book

Plans for Treating DOE's Mixed Radioactive and Hazardous Waste

Volume II

April 1995

APR 1995
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NOTE TO READER

THIS FEDERAL FACILITY COMPLIANCE ACT RESOURCE BOOK, VOLUME II, SUPPLEMENTS THE FFCACT RESOURCE BOOK (AUGUST 1994). PREVIOUS BACKGROUND INFORMATION IS STILL AVAILABLE IN VOLUME I. THE TABLE OF CONTENTS FOR VOLUME I AND OTHER AVAILABLE INFORMATION IS PROVIDED IN SECTION 5 OF THIS RESOURCE BOOK.

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DOE HEADQUARTERS
POINT-OF-CONTACT

Department of Energy
Forrestal Building
1000 Independence Avenue, SW
Washington, D.C. 20585

Attn: Patty Bubar, Director
FFCAct Task Force
EM-33 TREV2

301/903-7130 or
903-9770

Attn: Martin Letourneau, Special Assistant
Office of Program Integration
EM-33 TREV2

301/903-7656 or
903-9770 (fax)

DOE SITE POINTS-OF-CONTACT
GENERAL INFORMATION

Facility/Location	Contact	Phone Number
Energy Technology Engineering Center; Canoga Park, California	Dave Christy	510/637-1809
General Atomics; San Diego, California	Dave Christy	510/637-1809
General Electric Vallecitos Nuclear Center	Dave Christy	510/637-1809
Lawrence Livermore National Laboratory; Livermore, California	Dave Christy	510/637-1809
Lawrence Berkeley Laboratory; Berkeley, California	Dave Christy	510/637-1809
Laboratory for Energy-Related Health Research; Davis, California	Dave Christy	510/637-1809
Mare Island Naval Shipyard; Vallejo, California	Elmer Naples	703/603-6126 (written comments only address below)
Sandia National Laboratory - California; Livermore California	Dave Christy	510/637-1809
Grand Junction Project Office; Grand Junction, Colorado	Jody Stelmach	303/248-6022
Rocky Flats Environmental Technology Site; Golden, Colorado	Richard Schassburger	303/966-4888
Knolls Atomic Power Laboratory; Windsor, Connecticut	Elmer Naples	703/603-6126 (written comments only address below)
Pinellas Plant; Largo, Florida	Gary Schmidke	813/545-6179

Facility/Location	Contact	Phone Number
Pearl Harbor Naval Shipyard; Honolulu, Hawaii	Elmer Naples	703/603-6126 (written comments only address below)
Argonne National Laboratory - West; Idaho Falls, Idaho	Bob Starck	208/526-1122
Idaho National Engineering Laboratory; Idaho Falls, Idaho	Bob Starck	208/526-1122
Site A/Plot M Palos Forest Preserve; Cook County, Illinois	Mary Jo Acke	708/252-8796
Ames Laboratory; Ames, Iowa	Mary Jo Acke	708/252-8796
Argonne National Laboratory - East; Argonne, Illinois	Mary Jo Acke	708/252-8796
Paducah Gaseous Diffusion Plant; Paducah, Kentucky	David Tidwell	502/441-6800
Portsmouth Naval Shipyard; Kittery, Maine	Elmer Naples	703/603-6126 (written comments only address below)
Kansas City Plant; Kansas City, Missouri	Margaret Stockdale	816/997-7289
Weldon Spring Site Remedial Action Project; St. Charles County, Missouri	Tom Pauling	314/441-8978
University of Missouri; Columbia, Missouri	Dave Christy	510/637-1809
Nevada Test Site; Mercury, Nevada	Nancy Harkess	702/295-4652
Middlesex Sampling Plant; Middlesex, New Jersey	Melyssa Noe	615/241-3315
Princeton Plasma Physics Laboratory; Princeton, New Jersey	Mary Jo Acke	708/252-8796

Facility/Location	Contact	Phone Number
Inhalation Toxicology Research Institute; Albuquerque, New Mexico	Ted Pietrok	505/845-5649
Los Alamos National Laboratory; Los Alamos, New Mexico	Jon Mack	505/665-5026
Sandia National Laboratory - New Mexico; Albuquerque, New Mexico	Ted Pietrok	505/845-5649
Brookhaven National Laboratory; Upton, New York State	Mary Jo Acke	708/252-8796
Colonie Interim Storage Site; Colonie, New York	Melyssa Noe	615/241-3315
Knolls Atomic Power Laboratory - Kesselring; West Milton, New York	Elmer Naples	703/603-6126 (written comments only address below)
Knolls Atomic Power Laboratory - Schenectady; Niskayuna, New York	Elmer Naples	703/603-6126 (written comments only address below)
West Valley Demonstration Project; West Valley, New York	Elizabeth Matthews	716/942-4930
Battelle Columbus Laboratories Decommissioning Project; Columbus, Ohio	Mary Jo Acke	708/252-8796
Fernald Environmental Management Project; Fernald, Ohio	Gary Stegner	513/648-3153
Mound Plant; Miamisburg, Ohio	Rob Rothman	513/865-3823
Portsmouth Gaseous Diffusion Plant; Portsmouth, Ohio	Sandy Childers	614/947-1416

Facility/Location	Contact	Phone Number
RMI Titanium Inc.; Ashtabula, Ohio	Ward Best	216/993-1944
Bettis Atomic Power Laboratory; West Mifflin, Pennsylvania	Elmer Naples	703/603-6126 (written comments only address below)
Charleston Naval Shipyard; Charleston, South Carolina	Elmer Naples	703/603-6126 (written comments only address below)
Savannah River Site; Aiken, South Carolina	Drew Slaton	803/644-6766 or 800/603-0970 ext.4-6766
K-25 Site, Oak Ridge Reservation; Oak Ridge, Tennessee	Harvey Rice	615/241-2157
Oak Ridge National Laboratory, Oak Ridge, Reservation; Oak Ridge, Tennessee	Harvey Rice	615/241-2157
Y-12 Plant, Oak Ridge Reservation; Oak Ridge, Tennessee	Harvey Rice	615/241-2157
Pantex Plant; Amarillo, Texas	Vince Zebrowski	806/477-5969
Norfolk Naval Shipyard; Norfolk, Virginia	Elmer Naples	703/603-6126 (written comments only address below)
Puget Sound Naval Shipyard; Bremerton, Washington	Elmer Naples	703/603-6126 (written comments only address below)

Elmer Naples
Department of Energy
Assistant Secretary for Nuclear Energy
Deputy Assistant Secretary for Naval Reactors
Washington, D.C. 20585

MEDIA INQUIRIES
POINT-OF-CONTACT

Our policy of not discussing DOE policy issues is still enforced. Please refer any further questions from the press to the EM PRESS OFFICERS handling FFCAct issues:

JAYNE BRADY
202/586-5820

or

WENDY BUTLER
202/586-3654

FFCACT INFORMATION AVAILABLE THROUGH THE CEMI
(4/3/95)

DATE	TITLE	STATUS
3/94	National Database System for Conceptual Site Treatment Plans; Volumes 1-3 and Users Guide	Public
5/94	GAO/RCED-94-179, Much Effort Needed to Meet Requirements	Public
8/94	Draft Site Treatment Plans	Internal
8/94	FFCAct Resource Book *	Internal
9/94	FFCAct Status Report	Public
11/14/94	National Summary Report of Draft Site Treatment Plans; Volumes 1-2 and Executive Summary	Public
11/94	Issue Update, National Summary Report of Draft Site Treatment Plans, the Options, ATEP	Public
1/17/95	Revised Schedule for Submitting Proposed Site Treatment Plans	Public
1/18/95	Press Release, Revised Schedule	Public
2/28/95	Federal Register Notice - Delay in schedule - Proposed Site Treatment Plans	Public
3/95	Proposed Site Treatment Plans - Communication Plan	Do Not Release - DOE Internal
4/95	Proposed Site Treatment Plans	Internal
4/95	Federal Register Notice - Availability of Proposed Site Treatment Plans	Public
4/95	Overview of Proposed Site Treatment Plans	Public
5/96 (TBD)	National Summary Report of Proposed Site Treatment Plans (TBD)	Public
4/95	FFCAct Resource Book - Volume II*	Internal

*	Contents are listed below
Do Not Release - DOE Internal	Internal only, specific sections **are not** to be released to or reviewed by public
Public	Available to the public
Internal	Internal only, entire book is not for public release (only release sections)

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INFORMATION REPOSITORY LOCATIONS

Facility	State	Reading Room
Department of Energy Headquarters	DOE-HQ	* Headquarters U.S. Department of Energy Room 1E-190 1000 Independence Avenue, SW Washington, DC 20585 202/586-6025 Hours: 9:00 am - 4:00 pm M-F * Center for EM Information 470 L'Enfant Plaza East, SW Suite 7110 Washington, DC 20024
Energy Technology Engineering Center (ETEC)	California	* The Department of Energy Reading Room 1301 Clay Street Oakland, CA 94612 The State (DTSC) Library Lincoln Plaza Bldg 4th and P Street Sacramento, CA 92410 Simi Valley Public Library Tapo Canyon Road Ventura, CA 93001
General Atomics	California	* The Department of Energy Reading Room 1301 Clay Street Oakland, CA 94612 The State (DTSC) Library Lincoln Plaza Bldg 4th and P Street Sacramento, CA 92410

Facility	State	Reading Room
General Electric Vallecitos	California	* The Department of Energy Reading Room 1301 Clay Street Oakland, CA 94612 The State (DTSC) Library Lincoln Plaza Bldg 4th and P Street Sacramento, CA 92410
Lawrence Livermore National Laboratory	California	* The Department of Energy Reading Room 1301 Clay Street Oakland, CA 94612 The State (DTSC) Library Lincoln Plaza Bldg 4th and P Street Sacramento, CA 92410 Lawrence Livermore Eastgate Visitors Center Greenville Rd Livermore, CA 94550
Lawrence Berkeley Laboratory	California	* The Department of Energy Reading Room 1301 Clay Street Oakland, CA 94612 The State (DTSC) Library Lincoln Plaza Bldg 4th and P Street Sacramento, CA 92410 Berkeley Public Library Kittredge and Shattuck Berkeley, CA 94794

Facility	State	Reading Room
Laboratory for Energy-Related Health Research	California	* The Department of Energy Reading Room 1301 Clay Street Oakland, CA 94612 The State (DTSC) Library Lincoln Plaza Bldg 4th and P Street Sacramento, CA 92410 Davis Public Library 14th Street Davis, CA 95617
Mare Island Naval Shipyard	California	MINSY Public Affairs Office Code 1160-Building 47 Vallejo, CA 94592-5100
Sandia National Laboratory - California	California	SNL/CA Public Reading Room 7011 East Ave Building 901 Livermore, CA 94550
Grand Junction Project Office	Colorado	Government References Section Mesa County Public Library 530 Grand Ave Grand Junction, CO 81501 Technical Resource Center Grand Junction Project Office 2597 B 3/4 Road Grand Junction, CO 81503

Facility	State	Reading Room
Rocky Flats Environmental Technology Site	Colorado	* Rocky Flats Environmental Technology Site Reading Room Front Range Community College Library 3645 West 112th Ave Westminster, CO 80030 303/469-4453 Hours: 10:30 am - 6:30 pm M,T 10:30 am - 4:00 pm W 8:00 am - 4:00 pm Th,F US Environmental Protection Agency Region VIII 999 18th Street, Suite 500 Denver, CO 80202-2405 303/293-1807 Hours: 7:30 am - 4:30 pm M-F Colorado Department of Health 4300 Cherry Creek Drive South Denver, CO 80222-2405 303/692-3300 Hours: 8:00 am - 5:00 pm M-F Rocky Flats Citizens Advisory Board 9035 Wadsworth Parkway, Suite 2250 Westminster, CO 80021 303/420-7855 Hours: 8:30 am - 5:00 pm M-F Standley Lake Library 8485 Kipling Street Arvada, CO 80005 303/456-0806 Hours: 10:00 am - 9:00 pm M-Th 10:00 am - 5:00 pm F 12:00 pm - 5:00 pm Sun
Knolls Atomic Power Laboratory, Windsor	Connecticut	Windsor Public Library 323 Broad Street Windsor, CT 06095 203/285-1910

Facility	State	Reading Room
Pinnellas Plant	Florida	Information Repository Center Largo Public Library 351 East Bay Drive Largo, FL 34640 Martin Marietta Specialty Components Community Relations Center 7381 114th Avenue North Suite 403A Largo, FL 34643 Pinellas Park Public Library 7770 52nd Street North Pinellas, FL 34665
Pearl Harbor Naval Shipyard	Hawaii	Pearl Harbor Naval Base Library Code 90L 1614 Makalapa Drive Pearl Harbor, HI 96860-5350 Alea Public Library 99-143 Moanalua Road Alea, HI 96701 Hawaii State Library 478 South King Street Honolulu, HI 96813 Pearl City Public Library 1138 Waimano Home Road Pearl City, HI 96782
Argonne National Laboratory - West	Idaho	* INEL Technical Library 1776 Science Center Drive PO Box 1625 Idaho Falls, ID 83415-2300
Idaho National Engineering Laboratory	Idaho	* INEL Technical Library 1776 Science Center Drive PO Box 1625 Idaho Falls, ID 83415-2300

Facility	State	Reading Room
Ames Laboratory	Iowa	Ames Laboratory 111 T.A.S.F. Ames, IA 50011 515/294-5643
Argonne National Laboratory - East	Illinois	Lemont Public Library 810 Porter Street Lemont, IL 60439 708/257-6541 U.S. Department of Energy Public Document Room Documents Department University Library 3rd Floor Center The University of Illinois at Chicago 801 S. Morgan St. Chicago, IL 60607 312/413-2594
Site A/Plot M Palos Forest Preserve	Illinois	Lemont Public Library 810 Porter Street Lemont, IL 60439 708/257-6541 U.S. Department of Energy Public Document Room Documents Department University Library 3rd Floor Center The University of Illinois at Chicago 801 S. Morgan St. Chicago, IL 60607 312/413-2594
Paducah Gaseous Diffusion Plant	Kentucky	Environmental Information Center 175 Freedom Blvd Keul, KY 40253

Facility	State	Reading Room
Portsmouth Naval Shipyard	Maine	Portsmouth Public Library 8 Islington Street Portsmouth, NH 03601 Rice Public Library 8 Wentworth Avenue Kittery, ME 03904 207/439-1553
Kansas City Plant	Missouri	Red Bridge Branch Mid-Continent Public Library 11140 Locust Street Kansas City, MO 64108
Weldon Spring Site Remedial Action Project	Missouri	U.S. Department of Energy Weldon Spring Remedial Action Project Office 7295 Highway 94 South St. Charles, MO 63304 314/926-7051
University of Missouri	Missouri	Columbia Public Library 100 West Broadway Columbia, MO 65203
Nevada Test Site	Nevada	* Nevada Test Site Reading Room Coordination and Information Center 3084 South Highland Drive Las Vegas, NV 89109 702/295-3521
Middlesex Sampling Plant	New Jersey	Maywood DOE Public Information Center 43 West Pleasant Ave Maywood, NJ 07607 201/843-7466
Princeton Plasma Physics Laboratory	New Jersey	Middlesex County Library Plainsboro Branch PO Box 278 Plainsboro, NJ 08536 609/275-2897

Facility	State	Reading Room
Inhalation Toxicology Research Institute	New Mexico	* National Atomic Museum Kirtland Air Force Base 20358 Wyoming Blvd. South Albuquerque, NM 87116 Albuquerque Technical-Vocational Institute Main Campus Library 525 Buena Vista Dr. SE Albuquerque, NM 87106
Los Alamos National Laboratory	New Mexico	Museum Park Complex 15th & Central Suite 101 Los Alamos, NM 87544
Sandia National Laboratory New Mexico	New Mexico	* National Atomic Museum Kirtland Air Force Base 20358 Wyoming Blvd. South Albuquerque, NM 87116 Albuquerque Technical-Vocational Institute Main Campus Library 525 Buena Vista Dr. SE Albuquerque, NM 87106

Facility	State	Reading Room
Brookhaven National Laboratory	New York	Longwood Public Library Reference Department 800 Middle County Rd Middle Island, NY 11953 516/924-6400 Records Center 26 Federal Plaza 29th Floor, Rm 2900 New York, NY 10278 212/264-8770 Mastics-Moriches-Shirley Community Library 425 William Floyd Parkway Shirley, NY 11967 516/399-1511 Brookhaven National Laboratory Research Library Building 477A Upton, NY 11973 516/282-3489 Brookhaven Town Library Public Information Office 3333 Route 112 Medford, NY 11763 516/451-6260
Colonie Interim Storage Site	New York	Colonie Library 629 Albany-Shaker Rd Loudenville, NY 12211
Knolls Atomic Power Laboratory, Kesselring	New York	Schenectady Public Library Main Branch 99 Clinton Street Schenectady, NY 12305-2083 518/388-4511

Facility	State	Reading Room
Knolls Atomic Power Laboratory, Schenectady	New York	Schenectady Public Library Main Branch 99 Clinton Street Schenectady, NY 12305-2083 518/388-4511
West Valley Demonstration Project	New York	WVDP Public Reading Room MS-Trailer A 10282 Rock Springs Rd West Valley, NY 14171 Town of Concord Library 23 North Buffalo Street Springville, NY 14141 716/592-7742 Buffalo and Erie County Central Public Library Science and Technology Department Lafayette Square Buffalo, NY 14203 716/858-7098 West Valley Central School Library School Street West Valley, NY 14171 716/942-3293
Battelle Columbus Laboratories Decommissioning Project	Ohio	Columbus Metropolitan Library Main Branch 96 S. Grant Ave. Columbus, OH 43215 614/645-2000 Northside Branch Library 1423 N. High St. Columbus, OH 43201 614/644-2110 West Jefferson Public Library 270 Lilly Chapel Road West Jefferson, OH 43162 614/879-8448

Facility	State	Reading Room
Fernald Environmental Management Project	Ohio	Public Environmental Information Center Jamtek Building 10845 Hamilton Cleves Highway Harrison, OH 45030 513/738-0164
Mound Plant	Ohio	* Miamisburg Senior Adult Center Public Reading Room 305 Central Ave Miamisburg, OH 45343
Portsmouth Gaseous Diffusion Plant	Ohio	DOE Environmental Information Center 505 West Emmitt Ave, Suite 3 Waverly, OH 45690 614/947-5093 Hours: 10am-4pm M, T, W, F 9am - 12noon Th
RMI Titanium Inc.	Ohio	Kent State University Ashtabula Campus Library 3431 W. 13th St Ashtabula, OH 44004 216/964-4239
Bettis Atomic Power Laboratory	Pennsylvania	Carnegie Library Science and Technology Department 4400 Forbes Avenue Pittsburgh, PA 15213
Charleston Naval Shipyard	South Carolina	Charleston County Library 404 King Street Charleston, SC 29403 803/723-1645
Savannah River Site	South Carolina	* Gregg-Graniteville Library University of South Carolina-Aiken 171 University Parkway Aiken, SC 29801
Oak Ridge Reservation	Tennessee	* DOE Public Reading Room 55 Jefferson Circle Oak Ridge, TN 37831 615/576-1216

Facility	State	Reading Room
K-25 Site, Oak Ridge Reservation	Tennessee	DOE Environmental Information Resource Center (IRC) 105 Broadway Oak Ridge, TN 37830 615/481-0695 Hours: 9:00am - 5:00pm M,W,F 9:00am - 7:00pm T,Th 9:00am - 1:00pm Sat
Oak Ridge National Laboratory, Oak Ridge Reservation	Tennessee	DOE Environmental Information Resource Center (IRC) 105 Broadway Oak Ridge, TN 37830 615/481-0695 Hours: 9:00am - 5:00pm M,W,F 9:00am - 7:00pm T,Th 9:00am - 1:00pm Sat
Y-12 Plant, Oak Ridge Reservation	Tennessee	DOE Environmental Information Resource Center (IRC) 105 Broadway Oak Ridge, TN 37830 615/481-0695 Hours: 9:00am - 5:00pm M,W,F 9:00am - 7:00pm T,Th 9:00am - 1:00pm Sat
Pantex Plant	Texas	Amarillo College Library Lynn Library, DOE Reading Room 2201 S. Washington Amarillo, TX 79109 806/371-5419 Carson County Library Public Reading Room P.O. Box 339 401 Main Street Panhandle, TX 79060
Norfolk Naval Shipyard	Virginia	Portsmouth Public Library 601 Court Street Portsmouth, VA 23704

Facility	State	Reading Room
Hanford Site	Washington	University of Washington Suzzallo Library Box 352900 Seattle, WA 98195 206/685-9855 Gonzaga University, Foley Center E. 502 Boone Spokane, WA 99258 509/328-4220 Portland State University Branford Price Millar Library Science and Engineering Floor SW Harrison and Park Portland, OR 97202 503/725-3690 * U.S. Department of Energy Reading Room Washington State University, Tri-Cities 100 Sprout Rd, Room 130 Richland, WA 99352 509/376-8583 Department of Ecology Washington State Nuclear & Mixed Waste Library 300 Desmond Drive Lacey, WA 98503 (206) 407-7097 U.S. Environmental Protection Agency 1200 6th Ave, HW-070 Seattle, WA 98101 (206) 553-1388

Facility	State	Reading Room
Puget Sound Naval Shipyard	Washington	Kitsap Regional Library (Downtown) 612 5th Street Bremerton, WA 98310 Kitsap Regional Library (Central) 1301 Sylvan Way Bremerton, WA 98310

* Information Repositories that have full sets of the Proposed Site Treatment Plans

INTERNET ADDRESS

http://www.em.doe.gov/ffcabb/ffcamain.html

(K sensitive - must be lowercase)

SITE TREATMENT PLAN SCHEDULE

April 1993	Federal Register Notice of Site Treatment Plans process and proposed schedule
April 1993	Mixed Waste Inventory Report
October 1993	Conceptual Site Treatment Plans
August 1994	Draft Site Treatment Plans
November 1994	National Summary Report of Draft Site Treatment Plans
April 1995	Proposed Site Treatment Plans
June 1995 (approximately)	**(TBD)** National Summary Report of Proposed Site Treatment Plans
October 1995	Consent Orders issued to DOE by Regulatory Agencies (DOE to be in compliance)

6450-01-P

U.S. Department of Energy

Office of Environmental Management

Proposed Site Treatment Plans

AGENCY: U.S. Department of Energy

ACTION: Notice of Availability

SUMMARY: Today's notice announces the availability of the Department of Energy's (DOE) Proposed Site Treatment Plans (Proposed Plans) for treating its mixed radioactive and hazardous waste (mixed waste). As required by the Federal Facility Compliance Act of 1992 (FFCAct or the Act), DOE prepared Proposed Plans for 40 sites in 20 States where DOE stores or generates mixed waste. The Proposed Plans identify the proposed treatment option and related schedule for development of the option for each type of mixed waste. Each DOE site is submitting its Proposed Plan to either its State regulators, or as appropriate, the U.S. Environmental Protection Agency (U.S. EPA). DOE faces increasingly tight funding in the near-term, and anticipates that funding will continue to be constrained in the future. The schedules in the Proposed Plans reflect those constraints. DOE expects, that for some sites, further discussion with the State or Federal regulators concerning priorities will result in modified schedules in the approved Plans. The Proposed Plans are available at each site for review by the public.

Public comments on the Proposed Plans will be considered by the appropriate regulatory agency in reviewing the plan. Additional opportunities for public involvement in the FFCAct process will be offered at many sites by the DOE and State or Federal regulators.

DATES: Written comments on the Proposed Plans should be sent to the recipients identified in Table 1 by July 6, 1995. Written comments received on or before July 6, 1995, will be considered by the State/Federal regulators in reviewing the Proposed Plans.

ADDRESSES: Table 1 lists the recipient to which written comments should be sent on each of the Proposed Plans. Section V of Supplementary Information lists the Reading Rooms where the Proposed Plans may be reviewed.

FOR FURTHER INFORMATION CONTACT: To obtain general information on a site's Proposed Plan or for the address of a Reading Room where Proposed Plans may be viewed, contact the Center for Environmental Management Information at 1-800-7EM-DATA (1-800-736-3282).

SUPPLEMENTARY INFORMATION:

I. Background

Section 3021(b) of the Resource Conservation and Recovery Act (RCRA), as amended by the Federal Facility Compliance Act of 1992 (FFCAct or the Act), requires the DOE to prepare Site Treatment Plans for developing treatment capacities and technologies for mixed waste at each site where the DOE stores or generates mixed waste. Mixed waste is defined by the FFCAct as waste containing both hazardous waste subject to RCRA, and source, special nuclear, or by-product material subject to the Atomic Energy Act of 1954. DOE must submit the Site Treatment Plans to the State or U.S. EPA, as appropriate, for approval, disapproval, or approval with modification.

The FFCAct allows for a six month period during which the regulatory agency reviews the Proposed Plan, makes it available to the public, and approves, disapproves, or modifies the Proposed Plan. Upon approval, the regulatory agency is to issue an Order requiring compliance with the Proposed Plan. Sites that are in compliance with approved Plans and Orders by October 6, 1995, are not subject to fines and penalties related to the storage prohibition of section 3004(j) of RCRA as long as they continue to comply with their Plan and Order.

After consultation with State and Federal regulators, the

DOE published a Federal Register Notice on April 6, 1993 (58 FR 17875), which announced the DOE's plan to submit the Site Treatment Plans in three stages. In the first stage, Conceptual Site Treatment Plans describing a wide range of possible treatment alternatives for each mixed waste at each site were submitted in October 1993. Draft Site Treatment Plans (Draft Plans) narrowing the list of options to one or two identified by each site, with input from the State and Federal regulators, were submitted and announced in the Federal Register on August 31, 1994, (59 FR 44979). The DOE planned to submit Proposed Site Treatment Plans containing the DOE's preferred option for treatment of each mixed waste to the appropriate regulatory agency in February 1995. However, after consultation with the States and U.S. EPA, DOE announced in the Federal Register on February 28, 1995 (60 FR 10840) that the date for submitting the Proposed Plans was revised to no later than April 6, 1995, to allow additional time for further discussions on schedules for developing treatment capacity in light of anticipated funding limitations.

II. Proposed Site Treatment Plans

After submission of the Draft Plans in August 1994, the DOE, with input from the State and Federal regulators, evaluated the treatment options listed in the Draft Plans for the mixed waste at each site. The goal of this evaluation was

to gain a better understanding of the appropriate configuration of treatment systems across the DOE complex, and to eliminate redundancies and inefficiencies among the Draft Plans. Discussions with the regulators led to further refinement of the treatment configuration. The Proposed Plans reflect the results of this evaluation and present the DOE's proposed option for treating each site's mixed waste. The Proposed Plans follow a common format, consisting of a Background Volume and a Compliance Plan Volume. The Background Volume describes the site's treatment options, including the associated technical uncertainties and funding constraints, to the extent they are known. The Compliance Plan Volume identifies the preferred treatment option(s) and associated schedules, and broadly describes provisions for implementing and updating the Proposed Plan once it is approved. The Compliance Plan Volume is intended to contain requirements that will ultimately be enforced through a Consent or Compliance Order. In addition to identifying treatment options, DOE is also evaluating options for disposal of treatment residuals at the request of the States. The Background Volume of each Proposed Plan contains a description of the process for evaluating disposal options.

DOE will prepare a National Summary of the Proposed Site Treatment Plans that compiles the information contained in the individual site Proposed Plans and discusses the

complex-wide treatment configuration. The National Summary Report will describe the process used to develop the Proposed Plans, the treatment options for each mixed waste, technology development activities, and other related topics. The National Summary Report is expected to be available to the public by the end of June 1995.

III. Activities occurring between submission of the Draft Plans and preparation of the Proposed Plans

In February 1995, between submission of the Draft Plans and preparation of the Proposed Plans, the DOE, the State and Federal regulators, and Tribal representatives met to discuss future funding of DOE's Environmental Management Program, its Site Treatment Plans, and strategies for working cooperatively to address anticipated funding limitations.

Because of recent changes in funding projections, the schedules in the Proposed Plans have not yet been fully integrated with those of other DOE sites from a complex-wide perspective. Based on discussions concerning its Fiscal Year 1997 Budget, the DOE anticipates that funding will continue to be constrained. Accordingly, DOE anticipates that after submission of the Proposed Plans and before Proposed Plans and schedules are approved discussions will continue with regulatory agencies and the public concerning the priority of mixed waste treatment and other activities.

IV. Sites no longer preparing Proposed Site Treatment Plans

DOE has prepared Proposed Plans for 40 sites in 20 States. However, because two of the Proposed Plans each address more than one site, only 37 Proposed Plans have been submitted for approval. The Idaho National Engineering Laboratory and the Argonne Laboratory-West are located on a single federally-owned reservation near Idaho Falls, Idaho, and both are addressed within the Proposed Plan submitted by the U.S. DOE Idaho Operations Office. The Oak Ridge National Laboratory, K-25 Site, and Y-12 Plant are all located within the federally-owned Oak Ridge Reservation near Oak Ridge, Tennessee, and are addressed within the Proposed Plan submitted by the U.S. DOE Oak Ridge Operations Office. Additionally, eight sites that initially developed Conceptual or Draft Site Treatment Plans have not submitted Proposed Plans for approval. These sites are: (1) General Electric, Vallecitos Nuclear Center, Vallecitos, California; (2) Sandia National Laboratory, Livermore, California; (3) Pinellas Plant, Largo, Florida; (4) Site A/Plot M Palos Forest Preserve, Cook County, Illinois;
(5) Kansas City Plant, Kansas City, Missouri; (6) Middlesex Sampling Plant, Middlesex, New Jersey; (7) Princeton Plasma Physics Laboratory, Princeton, New Jersey; and (8) the Inhalation Toxicology Research Institute, Albuquerque, New Mexico. These sites are not submitting Proposed Plans for one or more of the following reasons: (1) the site is not

generating or storing mixed waste at this time; (2) the site no longer has mixed waste because the waste has been consolidated at another site or has been treated; (3) the site can already treat the waste it generates on a routine basis in compliance with RCRA; or (4) it has not yet been determined through the environmental restoration process whether mixed waste subject to RCRA land disposal restrictions will be generated.

These eight sites have submitted and will update information on their mixed waste compliance to the regulatory agencies as needed. In the future, if any of these sites generate mixed waste that cannot be treated in compliance with RCRA, the site will propose a Plan for approval that meets the requirements of the Act. In addition, the Hanford Site in Richland, Washington, has signed an agreement with the State of Washington that addresses mixed waste treatment as specified in the FFCAct. Therefore, the Hanford site is not required to prepare a Site Treatment Plan; however, the Hanford Site and its State regulators are actively participating in the FFCAct discussions.

V. Availability of Proposed Site Treatment Plans and Opportunity for Comment

The Proposed Site Treatment Plans for all DOE sites subject to the FFCAct will be available for review at the site's public reading room or at nearby locations by mid-April

1995. To review or request information on a specific Proposed Plan, contact the Center for Environmental Management Information at 1-800-7EM-DATA (1-800-736-3282). Full sets of the Proposed Plans from the 40 sites will also be available for review by mid-April 1995 at the following locations:

U.S. Department of Energy Headquarters Reading Room
Room 1E-190
1000 Independence Avenue, SW
Washington, D.C. 20585
202/586-6025

Center for Environmental Management Information
470 L'Enfant Plaza East, SW
Suite 7110
Washington, D.C. 20024
800/736-3282

Albuquerque Operations Office
National Atomic Museum
P.O. Box 5400
Kirtland Air Force Base
Albuquerque, NM 87185-5400
505/845-6670

Hanford Site
U.S. DOE Reading Room
Washington State University, Tri-Cities
100 Sprout Road
Room 130
Richland, WA 99352
509/376-8583

Idaho National Engineering Laboratory
INEL Technical Library
1776 Science Center Drive
P.O. Box 1625
Idaho Falls, ID 83415-2300
208/526-1185

Lawrence Livermore National Laboratory
DOE Reading Room
1301 Clay Street
Oakland, CA 94612
510/637-1762

Mound Plant
Miamisburg Senior Adult Center Public Reading Room
305 Central Ave.
Miamisburg, OH 45343
513/866-8999

Nevada Test Site
Nevada Test Site Reading Room
3084 South Highland Drive
Las Vegas, NV 89109
702/295-3521

Oak Ridge Reservation
DOE Public Reading Room
55 Jefferson Circle
Oak Ridge, TN 37831
615/576-1216

Rocky Flats Plant
Rocky Flats Environmental Technology Site Reading Room
Front Range Community College Library
3645 West 112th Ave.
Westminster, CO 80030
303/469-4453

Savannah River Site
Gregg-Graniteville Library
University of South Carolina-Aiken
171 University Parkway
Aiken, SC 29801
803/641-3465

Opportunities for public involvement in the FFCAct process will be offered at many sites. To obtain information about these opportunities contact the Center for Environmental Management Information at 1-800-7EM-DATA (1-800-736-3282). Persons interested in receiving the National Summary of the Proposed Site Treatment Plans when available, or other information on the development of the Site Treatment Plans and related activities, should contact the Center for Environmental Management Information. Information about the FFCAct may also be obtained electronically through the

FFCAct Bulletin Board on the Internet at

http://eagle.haz.ornl.gov/ffcabb/ffcamain.html

Issued in Washington, DC on March 30, 1995.

AR

S P Cowan for

~~Jill E. Lytle~~ Stephen COWAN

Acting Deputy Assistant Secretary
for Waste Management
Environmental Management

TABLE 1. Sites preparing Site Treatment Plans and Comment Recipients

State	Facility/Location	Reviewing Agency Recipient of Comments
California	Energy Technology Engineering Center; Canoga Park General Atomics; San Diego Lawrence Livermore National Laboratory; Livermore Lawrence Berkeley Laboratory; Berkeley Laboratory for Energy-Related Health Research; Davis Mare Island Naval Shipyard; Vallejo	Chet Kawashige California Department of Toxic Substances Control P.O. Box 806, Mail Code HQ-10 Sacramento, CA 95812-0806
Colorado	Grand Junction Project Office; Grand Junction Rocky Flats Environmental Technology Site; Golden	Jacqueline Hernandez-Berardini Director, Environmental Integration Group Colorado Department of Public Health and Environment 4300 Cherry Creek Drive South OE-EIG-B2 Denver, CO 80222-1530
Connecticut	Knolls Atomic Power Laboratory; Windsor	Fred Scheuritzel Air Monitoring and Radiation Department of Environmental Protection 79 Elm Street 6th Floor Hartford, CT. 06106-5127

State	Facility/Location	Reviewing Agency Recipient of Comments
Hawaii	Pearl Harbor Naval Shipyard; Honolulu	Tony Terrell U.S. EPA (H41), Region 9 75 Hawthorne Street San Francisco, CA 94105
Idaho	Argonne National Laboratory-West; Idaho Falls Idaho National Engineering Laboratory; Idaho Falls	Brian Monson Bureau Chief, DEQ 1410 North Hilton Street Boise, ID 83706-1290
Illinois	Argonne National Laboratory-East; Argonne	Richard Allen Manager, Office of Environmental Safety Department of Nuclear Safety 1034 Outer Park Drive, 5th floor Springfield, IL 62704
Iowa	Ames Laboratory; Ames	Ken Herstowki U.S. EPA (Iowa Section), Region 7 726 Minnesota Avenue Kansas City, KS 66101
Kentucky	Paducah Gaseous Diffusion Plant; Paducah	Caroline P. Haight Director of Division of Waste Management 14 Rally Road - OMEGA Bldg. Frankfort, KY 40601
Maine	Portsmouth Naval Shipyard; Kittery	Joan Serra U.S. EPA (HRR-CNN3), Region 1 JFK Federal Building Boston, MA 02203

State	Facility/Location	Reviewing Agency Recipient of Comments
Missouri	Weldon Spring Site Remedial Action Project; St. Charles County University of Missouri; Columbia	Dan Tschirgi Missouri Department of Natural Resources P.O. Box 176 Jefferson City, MO 65102-0176
Nevada	Nevada Test Site; Mercury	Paul Liebendorfer Bureau Chief Bureau of Federal Facilities Division of Environmental Protection 123 W. Nye Lane Carson City, NV 89710
New Mexico	Los Alamos National Laboratory; Los Alamos Sandia National Laboratory - New Mexico; Albuquerque	Jim Seubert Environmental Specialist 525 Camino De Los Marquez Santa Fe, NM 87502

State	Facility/Location	Reviewing Agency Recipient of Comments
New York	Brookhaven National Laboratory; Upton Colonie Interim Storage Site; Colonie Knolls Atomic Power Laboratory - Kesselring; West Milton Knolls Atomic Power Laboratory - Schenectady; Niskayuna West Valley Demonstration Project; West Valley	Norm Drapeau Environmental Engineer III 50 Wolf Road Albany, NY 12233
Ohio	Battelle Columbus Laboratories Decommissioning Project; Columbus Fernald Environmental Management Project; Fernald Mound Plant; Miamisburg Portsmouth Gaseous Diffusion Plant; Portsmouth RMI Titanium Inc.; Ashtabula	Thomas Crepeau Manager, Data Management Section Division of Hazardous Waste Management Ohio EPA P.O. Box 1049 Columbus, Ohio 43216-1049
Pennsylvania	Bettis Atomic Power Laboratory; West Mifflin	David Friedman U.S. EPA, Region 3 841 Chestnut Building Philadelphia, PA 19107

State	Facility/Location	Reviewing Agency Recipient of Comments
South Carolina	Charleston Naval Shipyard; Charleston Savannah River Site; Aiken	David Wilson, Jr. Assistant Bureau Chief 8901 Farrow Road Columbia, SC 29223
Tennessee	K-25 Site, Y-12 Plant and Oak Ridge National Laboratory; Oak Ridge Reservation; Oak Ridge	Earl Leming Tennessee Department of Environment and Conservation DOE Oversight Office 761 Emory Road Oak Ridge, TN 37830
Texas	Pantex Plant; Amarillo	Dan Pearson Executive Director Natural Resource Conservation Commission P.O. Box 13087 Austin, Texas 78711-3087
Virginia	Norfolk Naval Shipyard; Norfolk	David Friedman U.S. EPA, Region 3 841 Chestnut Building Philadelphia, PA 19107
Washington	Puget Sound Naval Shipyard; Bremerton	Jeff Breckel Washington-Oregon Interstate Liaison Nuclear and Mixed Waste Management Program Washington Department of Ecology P.O. Box 47600 300 Desmond Drive SE Lacey, WA 98503

WHERE TO SEND COMMENTS ON THE PSTPS?

Facility/Location	Reviewing Agency Recipient of Comments
Energy Technology Engineering Center; Canoga Park, California	Chet Kawashige California Department of Toxic Substances Control P.O. Box 806, Mail Code HQ-10 Sacramento, CA 95812-0806
General Atomics; San Diego, California	Chet Kawashige California Department of Toxic Substances Control P.O. Box 806, Mail Code HQ-10 Sacramento, CA 95812-0806
Lawrence Livermore National Laboratory, Livermore, California	Chet Kawashige California Department of Toxic Substances Control P.O. Box 806, Mail Code HQ-10 Sacramento, CA 95812-0806
Lawrence Berkeley Laboratory, Berkeley, California	Chet Kawashige California Department of Toxic Substances Control P.O. Box 806, Mail Code HQ-10 Sacramento, CA 95812-0806
Laboratory for Energy-Related Health Research; Davis, California	Chet Kawashige California Department of Toxic Substances Control P.O. Box 806, Mail Code HQ-10 Sacramento, CA 95812-0806
Mare Island Naval Shipyard; Vallejo, California	Chet Kawashige California Department of Toxic Substances Control P.O. Box 806, Mail Code HQ-10 Sacramento, CA 95812-0806

Facility/Location	Reviewing Agency Recipient of Comments
Grand Junction Project Office; Grand Junction, Colorado	Jacqueline Hernandez-Berardini Director, Environmental Integration Group Colorado Department of Public Health and Environment 4300 Cherry Creek Drive South OE-EIG-B2 Denver, CO 80222-1530
Rocky Flats Environmental Technology Site; Golden, Colorado	Jacqueline Hernandez-Berardini Director, Environmental Integration Group Colorado Department of Public Health and Environment 4300 Cherry Creek Drive South OE-EIG-B2 Denver, CO 80222-1530
Knolls Atomic Power Laboratory; Windsor, Connecticut	Fred Scheuritzel Air Monitoring and Radiation Department of Environmental Protection 79 Elm Street 6th Floor Hartford, CT 06106-52127
Pearl Harbor Naval Shipyard; Honolulu, Hawaii	Tony Terrell U.S. EPA, Region 9 75 Hawthorne Street San Francisco, CA 94105
Argonne National Laboratory - West; Idaho Falls, Idaho	Brian Monson Bureau Chief, DEQ 1410 North Hilton Street Boise, ID 83706-1290
Idaho National Engineering Laboratory; Idaho Falls, Idaho	Brian Monson Bureau Chief, DEQ 1410 North Hilton Street Boise, ID 83706-1290
Ames Laboratory; Ames, Iowa	Ken Herstowki U.S. EPA (Iowa Section), Region 7 726 Minnesota Avenue Kansas City, KS 66101

Facility/Location	Reviewing Agency Recipient of Comments
Argonne National Laboratory - East; Argonne, Illinois	Richard Allen Manager, Office of Environmental Safety Department of Nuclear Safety 1034 Outer Park Drive, 5th flr Springfield, IL 62704
Paducah Gaseous Diffusion Plant; Paducah, Kentucky	Caroline P. Haight Director of Division of Waste Management 14 Rally Road - OMEGA Bldg. Frankfort, KY 40601
Portsmouth Naval Shipyard; Kittery, Maine	Joan Serra U.S. EPA (HRR-CNN#), Region 1 JFK Federal Building Boston, MA 02203
Weldon Spring Site Remedial Action Project; St. Charles County, Missouri	Dan Tschirgi Missouri Department of Natural Resources P.O. Box 176 Jefferson City, MO 65102-0176
University of Missouri; Columbia, Missouri	Dan Tschirgi Missouri Department of Natural Resources P.O. Box 176 Jefferson City, MO 65102-0176
Nevada Test Site; Mercury, Nevada	Paul Liebendorfer Bureau Chief Bureau of Federal Facilities Division of Environmental Protection 123 W. Nye Lane Carson City, NV 89710
Los Alamos National Laboratory; Los Alamos, New Mexico	Jim Seubert Environmental Specialist 525 Camino Delos Marquez Santa Fe, NM 87502
Sandia National Laboratory - New Mexico; Albuquerque, New Mexico	Jim Seubert Environmental Specialist 525 Camino Delos Marquez Santa Fe, NM 87502

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Colonie Interim Storage Site; Colonie, New York	Norm Drapeau Environmental Engineer III 50 Wolf Road Albany, NY 12233
Knolls Atomic Power Laboratory - Kesselring; West Milton, New York	Norm Drapeau Environmental Engineer III 50 Wolf Road Albany, NY 12233
Knolls Atomic Power Laboratory - Schenectady; Niskayuna, New York	Norm Drapeau Environmental Engineer III 50 Wolf Road Albany, NY 12233
West Valley Demonstration Project; West Valley, New York	Norm Drapeau Environmental Engineer III 50 Wolf Road Albany, NY 12233
Battelle Columbus Laboratories Decommissioning Project; Columbus, Ohio	Thomas Crepeau Manager, Data Management Section Division of Hazardous Waste Management Ohio EPA P.O. Box 1049 Columbus, Ohio 43216-1049
Fernald Environmental Management Project; Fernald, Ohio	Thomas Crepeau Manager, Data Management Section Division of Hazardous Waste Management Ohio EPA P.O. Box 1049 Columbus, Ohio 43216-1049

Facility/Location	Reviewing Agency Recipient of Comments
Mound Plant; Miamisburg, Ohio	Thomas Crepeau Manager, Data Management Section Division of Hazardous Waste Management Ohio EPA P.O. Box 1049 Columbus, Ohio 43216-1049
Portsmouth Gaseous Diffusion Plant; Portsmouth, Ohio	Thomas Crepeau Manager, Data Management Section Division of Hazardous Waste Management Ohio EPA P.O. Box 1049 Columbus, Ohio 43216-1049
RMI Titanium Inc.; Ashtabula, Ohio	Thomas Crepeau Manager, Data Management Section Division of Hazardous Waste Management Ohio EPA P.O. Box 1049 Columbus, Ohio 43216-1049
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Overview of Proposed Site Treatment Plans

U.S. Department of Energy **March 31, 1995**

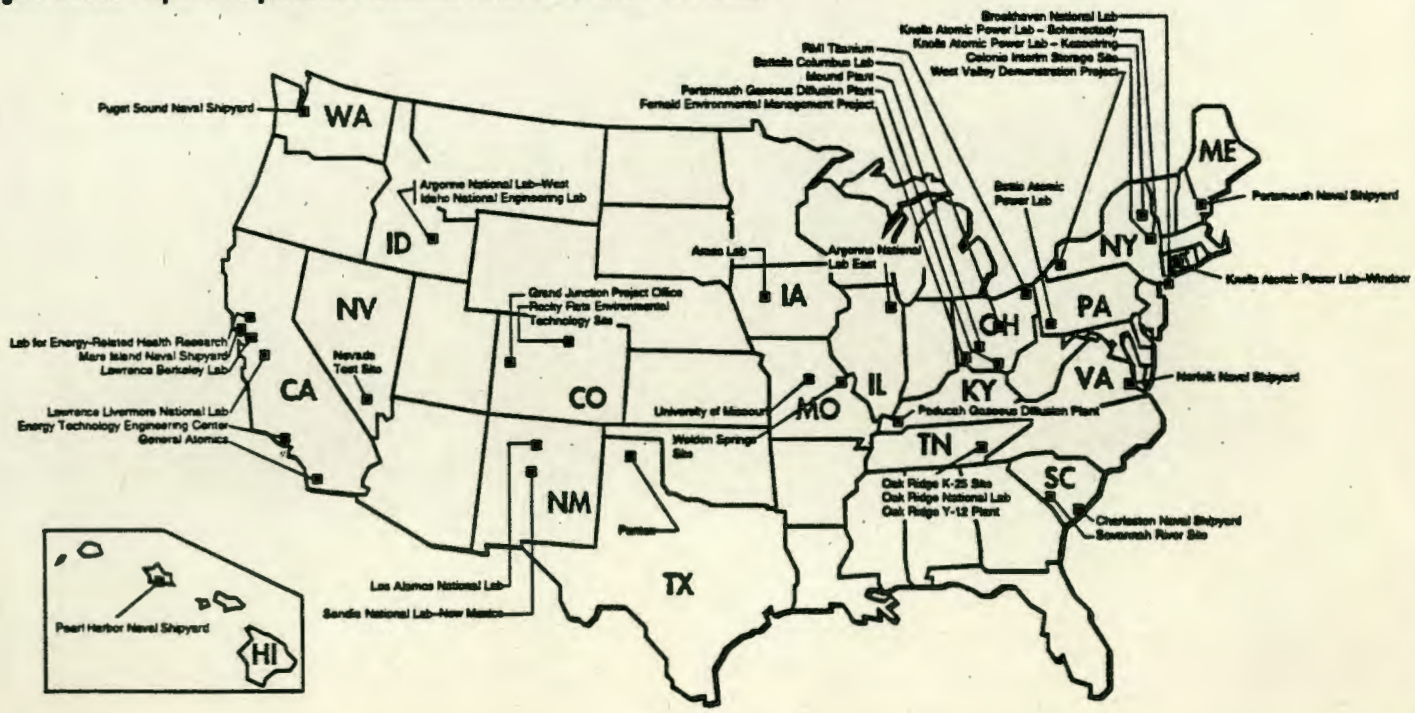
For more than 40 years, the United States has produced materials for nuclear weapons, operated and conducted research on nuclear reactors, and performed various nuclear experiments on reactor equipment. These activities generated both radioactive and hazardous wastes. The Department of Energy (DOE) is faced with the challenge of managing these wastes.

Waste that contains both a hazardous and radioactive component is identified as "mixed waste." Mixed waste can be categorized as high-level waste (HLW), mixed-transuranic waste (MTRU), or mixed low-level waste (MLLW). The management of this waste is particularly challenging to the Department. Currently, there is insufficient capacity, and in some cases a lack of available technologies, to treat these wastes to the standards required by the Resource Conservation and Recovery Act (RCRA).

DOE has prepared Site Treatment Plans to provide mixed waste treatment capacity for 40 sites in 20 States, the locations of which are shown in Figure 1. Since the passage of the FFCAct, the status of mixed waste at nine sites has changed; and, as such, these sites are no longer required to submit Site Treatment Plans. This Overview describes the process used by the sites to prepare the Proposed Site Treatment Plans and summarizes the locations, costs, and schedules for the treatment identified in these Plans.

DOE is facing increasingly uncertain funding and anticipates that funding will be even more constrained in the future. The treatment and facility schedules contained in the Proposed Site Treatment Plans reflect funding constraints as they are currently understood. DOE has invited the regulatory agencies and other stakeholders to participate in developing the Environmental Management program budget and priorities. This interaction will improve the way DOE does business and help to develop an effective Environmental Management program that uses resources wisely.

Figure 1. DOE Prepared Proposed Site Treatment Plans for 40 Sites in 20 States



Printed with soy ink on recycled paper

The Federal Facility Compliance Act

The Federal Facility Compliance Act of 1992 (FFCAct) requires the Secretary of Energy to develop and submit Site Treatment Plans for the development of capacity and technologies for treating mixed waste. A Plan is required for each facility at which DOE stores or generates these wastes. These Plans identify how DOE will provide the necessary mixed waste treatment capacity, including schedules for bringing new treatment facilities into operation.

The FFCAct amends the Resource Conservation and Recovery Act (RCRA), the law that defines requirements for the management of hazardous waste. RCRA contains specific restrictions on the land disposal of hazardous waste, including treatment standards that must be met prior to disposal or storage. In general, DOE sites that store mixed waste are not in compliance with these land disposal restrictions because of the lack of capacity for treating mixed waste.

The FFCAct also subjects Federal facilities to fines and penalties for violations of RCRA. However, DOE is not subject to fines and penalties for violations of the RCRA land disposal restrictions for mixed waste until after October 6, 1995.

DOE has followed a three-phased approach for developing its Site Treatment Plans. The National Governors' Association (NGA), through a cooperative agreement with DOE, has coordinated representatives from 20 States and the U. S. Environmental Protection Agency (EPA) to assist the DOE sites in evaluating the candidate treatment options and developing mixed waste treatment plans.

In the first phase of this process, the Conceptual Site Treatment Plans were submitted by DOE sites to their State/Federal regulating agency in October 1993. They identified the broad range of options available to treat DOE's mixed waste.

In the second phase, the Draft Site Treatment Plans narrowed the range of treatment options and presented the individual sites' proposed options for their mixed waste. These Draft Site Treatment Plans were submitted to the States and EPA in August 1994.

DOE has now completed the third phase and submitted Proposed Site Treatment Plans to the State and Federal regulators in March 1995. DOE submitted these Plans to the state regulatory agency (or to the EPA, as appropriate) for approval, approval with modification, or disapproval. Approved Plans will be enforced through Compliance Orders, which are expected to be issued by the regulating agencies by October 6, 1995.

The Proposed Site Treatment Plans contain the treatment configuration that resulted from discussions among the States, EPA, Tribal governments and the public, and from DOE's evaluation of its treatment needs. Now that these Proposed Site Treatment Plans have been submitted , further discussions will take place to work toward the treatment configuration and schedules that will be enforced through the Compliance Orders.

Overview of the Proposed Site Treatment Plans

This Overview presents a summary of the complex-wide treatment configuration resulting from the options presented in the

Definitions

Mixed Waste: Mixed waste is waste that contains both hazardous waste and radioactive material (source, special nuclear, or by-product material as regulated by the Atomic Energy Act of 1954 [42 U.S.C. 2011 et seq.]). Mixed waste is classified by DOE according to the type of radioactive waste that it contains as either mixed low-level waste (MLLW), or mixed transuranic waste (MTRU). DOE's high-level waste (HLW) is assumed to be mixed waste because it contains hazardous components or exhibits the characteristic of corrosivity.

Low-Level Waste: Low-level waste (LLW) is radioactive material that is not classified as high-level waste, TRU waste, spent fuel, or uranium or thorium mill tailings.

Transuranic Waste: Transuranic waste (TRU) refers to radioactive materials contaminated with greater than 100 nanocuries per gram of alpha-emitting radionuclides with half-lives greater than 20 years.

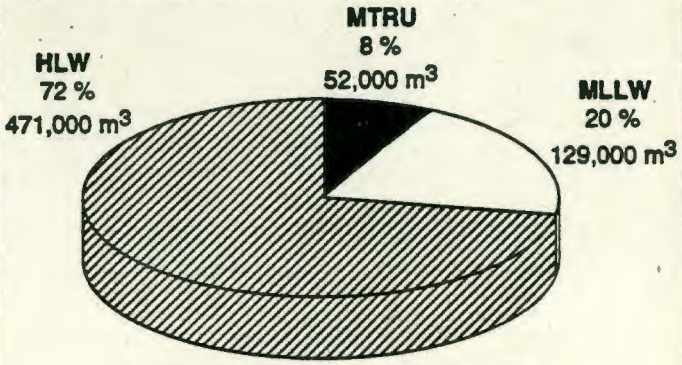
High-Level Waste: High-level waste (HLW) is highly radioactive material containing fission products, traces of uranium and plutonium, and other transuranic elements, that result from chemical processing of spent nuclear fuel.

Life Cycle Cost: The life cycle cost is the sum total of costs estimated to be incurred in the design, development, production, operation, maintenance, support, and final disposition of a major system over its anticipated useful life span.

Constant Dollars: Constant dollars are a unit of cost measurement in which the current value of the dollar is assumed to remain unchanged in the future. Constant dollars in this Overview use fiscal year 1994 as the current dollar value.

oposed Site Treatment Plans. As shown in Figure 2, 72 percent of DOE's mixed waste is high-level waste (HLW), 20 percent is mixed low-level waste (MLLW), and 8 percent is mixed transuranic (MTRU).

Figure 2: Relative Volumes of Mixed Waste Types



Current Inventory Plus Five-Year Projections
in cubic meters (m3)

Although the majority of DOE's mixed waste (51 percent) is located at the Hanford site in Washington, the site did not repare a Site Treatment Plan. Because the Hanford site had an greement in place with its regulators for treating its mixed waste, it was not required by the FFCAct to prepare a Site Treatment Plan. Some sites preparing Site Treatment Plans are, however, proposing Hanford facilities for the treatment of their wastes. Therefore, Hanford wastes and facilities are included in this Overview.

The Proposed Site Treatment Plans are consistent with the current strategies being developed for the treatment of DOE's HLW. HLW is managed at four sites (the Hanford site in Washington, the Savannah River site in South Carolina, the West Valley Demonstration Project in New York, and the Idaho National Engineering Laboratory in Idaho). HLW will only be transported from these sites as a stable solid waste form ready for disposal.

The Proposed Site Treatment Plans are also consistent with DOE's current policy that defense related MTRU waste will be disposed at the Waste Isolation Pilot Plant (WIPP) using the No Migration Variance and will not require treatment to meet the land disposal restriction standards. The Proposed Site Treatment Plans identify the characterization and processing of MTRU waste required to meet the WIPP Waste Acceptance Criteria. The Proposed Site Treatment Plans also include options or treatment of non-defense MTRU waste to meet the land disposal restrictions. However, they recognize the need for modifications if there are variations in the WIPP disposal requirements.

The Draft Site Treatment Plans presented site-preferred MLLW treatment options and, when viewed from a national level, contained redundancies and inefficiencies. In developing the Proposed Site Treatment Plans, an evaluation was performed to determine what accommodations were necessary to blend the configuration presented in the Draft Site Treatment Plans into a national configuration of treatment systems. Because there are existing strategies to address HLW and MTRU, the focus of this evaluation was on identifying the facilities and locations to treat MLLW to land disposal restriction standards. However, specific treatment technologies have not been identified for some of those facilities. Treatment technologies are being evaluated and will be identified through implementation of the Plans and through further discussions with the States, EPA, Tribal governments, and the public.

To facilitate this evaluation, a team was established comprised of site representatives and members of the DOE Headquarters FFCAct Task Force. The team coordinated their efforts with the States through the National Governors' Association to ensure that both the States' and DOE's values were considered in developing the national mixed waste treatment configuration.

The resulting Proposed Site Treatment Plans (plus Hanford) identify on-site treatment for 95 percent of the total mixed waste volume. Over 76 percent of DOE's MLLW would be treated on site, with 98.4 percent of DOE's MLLW being treated in the State where it is stored or generated. Only 2,100 cubic meters of MLLW (1.6 percent of the total DOE MLLW volume) is proposed for treatment out-of-State. The majority of that waste (1,950 cubic meters) would be sent to Idaho and Tennessee. Approximately 22 percent of the total MLLW volume does not yet have a specified treatment location, primarily due to the examination of commercial treatment options, the locations of which have not yet been determined. An additional small volume of waste with an unspecified treatment location requires additional characterization before a treatment location can be identified. Table 1 presents the volumes of MLLW that would be treated in-State, in new or existing systems, and where wastes being shipped out of State would be treated.

The total life-cycle cost for treating mixed waste identified in the Proposed Site Treatment Plans, plus mixed waste treatment at the Hanford site, is estimated at $50.3 billion in fiscal year 1994 constant dollars. Approximately 85 percent of the total cost ($42.7 billion) is for the treatment of HLW. MTRU and MLLW account for 7 percent and 8 percent of the total cost, respectively. These cost estimates do not reflect anticipated savings achieved through improvements in operations. As the

ites identify specific opportunities for improvements, cost stimates will be refined.

The largest new costs resulting from the Proposed Site Treatment Plans are for 15 major new treatment facilities, each with an estimated life cycle cost of greater than $50 million (constant dollars). The Hanford site is also proposing new major treatment facilities; however, these facilities are covered under an existing agreement and do not represent new funding commitments.

Excluding Hanford, the 15 major treatment facilities account for approximately 93 percent of the total cost of proposed new facilities and would treat 82 percent of the mixed waste proposed for treatment in new facilities. Large MLLW facilities are proposed at Idaho National Engineering Laboratory, Rocky Flats, Savannah River, and Lawrence Livermore National Laboratory, plus new commercialized treatment facilities being examined by the Oak Ridge site. Major MTRU facilities are proposed at Oak Ridge, Savannah River, Idaho National Engineering Laboratory/Argonne-West, and Los Alamos National Laboratory. A HLW facility is proposed at the Idaho National Engineering Laboratory.

The current funding assumptions used to prepare the Proposed Site Treatment Plans differ from those used during the first two years of the Site Treatment Plan development process. Under the currently projected funding targets, schedules in the Proposed Site Treatment Plans for some facilities, particularly the largest and most costly facilities, are significantly delayed compared to schedules in the Draft Plans. Treatment schedules for small sites that rely on the capacity at these larger sites

Table 1. Mixed Low-Level Waste Treatment by State
Waste Volumes in Cubic Meters—Current Inventory Plus Five-Year Projections

STATE	DOE WASTE TREATED IN STATE		STATES RECEIVING WASTE FROM OUT-OF-STATE DOE SITES									TOTAL
	In Existing Systems	In New Systems	FL	ID	NM	SC	TN	TX	UT	WA	TREATMENT LOCATION NOT SPECIFIED	
California	1,990.2	83.1		179.3			0.7			33.2	33.3	2,319.8
Colorado	1,887.9	15,428.8		157.2			90.0				0.0*	17,563.9
Connecticut				5.1		3.6				4.3		13.0
Hawaii				0.1			16.0			4.5		20.6
Iowa							0.2			0.0*		0.2
Idaho	633.3	26,002.3									2.2	26,637.8
Illinois	16.2	131.2					3.1					150.5
Kentucky	8.4	85.7					320.5				617.7	1,032.3
Maine						0.0*				2.3		2.3
Missouri	1,960.5						61.5			1.8		2,023.8
New Mexico	56.2	197.4					18.4				401.1	673.1
Nevada			0.3								297.8	298.1
New York	6.0	0.6		30.7		9.3	9.0	1.7	5.7	8.9	95.0	166.9
Ohio	1,249.9	12,744.4		11.5			962.7		8.8	13.3	275.5	15,266.1
Pennsylvania				13.8		2.0						15.8
South Carolina	7,802.9	5,664.5		7.9	0.8						491.8	13,967.9
Tennessee	3,531.4	2,519.1									26,200.9	32,251.4
Texas	70.6	774.8										845.4
Virginia				9.8		2.1						11.9
Washington		15,904.6		19.0			36.0					15,959.6
STATE TOTALS	19,213.5	79,536.5	0.3	434.4	0.8	17.0	1,518.1	1.7	14.5	68.3	28,415.3	129,220.4

* Waste Volume < 0.05 m³

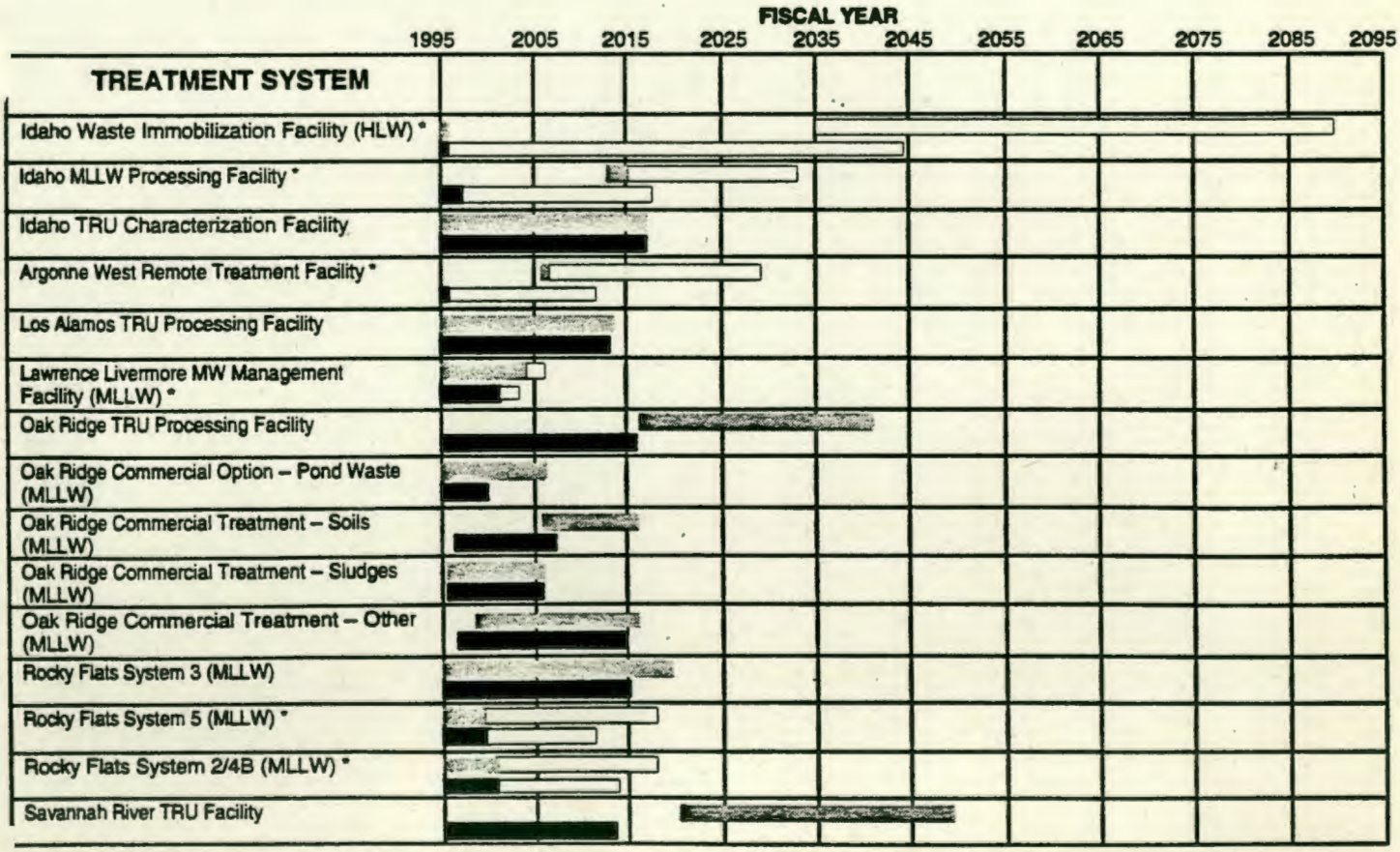
e also affected. DOE is providing its State and Federal regula-rs, as well as other interested parties, an opportunity to participate in prioritizing its Environmental Management activities, including mixed waste treatment, in support of fiscal year 1997 budget development. DOE expects that for some sites further discussion with the State and Federal regulators concerning priorities will result in modified schedules in the approved Plans. For example, schedules in the Proposed Site Treatment Plans for the MTRU treatment facilities are not currently integrated with the schedule for opening and closing WIPP, and discussions with the regulators and the public may result in changes to these schedules.

Figure 3 shows the schedules in the Proposed Site Treatment Plans, constrained by current Waste Management program funding targets, for the 15 major new treatment facilities and the schedules that the sites were considering prior to the projected funding limitations. Although the majority of the schedule changes occur for the major new facilities, schedules for some of the smaller facilities have also been delayed. Excluding Idaho's Waste Immobilization Facility, which would not complete treatment until the year 2088, treatment in the 15 large facilities would be completed by 2050.

For waste for which treatment technology does not exist, the FFCAct requires schedules for research and development, rather than schedules for treatment, to be included in the Plans. Projected post-research and development schedules are shown in Figure 3 for comparison and planning purposes, but are not part of the Proposed Site Treatment Plans, and may change as a result of research and development activities. The Proposed Site Treatment Plans for the following facilities include only schedules for research and development activities:

- Idaho Waste Immobilization Facility
- Idaho MLLW Waste Processing Facility

Figure 3. Proposed Site Treatment Plan Schedules
Comparison of PSTP Schedules with Previous Draft Schedules



* Facilities to treat wastes needing technology development; schedules include R&D only. Other facility schedules include planning, design, construction, and operation.

Proposed Site Treatment Plan Schedule — Previous Draft Schedule — Projected Post-R&D Schedule

- Argonne-West Remote Treatment Facility
- Lawrence Livermore Mixed Waste Management Facility
- Two Rocky Flats Facilities: System 5 and System 2/4B

The Proposed Site Treatment Plans for some additional sites' new facilities will follow this same research and development scheduling approach, but are not among the 15 major new facilities.

Implementation of the Site Treatment Plans

Once the Site Treatment Plans are approved, the FFCAct requires the regulatory agencies to issue Orders requiring compliance with the Plans. In view of its significant funding limitations, DOE intends to seek a process for implementing the Plans that provides accountability, focuses resources on high priority activities, and recognizes fiscal and technical realities. One element of DOE's proposal is to establish enforceable "milestones" only for near-term activities when technical aspects and funding are more certain. The milestones would be reviewed annually with the regulatory agency to consider factors such as funding availability; the latest technical and cost information; site priorities identified through consultations among DOE, egulatory agencies, and stakeholders; new or emerging technologies; nd other relevant factors, and would be revised as appropriate.

Relationship between the FFCAct and Other Initiatives

Concurrent with the FFCAct process, DOE has been pursuing two related major initiatives, the Waste Management Programmatic Environmental Impact Statement (PEIS) and the Baseline Environmental Management Report (BEMR).

DOE is undertaking a programmatic environmental impact analysis of alternative strategies for waste management activities in the Waste Management PEIS. The PEIS, being developed in accordance with the provisions of the National Environmental Policy Act, will include an evaluation of the potential environmental impacts of waste management activities at a broad level. The draft PEIS is scheduled to be released in May 1995 and finalized in late 1995.

The other related major initiative is the Baseline Environmental Management Report. The Report, developed in response to a Congressional requirement, will address the environmental liabilities of the DOE complex and provide an estimated cost or all DOE Environmental Management activities. The Report reflects the activities that DOE field offices currently expect to carry out and alternative cases developed by DOE showing the potential cost variations from four key factors: future land use, scheduling, technology development, and the waste management configuration. The Report was submitted to Congress at the end of March 1995.

The FFCAct efforts address only mixed waste treatment within the Waste Management program. The Programmatic Environmental Impact Statement, although also evaluating the Waste Management program, has a broader perspective in that it addresses five different waste types and treatment, storage, and disposal alternatives for those waste types. The Baseline Environmental Management Report is broader still, addressing all of the Environmental Management programs, including Compliance, Waste Management, Environmental Restoration, Technology Development, and Nuclear Material and Facility Stabilization. By estimating total life-cycle costs for Environmental Management programs, including costs of environmental liabilities and regulatory commitments, the Baseline Environmental Management Report highlights the challenges facing DOE in managing its wastes, cleaning up its contaminated property, considering future land use, and budgeting resources to meet these challenges.

Disposal

Established processes are being implemented by DOE for studying, designing, constructing, and ultimately operating disposal facilities for HLW and MTRU wastes (specifically the HLW repository in Nevada, and the Waste Isolation Pilot Plant in New Mexico).

Although the FFCAct does not require DOE to address disposal of treated mixed waste, both DOE and the States recognized that disposal issues are an integral part of mixed waste management activities. Currently there are no active permitted mixed waste disposal facilities operated by DOE for disposal of residuals from the treatment of MLLW. Through the Site Treatment Plan development process, DOE and State and Federal regulators have formed working groups to evaluate issues related to disposal of treated MLLW. These workgroups have defined criteria to evaluate the sites subject to the FFCAct in order to identify sites that may be suitable for disposal of these residuals. Evaluation of these facilities and determination of potential disposal locations is continuing. A description of the disposal process and its status is included in the individual site Proposed Site Treatment Plans.

Next Steps

The Proposed Site Treatment Plans have been submitted to the State/EPA regulators for their approval, approval with modification, or disapproval. The regulators are expected to issue Orders requiring compliance with the Plans by October 6, 1995. As discussions among DOE, its regulators, Tribal governments, and the public continue, it is expected that modifications and improvements will be made to the treatment configuration and schedules described in the Plans.

DOE intends to continue its dialogue with the State/EPA regulators in working to finalize the Plans, leading to issuance of the Compliance Orders. To ensure that the FFCAct process moves forward and that common goals are attained, DOE anticipates that the following steps will be taken in the near term:

- Determine, with the States, EPA, Tribes, and the public, the priorities of the Environmental Management program at each site.
- Revise facility schedules to reflect these priorities and funding limitations.
- Continue a cooperative process under the FFCAct beyond the release of the Proposed Site Treatment Plans to build on the progress that has been made to date.

In the long-term, the current process should evolve into a new way of doing business that consists of open communication with the regulators on both a local and national level, joint resolution of issues, and working toward common goals. Much work must still be done to address challenging issues such as implementation, funding, prioritization, and equity. However, there is a solid process in place to move forward through cooperation and regular communication between DOE, its regulators, and the public.

General information on a site's Proposed Site Treatment Plan, locations of DOE reading rooms where the Plans may be viewed, and addresses of regulators to whom comments on specific Plans should be sent, can be obtained from the Center for Environmental Management Information at 1-800-7EM-DATA (1-800-736-3282).

Additional information about the FFCAct may also be obtained electronically through the FFCAct Bulletin Board on the Internet at http://eagle.haz.ornl.gov/ffcabb/ffcamain.html.

Comments on DOE's Proposed Site Treatment Plans will be considered by the appropriate regulatory agency in reviewing the Plans. Written comments on the Plans should be sent to the State/Federal recipients by July 6, 1995.

PROPOSED SITE TREATMENT PLAN
FOR
AMES LABORATORY

EXECUTIVE SUMMARY

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Executive Summary

The Federal Facility Compliance Act (FFCAct) requires the Department of Energy (DOE) to prepare Site Treatment Plans (STP of Plan) for how mixed waste, waste containing both hazardous and radioactive components, will be treated. More specifically, the FFCAct requires each individual DOE site that stores or generated mixed waste to develop a STP. Each site's Plan must provide a list or inventory of mixed waste, treatment technology required and the approach or treatment facility that will be used to treat the waste. After it is completed, the sites plan is then submitted to the cognizant state agency or Regional EPA office for review and approval, approval with modification, or disapproval. For Ames Laboratory the Plan is being submitted to EPA Region VII for this review.

This Plan is the result of a three part planning process consisting of Conceptual, Draft and this Proposed Plan. The Conceptual Plan was completed in October 1993. In general, that document provides a mixed waste inventory, identified potential treatment technologies and a range of treatment options. The Draft Plan, completed in August 1994, represented the second stage of the process in which the treatment options identified in the Conceptual Plan were narrowed down to a few or only one preferred option for each waste stream. The Proposed Plan is the final stage of the planning process and provides the DOE proposed option and treatment schedule for each waste stream.

The schedules in this Proposed Plan have not yet been integrated with those of other DOE sites from a technical, complex-wide perspective. Moreover, DOE faces increasingly tight budgets throughout the DOE complex and anticipates that funding will continue to be constrained. The schedules in this and othe Plans reflect those constraints. DOE has asked regulatory agencies to work with DOE and other interested parties at the site and National level to assist DOE in prioritizing its activities. Through this process, DOE expects that some schedules will be revised before the Site Treatment Plans are approved and orders issued.

The Proposed Plan, like the Draft Plan consist of two major sections or volumes: Background Volume and Plan Volume. The Background Volume provide a more extensive discussion while the Plan Volume is a much shorter and focused document.

The Background Volume consists of the following eight sections:

- Section 1. Introduction. This in turn discusses the Purpose and Scope, Site History and Mission, Framework for Developing the Site Treatment Plans, the Proposed Plan Organization and Related Activities.

- Section 2. Methodology. This includes discussion of Assumptions, Preferred Selection Process, Coordination with Regulatory Agencies and Other Stakeholders, Characterization of Mixed Waste and Waste Minimization.

- Section 3. Low Level Mixed Waste Streams. This provides for each mixed waste stream, a discussion of each mixed waste stream, treatment technology needed and the proposed treatment approach.

- Sections 4 and 5. TRU Mixed Waste and High Level Mixed Waste Streams. Provides information on future generation of TRU Mixed Waste. Ames Laboratory does not foresee the generation of any High Level Mixed Waste.

- Section 6. Future Generation of Mixed Waste. Identifies as far as possible, mixed waste not discussed in Section 3 that could result from future restoration or site remediation activities.

- Section 7. Storage Report. Discusses the adequacy of the sites mixed waste storage facilities.

- Section 8. Process for Evaluating Disposal Issues in Support of the STP. This section summarized the overall DOE activity in the area of disposal of mixed waste treatment residuals.

The Plan Volume is shorter and more focused document consisting of three major sections:

- Section 1. Purpose and Scope of the Compliance Plan
- Section 2. Implementation of the STP. Provides administrative language for the plan.
- Sections 3. Low Level Mixed Waste Schedules. For each mixed waste stream, a proposed treatment approach has been identified with milestone and target dates.

The above discussion provided and overview of the FFCAct planning, review and approval process, and format of the Proposed Plan. The important feature of the Plan is the discussion of the waste streams and the proposed treatment approaches. The following Table provides a summary matrix which identifies each waste stream, the proposed treatment approach and current inventory.

Ames Laboratory Waste/Treatment Matrix

Waste Name	Proposed Treatment Approach	Current Inventory, m^3
Analytical Reference Standards	Stabilization Hanford WRAP IIA	0.01
Uranium Sulfate	Neutralization fb Stabilization Oak Ridge CNF	0.01
Acidic Aqueous Liquids	Neutralization fb Stabilization Oak Ridge CNF	0.04

As noted above, Chapter 3 of the Background Volume provides additional detail on each of the items in this matrix.

The Final Stage of the FFCAct is for the regulatory agency to review the Plan. DOE plans to work with the staff of the agency or agencies to openly discuss issues in order to facilitate approval of the plan.

PROPOSED SITE TREATMENT PLAN FOR ARGONNE NATIONAL LABORATORY-EAST

EXECUTIVE SUMMARY

Executive Summary

The Federal Facility Compliance Act requires the Department of Energy (DOE) to prepare Site Treatment Plans for how mixed waste, waste containing both hazardous and radioactive components, will be treated. More specifically, the FFCAct requires each individual DOE site that stores or generates mixed waste to develop a Site Treatment Plan. Each site's Plan must provide a list or inventory of mixed waste, treatment technology required and the approach or treatment facility that will be used to treat the waste. After completed, the site's plan is then submitted to the cognizant state agency or Regional EPA office for review and approval, approval with modification or disapproval. For Argonne National Laboratory-East the Plan is being submitted to the Illinois Department of Nuclear Safety and the Illinois Environmental Protection Agency for their review and approval.

This Plan is the result of a three part planning process consisting of Conceptual, Draft and this Proposed Plan. The Conceptual Plan was completed in October, 1993. In general, that document provided a mixed waste inventory, identified potential treatment technologies and a range of treatment options. The Draft Plan, completed in August 1994, represented the second stage of the process in which the treatment options identified in the Conceptual Plan were narrowed down to a few or only one preferred option for each waste stream. The Proposed Plan is the final stage of the planning process and provides the preferred option and treatment schedule for each waste stream.

The Proposed Plan, like the Draft Plan consists of two major sections or volumes: Background Volume and Plan Volume. The Background Volume provides a more extensive discussion while the Plan Volume is a much shorter and focused document.

The Background Volume consists of the following eight sections:

- Section 1 Introduction. This discusses the Purpose and Scope, Site History and Mission, Framework for Developing the Site Treatment Plans, The Proposed Plan Organization and Related Activities.

- Section 2 Methodology. This includes discussions of Assumptions, Preferred Selection Process, Coordination with Regulatory Agencies and Other Stakeholders, Characterization of Mixed Waste and Waste Minimization.

- Section 3 Low-Level Mixed Waste Stream. This provides for each mixed waste stream, a discussion of each mixed waste stream, treatment technology needed and the preferred option.

- Sections 4 and 5 TRU Mixed Waste and High-Level Mixed Waste Stream. If applicable this provides information on these waste streams.

- Section 6 Future Generation of Mixed Waste. Identifies, as possible, mixed waste not discussed in Section 3 that could result from future restoration or site remediation activities.

- Section 7 Storage Report. Discusses the adequacy of the sites mixed waste storage facilities.

- Section 8 Process for Evaluating Disposal Issues in Support of the Site Treatment Plan. This summarizes the overall DOE activity in the area of disposal of mixed waste treatment residuals.

The Plan Volume is a shorter and more focused document consisting of the following Sections:

- Section 1 Purpose and Scope of the Compliance Plan.

- Section 2 Implementation of the Site Treatment Plan. This provides administrative language for the Plan.

- Section 3 Low-Level Mixed Waste Schedules. For each mixed waste stream and treatment option identifies milestones and target dates.

- TRU Mixed Waste and High-Level Mixed Waste Stream. If applicable, for each mixed waste stream and treatment option identifies milestones and target dates.

The above discussion provided an overview of the FFCAct, planning and Plan review and approval preview and approval process and format of the Proposed Plan. The important feature of the Plan is the discussion of the waste streams and treatment options. The following Table provides a summary matrix which identifies each waste stream, the respective preferred treatment option and inventory.

Site Waste/Treatment Matrix

Waste Name	Proposed Treatment	Inventory
Acidic and MLLW Wastewater with Metals	Neutralization/Precipitation	5.31 m^3
Acidic Wastewater without Metals	Neutralization/Precipitation	1.00 m^3
MLLW Wastewater with Organics	Neutralization/Precipitation	0.07 m^3
Organic Solvents	Wet Oxidation	3.00 m^3
Evaporator/Concentrator Sludges	Vitrification	4.10 m^3

Waste Name	Proposed Treatment	Inventory
Retention Tank Sludges	Vitrification	1.00 m^3
Soil with Metals	Vitrification	0.86 m^3
Glass with Metals	Vitrification	0.04 m^3
Glass with Organics	Vitrification	0.01 m^3
Paint Chips	Macroencapsulation/ Stabilization	1.60 m^3
Inorganic Solids with Chromium	Macroencapsulation/ Stabilization	0.00 m^3
Combustible Solids with Metals	Macroencapsulation/ Stabilization	0.28 m^3
Metal with RCRA Metals and Stainless Steel with Metals	Surface Decontamination	0.62 m^3
Lead Shielding	Surface Decontamination	7.93 m^3
Stored Lead Waste	Surface Decontamination	10.00 m^3
Reactive Alkali Metals	Alkali Metal Passivation	0.53 m^3
Combustible Solids with Organics	TSCA Incinerator (Oak Ridge)	0.51 m^3

Also as noted above, Chapter 3 of the Background Volume provides more detail on each of the items in this matrix.

The Final stage of the FFCAct is for the regulatory agency to review the Plan. DOE plans to be working with the staff of the agency or agencies to discuss issues in order to facilitate approval of the Plan.

EXECUTIVE SUMMARY

The Federal Facility Compliance Act (FFCA) requires the Department of Energy to prepare Site Treatment Plans for how mixed waste, waste containing both hazardous and radioactive components, will be treated. More specifically, the FFCA requires each individual DOE site that stores or generates mixed waste to develop a Site Treatment Plan. Each site's Plan must provide a list or inventory of mixed waste, treatment technology required and the approach or treatment facility that will be used to treat the waste. After completed, the site's Plan is then submitted to the cognizant state agency or Regional EPA office for review and approval, approval with modification, or disapproval. For the Battelle Columbus Laboratories, the Plan is being submitted to the Ohio Environmental Protection Agency for review and approval.

This Plan is a result of a three-part planning process consisting of Conceptual, Draft, and this Proposed Plan. The Conceptual Plan was completed in October 1993. In general, that document provided a mixed waste inventory, identified potential treatment technologies and a range of treatment options. The Draft Plan, completed in August 1994, represented the second stage of the process in which the treatment options identified in the Conceptual Plan were narrowed down to few or only one preferred option for each waste stream. The Proposed Plan is the final stage of the planning process and provides the preferred option and treatment schedule of each waste stream.

The Proposed Plan, like the Draft Plan, consists of two major sections or volumes: Background Volume and Plan Volume. The Background Volume provides a more extensive discussion while the Plan Volume is a much shorter and focused document.

The Background Volume consists of the following eight sections:

- **Section 1. Introduction**. This in turn discussed the Purpose and Scope, Site History and Mission, Framework for Developing the Site Treatment Plans, The Proposed Plan Organization, and Related Activities.

- **Section 2. Methodology**. This includes discussions of Assumptions, Preferred Selection Process, Coordination with Regulatory Agencies and Other Stakeholders, Characterization of Mixed Waste and Waste Minimization.

- **Section 3. Low Level Mixed Waste Stream**. This provides, for each mixed waste stream, a discussion of each mixed waste stream, treatment technology needed, and the preferred option.

- **Sections 4 and 5. TRU Mixed Waste and High Level Mixed Waste Stream**. If applicable, this provides information on these waste streams.

- **Section 6. Future Generation of Mixed Waste**. Identifies, as possible, mixed waste not discussed in Section 3 that could result from future restoration or site remediation activities.

- **Section 7. Storage Report**. Discusses the adequacy of the site's mixed waste storage facilities.

- **Section 8. Process for Evaluating Disposal Issues in Support of the STP**. This summarizes the overall DOE activity in the area of disposal of mixed waste treatment residuals.

The Plan Volume is a shorter and more focused document consisting of the following sections:

- **Section 1. Purpose and Scope of the Compliance Plan**.

- **Section 2. Implementation of the Site Treatment Plan**. This provides administrative language for the Plan.

- **Section 3. Low Level Mixed Waste Schedules**. For each mixed waste stream and option, identifies milestones and target dates.

The above discussion provided an overview of FFCA, planning and plan review, and approval process and format of the Proposed Plan. The important feature of the Plan is the discussion of the waste streams and treatment options. The following table provides a summary matrix which identifies each waste stream, the respective preferred treatment option, and inventory.

Site Waste/Treatment Matrix

Waste Name	Preferred Treatment	Inventory
BC-W001 Inorganic Lab Packs	Fernald Environmental Management Project (FEMP)	$0.042m^3$
BC-W002 Organic Lab Packs	ORNL TSCA Incinerator	$0.511m^3$
BC-W003 Elemental Lead	Hanford WRAP II A	$0.000m^3$
BC-W004 Mercury Contaminated Drainlines	Hanford WRAP II A	$0.000m^3$

Also as noted above, Chapter 3 of the Background Volume provides more detail on each of the items in this matrix.

The final stage of the FFCA is for the regulatory agency to review the Plan. DOE plans to be working with the staff of the agency or agencies to discuss issues in order to facilitate approval of the Plan.

EXECUTIVE SUMMARY FOR THE BETTIS PROPOSED SITE TREATMENT PLAN

The Federal Facility Compliance Act of 1992 (FFCAct) requires the U.S. Department of Energy (DOE) to prepare Site Treatment Plans (STPs) to address treatment of mixed radioactive and hazardous waste for each DOE site which generates and stores mixed waste. These plans are to be submitted to the states (or the U.S. Environmental Protection Agency (EPA) in cases where the state has not been delegated authority to regulate mixed waste) for approval. Owing to the joint Navy/DOE nature of the Naval Nuclear Propulsion Program (NNPP) and pursuant to the legislative history of the FFCAct, NNPP facilities which generate and store mixed waste, including Bettis Atomic Power Laboratory (Bettis), are included in the FFCAct process and have prepared STPs. The Bettis Proposed Site Treatment Plan (PSTP) is being provided to EPA Region III for approval in accordance with the FFCAct.

Bettis generates very small amounts of mixed waste as a result of design and development of Naval nuclear propulsion plants. Bettis currently has approximately 11.73 cubic meters of mixed waste in storage, 24.03 cubic meters of mixed waste undergoing on-site processing, and projects to generate approximately 1201.59 cubic meters over the next five years (4.06 cubic meters of the 1201.59 cubic meters is expected to be placed in storage pending availability of treatment following completion of on-site processing). These amounts represent less than 0.47 percent of the total amount of mixed waste stored and generated at DOE facilities.

As outlined in an April 6, 1993 Federal Register notice (58 FR 17875, as modified in 60 FR 10840, February 28, 1995), the STPs were developed in three stages. Conceptual Site Treatment Plans (CSTPs), which identified the range of potentially feasible treatment options for each mixed waste stream, were completed and submitted to state and EPA regulators in October 1993. Draft Site Treatment Plans (DSTPs), completed and submitted to state and EPA regulators in August 1994, discussed the evaluation of treatment options and identified the site's preferred treatment option for each waste stream. PSTPs, which contain DOE's preferred options developed after evaluation and integration with the site specific options in other sites' DSTPs, are being submitted to state and EPA regulators in March 1995. This three step process was intended to facilitate early interaction with the regulators and other stakeholders to maximize the likelihood that the STPs will ultimately be approved by October 1995 as required by the FFCAct.

Prior to submittal of the DSTPs in August 1994, Bettis determined preferred treatment options for each waste stream by comparing all feasible treatment options (including on-site treatment, use of mobile treatment systems, commercial treatment, and treatment at other DOE facilities) in several fundamental areas (including regulatory compliance, treatment effectiveness, environment/health/safety concerns, cost, and implementability). This approach was used by all sites. Based on the small volumes of Bettis waste streams requiring treatment following completion of on-site processing, these evaluations indicated that off-site

treatment at other DOE facilities is economically and technically preferable to other options. Bettis identified potentially technically capable DOE facilities for each waste stream based on an evaluation of available treatment facility information, then coordinated with the other DOE sites to confirm treatment capability and select preferred options. Several of the preferred treatment options now identified in the PSTP have been changed from those identified in the DSTP based on further evaluations to resolve technical uncertainties and based on the DOE Options Analysis Team (OAT) evaluations to improve the efficiency of the complex wide treatment configuration.

In addition to identifying the proposed treatment option for each Bettis mixed waste stream, the PSTP also identifies proposed schedules for shipment of each waste stream to the selected treatment facility, and proposed arrangements for pre-treatment storage and post-treatment residual management for each waste stream. A single schedule milestone, for shipment to the treatment facility within 18 or 24 months of the start of facility operations, is proposed for each waste stream. Thus, pre-treatment storage on-site at Bettis until the selected treatment facilities are available is proposed. Projected schedules for the start of operation of selected treatment facilities are identified, except where this information was not available for inclusion in the PSTP. The PSTP also proposes commitments to perform additional evaluations and work with the EPA Region III to determine whether alternative treatment options should be selected in the event completion of a targeted treatment facility is delayed (or in the event the initial projected schedule is not acceptable for cases where a projected schedule is not currently available).

The Bettis PSTP proposes that treatment residuals from Bettis mixed waste streams be stored at the treatment sites until DOE complex-wide mixed waste disposal arrangements are established. This proposal is based on the small volumes of Bettis' mixed waste streams, the desire to minimize shipments, and technical concerns associated with different radionuclides and hazardous constituents in the residues. Given the small volumes of Bettis' mixed waste streams, these streams will likely be blended with other waste streams at the treatment sites to facilitate treatment. Therefore, treatment residuals will likely be a mixture of Bettis' and other sites' residuals which may contain different radionuclides and hazardous constituents from the original Bettis mixed waste streams. Bettis and the NNPP consider this technical justification supports having very small volumes of treatment residuals remain at the treatment sites vice being returned to Bettis.

The following table contains a listing of the mixed waste streams and proposed treatment options identified in the Bettis PSTP. The table also identifies the proposed schedule milestones, projected shipping dates, and estimated costs for implementing each proposed treatment option. If the targeted treatment facilities are completed according to currently identified schedules, many of Bettis' mixed waste streams will be treated by 1998, and the total cost for treating all waste streams will be about $576,000. Bettis and the NNPP believe the Bettis PSTP balances the concerns of expeditious completion of treatment, cost/efficiency, minimizing shipments, and minimizing risk/liability, and represents the best overall plan for achieving compliance with Land Disposal Restriction requirements for Bettis mixed waste.

Waste Stream ID #	Waste Stream Name	Current Inventory (M3)	5 Year Projected Inventory (M3)	Preferred Option	Facility Name	Projected Start Date of Facility Operation	Proposed Milestone	Projected Shipping Date	Estimated Cost
BT-W001	Oil Containing Heavy Metals #1	0.21	0.21	SR-S018	Savannah River CIF	Feb. 1996	Start of ops. + 24 months	Feb. 1998	$7,748
BT-W002	Spent Solvent Rags	0.21	0.00	SR-S018	Savannah River CIF	Feb. 1996	Start of ops. + 24 months	Feb. 1998	$7,379
BT-W003	Oil Containing Heavy Metals #2	0.73	0.21	SR-S018	Savannah River CIF	Feb. 1996	Start of ops. + 24 months	Feb. 1998	$13,557
BT-W005	Lead and Chromium Based Paint Chips	0.10	0.10	IN-S004	INEL WERF Stabilization Unit	Jan. 1996	Start of ops. + 18 months	Jul. 1997	$17,723
BT-W007	Solids with Solvents	0.42	0.00	SR-S018	Savannah River CIF	Feb. 1996	Start of ops. + 24 months	Feb. 1998	$8,806
BT-W008	Mercury Containing Waste	0.00	0.02	IN-S128	INEL WEDF Mercury Retort Facility	Apr. 1999	Start of ops. + 18 months	Oct. 2000	$17,382
BT-W009	VOC Contaminated Soil	0.63	0.00	IN-S015	INEL IWPF Incinerator	Not Available	Start of ops. + 18 months	Not Available	$28,849
BT-W010	Waste Oil with Heavy Metals and PCBs	0.26	0.00	IN-S015	INEL IWPF Incinerator	Not Available	Start of ops. + 18 months	Not Available	$19,622
BT-W012	VOC and PCB Contaminated Debris	1.68	0.42	IN-S015	INEL IWPF Incinerator	Not Available	Start of ops. + 18 months	Not Available	$49,203
BT-W013	VOC and PCB Contaminated Soil	0.84	0.00	IN-S015	INEL IWPF Incinerator	Not Available	Start of ops. + 18 months	Not Available	$23,062
BT-W017	Ion Exchange Resin	0.001	0.00	IN-S015	INEL IWPF Incinerator	Not Available	Start of ops. + 18 months	Not Available	$24,082
BT-W018	TCLP Extraction Fluid	0.00	0.001	SR-S018	Savannah River CIF	Feb. 1996	Start of ops. + 24 months	Feb. 1998	$6,972
BT-W019	Elemental Lead	1.16	0.53	PX-S803	INEL Pantex Mobile Macroencapsulation Unit	Not Available	Start of ops. + 18 months	Not Available	$80,789
BT-W020	Brass and Bronze	0.00	0.05	PX-S803	INEL Pantex Mobile Macroencapsulation Unit	Not Available	Start of ops. + 18 months	Not Available	$18,103
BT-W028	VOC and PCB Contaminated Water	2.10	0.63	IN-S015	INEL IWPF Incinerator	Not Available	Start of ops. + 18 months	Not Available	$72,991
BT-W029	VOC Contaminated Sediments/Sludge	0.42	0.63	IN-S015	INEL IWPF Incinerator	Not Available	Start of ops. + 18 months	Not Available	$41,668
BT-W030	VOC Contaminated Debris	0.21	0.21	IN-S015	INEL IWPF Incinerator	Not Available	Start of ops. + 18 months	Not Available	$18,018
BT-W031	VOC and PCB Contaminated Sludge	2.73	1.05	IN-S015	INEL IWPF Incinerator	Not Available	Start of ops. + 18 months	Not Available	$102,819
BT-W033	Ignitable Liquid	0.03	0.00	IN-S015	INEL IWPF Incinerator	Not Available	Start of ops. + 18 months	Not Available	$17,723

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Proposed Site Treatment Plan
Brookhaven National Laboratory

Executive Summary

The Federal Facility Compliance Act (FFCAct) requires the Department of Energy to prepare Site Treatment Plans for how mixed waste, waste containing both hazardous and radioactive components, will be treated. More specifically, the FFCAct requires each individual DOE site that stores or generates mixed waste to develop a Site Treatment Plan. Each site's Plan must provide a list or inventory of mixed waste, treatment technology required and the approach or treatment facility that will be used to treat the waste. After completed, the site's plan is then submitted to the cognizant state agency or Regional EPA office for review and approval, approval with modification or disapproval. For Brookhaven National Laboratory (BNL) the Plan is being submitted to the New York State Department of Environmental Conservation (NYSDEC) for this review.

This Plan is the result of a three part planning process consisting of Conceptual, Draft and this Proposed Plan. The Conceptual Plan was completed in October, 1993. In general, that document provided a mixed waste inventory, identified potential treatment technologies and a range of treatment options. The Draft Plan, completed in August 1994, represented the second stage of the process in which the treatment options identified in the Conceptual Plan were narrowed down to few or only one preferred option for each waste stream. The Proposed Plan is the final stage of the planning process and provides the preferred option and treatment schedule for each waste stream.

It should be noted that schedules in this Proposed Plan have not yet been integrated with those of other DOE sites from a technical, complex-wide perspective. Moreover, DOE faces increasingly tight budgets throughout the DOE complex and anticipates that funding will continue to be constrained. The schedules in this and other Plans reflect those constraints. DOE has asked regulatory agencies to work with DOE and other interested parties at the site and National level to assist DOE in prioritizing its activities. Through this process, DOE expects that some schedules will be revised before the Site Treatment Plans are approved and orders issued.

The Proposed Plan, like the Draft Plan consists of two major sections or volumes: Background Volume and Compliance Plan Volume. The Background Volume provides a more extensive discussion while the Plan Volume is a much shorter and focused document.

The Background Volume consists of the following eight sections:

- Section 1, Introduction - This in turn discusses the Purpose and Scope, Site History and Mission, Framework for Developing the Site Treatment Plans, the Proposed Plan Organization and Related Activities.

- Section 2, Methodology - This includes discussions of Assumptions, Preferred Selection Process, Coordination with Regulatory Agencies and Other Stakeholders, Characterization of Mixed Waste and Waste Minimization.

- Section 3, Low Level Mixed Waste Streams - This provides, for each mixed waste stream, a discussion of each mixed waste stream, treatment technology needed and the preferred option.

- Sections 4 and 5, TRU Mixed Waste and High Level Mixed Waste Stream - If applicable this provides information on these waste streams.

- Section 6, Future Generation of Mixed Waste - Identifies, as possible, mixed waste not discussed in Section 3 that could result from future restoration or site remediation activities.

- Section 7, Storage Report - Discusses the adequacy of the sites mixed waste storage facilities.

- Section 8, Process for Evaluating Disposal Issues in Support of the STP - This summarizes the overall DOE activity in the area of disposal of mixed waste treatment residuals.

The Compliance Plan Volume is a shorter and more focused document consisting of the following Sections:

- Section 1, Purpose and Scope of the Compliance Plan.

- Section 2, Implementation of the Site Treatment Plan - This provides administrative language for the plan.

- Section 3, Low Level Mixed Waste Schedules - For each mixed waste stream and option identifies milestones and target dates.

The above discussion provided an overview of FFCAct, planning and plan review and approval process and format of the Proposed Plan. The important feature of the Plan is the discussion of the waste streams and treatment options. The following Table provides a summary matrix which identifies each waste stream, the respective preferred treatment option and inventory.

SITE Waste/Treatment Matrix

Waste Name	Preferred Treatment	Inventory(m^3)
Ignitable Waste (BN-W001)	Commercial Facility; Incineration	0.57
Corrosive Waste (BN-W002)	On-Site Neutralization	0
Reactive Waste (BN-W003)	Commercial Facility, Stabilization	<0.01
Spent Solvents (BN-W004)	Oak Ridge TSCA Incinerator; Incineration	0.83
Chromium Waste (BN-W005)	Commercial Facility; Stabilization	5.6
Lead Waste (BN-W006)	Commercial Facility, Stabilization	0.2

Mercury Waste (BN-W007)	WROC Amalgamation & Retorting Facilities, INEL	0.015
Acutely Hazardous (BN-W008)	On-Site destruction; Cyanide destruction	<0.01
PCB Waste (BN-W011)	Oak Ridge TSCA Incinerator; Incineration	0.7

Also as noted above, Chapter 3 of the Background Volume provides more detail on each of the items in this matrix.

The Final stage of the FFCAct is for the regulatory agency to review the Plan. DOE plans to work with the staff of the agency or agencies to discuss issues in order to facilitate approval of the plan.

EXECUTIVE SUMMARY FOR THE CNS PROPOSED SITE TREATMENT PLAN

The Federal Facility Compliance Act of 1992 (FFCAct) requires the U.S. Department of Energy (DOE) to prepare Site Treatment Plans (STPs) to address treatment of mixed radioactive and hazardous waste for each DOE site which generates and stores mixed waste. These plans are to be submitted to the states (or the U.S. Environmental Protection Agency (EPA) in cases where the state has not been delegated authority to regulate mixed waste) for approval. Owing to the joint Navy/DOE nature of the Naval Nuclear Propulsion Program (NNPP) and pursuant to the legislative history of the FFCAct, NNPP facilities which generate and store mixed waste, including Charleston Naval Shipyard (CNS), are included in the FFCAct process and have prepared STPs. The CNS Proposed Site Treatment Plan (PSTP) is being provided to the South Carolina Department of Health and Environmental Control for approval in accordance with the FFCAct.

CNS generates very small amounts of mixed waste as a result of maintenance and repair work performed on Naval nuclear propulsion plants. CNS currently has approximately 1.97 cubic meters of mixed waste in storage, and projects to generate approximately 6.80 cubic meters prior to scheduled shipyard closure in April 1996. These amounts represent less than 0.003 percent of the total amounts of mixed waste stored and generated at DOE facilities.

As outlined in an April 6, 1993 Federal Register notice (58 FR 17875 as modified in 60 FR 10840, February 28, 1995), the STPs were developed in three stages. Conceptual Site Treatment Plans (CSTPs), which identified the range of potentially feasible treatment options for each mixed waste stream, were completed and submitted to state and EPA regulators in October 1993. Draft Site Treatment Plans (DSTPs), completed and submitted to state and EPA regulators in August 1994, discussed the evaluation of treatment options and identified the site's preferred treatment option for each waste stream. PSTPs, which contain DOE's preferred options developed after evaluation and integration with the site-specific options in other sites' DSTPs, are being submitted to state and EPA regulators in March 1995. This three step process was intended to facilitate early interaction with the regulators and other stakeholders to maximize the likelihood that the STPs will ultimately be approved by October 1995 as required by the FFCAct.

Prior to submittal of the DSTPs in August 1994, CNS determined preferred treatment options for each waste stream by comparing all feasible treatment options (including on-site treatment, use of mobile treatment systems, commercial treatment, and treatment at other DOE facilities) in several fundamental areas (including regulatory compliance, treatment effectiveness, environment/health/safety concerns, cost, and implementability). This approach was used by all sites. Based on the very small volumes of CNS's waste streams, these evaluations indicated that off-site treatment at other DOE facilities is economically and technically preferable to other options. CNS identified potentially technically capable DOE facilities for each waste stream based on an evaluation of available treatment facility information, then coordinated with the other DOE sites to confirm treatment capability and select preferred options. Several of the preferred treatment options now identified in the PSTP have been changed from those identified in the DSTP based on further evaluations to

resolve technical uncertainties and based on the DOE Options Analysis Team (OAT) evaluations to improve the efficiency of the complex wide treatment configuration.

In addition to identifying the proposed treatment option for each CNS mixed waste stream, the PSTP also identifies proposed schedules for shipment of each waste stream to the selected treatment facility, and proposed arrangements for pre-treatment storage and post-treatment residual management for each waste stream. To support base closure schedules, a single schedule milestone, for shipment to the treatment facility by January 1996, is proposed for each CNS waste stream. Thus, pre-treatment storage at the selected treatment facility is proposed. CNS and the NNPP consider support of base closure is sufficient justification for having very small volumes of CNS waste stored at treatment sites prior to the availability of the selected treatment facilities. Projected schedules for the start of operation of selected treatment facilities are identified, except where this information was not available for inclusion in the PSTP.

The CNS PSTP proposes that treatment residuals from CNS mixed waste streams be stored at the treatment sites until DOE complex-wide mixed waste disposal arrangements are established. This proposal is based on supporting CNS's base closure schedule, the very small volumes of CNS's mixed waste streams, the desire to minimize shipments, and technical concerns associated with different radionuclides and hazardous constituents in the residues. Given the very small volumes of CNS's mixed waste streams, these streams will likely be blended with other waste streams at the treatment sites to facilitate treatment. Therefore, treatment residuals will likely be a mixture of CNS's and other sites' residuals which may contain different radionuclides and hazardous constituents from the original CNS waste streams. CNS and the NNPP consider this technical justification supports having very small volumes of treatment residuals remain at the treatment sites vice being returned to CNS.

The following table contains a listing of the mixed waste streams and proposed treatment options identified in the CNS PSTP. The table also identifies the proposed schedule milestones, projected shipping dates, and estimated costs for implementing each proposed treatment option. If the PSTP proposals are approved, all of CNS's mixed waste streams will be shipped to treatment sites by January 1996 to support the base closure schedule, and the total cost for treating all waste streams will be about $ 188,000. CNS and the NNPP believe the CNS PSTP balances the concerns of expeditious completion of treatment, cost/efficiency, minimizing shipments, and minimizing risk/liability, and represents the best overall plan for achieving compliance with Land Disposal Restriction requirements for CNS mixed waste.

Waste Stream ID #	Waste Stream Name	Current Inventory (M3)	5 Year Projected Inventory (M3)	Preferred Option	Facility Name	Projected Start Date of Facility Operation	Proposed Milestone	Projected Shipping Date	Estimated Cost
CN-W001	Solids Containing Potassium Chromate	0.50	0.60	SR-S018	Savannah River CIF	Feb. 1996	Jan. 1996	Jan. 1996	$6,903
CN-W002	Lead and Lead Bearing Materials	0.32	3.50	PX-S803	INEL Pantex Mobile Macroencapsulation Unit	Not Available	Jan. 1996	Jan. 1996	$85,103
CN-W003	Lead and/or Chromium Based Paint Chips	0.07	0.40	IN-S004	INEL WERF Stabilization Unit	Jan. 1996	Jan. 1996	Jan. 1996	$21,351
CN-W004	Organic Debris Contaminated with Lead and/or Chromium	0.61	0.90	SR-S018	Savannah River CIF	Feb. 1996	Jan. 1996	Jan. 1996	$6,270
CN-W005	Cadmium-Plated Metals	0.00	0.50	PX-S803	INEL Pantex Mobile Macroencapsulation Unit	Not Available	Jan. 1996	Jan. 1996	$24,355
CN-W006	Brass and Bronze	0.47	0.70	PX-S803	INEL Pantex Mobile Macroencapsulation Unit	Not Available	Jan. 1996	Jan. 1996	$39,865
CN-W007	Flammable Organic Debris	0.00	0.20	SR-S018	Savannah River CIF	Feb. 1996	Jan. 1996	Jan. 1996	$4,020

PROPOSED SITE TREATMENT PLAN FOR THE COLONIE INTERIM STORAGE SITE

EXECUTIVE SUMMARY

The Colonie Interim Storage Site (CISS) is a DOE-owned facility located in Colonie, New York. The site is used for interim storage of low-level radioactive waste material generated by former industrial activities. Before the U.S. Department of Energy (DOE) assumed ownership of CISS, waste regulated under the Resource Conservation and Recovery Act (RCRA) was identified and stored at the site under a Part A RCRA Interim Status Permit application filed with the New York State Department of Environmental Conservation (NYSDEC). A RCRA closure plan recently developed by DOE and approved by NYSDEC described methods and schedules for removing all the wastes identified on the Part A permit application and cleaning up the associated RCRA storage areas.

RCRA, Section 3021(b), as amended by Section 105(a) of the Federal Facility Compliance Act (FFCA), requires DOE to develop and submit a plan for identifying and applying technologies and capacities to treat mixed waste generated or stored at DOE facilities. This plan is to be submitted to the appropriate state or the Environmental Protection Agency (EPA). Mixed waste generated at DOE sites must be treated or otherwise managed in accordance with RCRA land disposal restriction standards. After the plan is submitted to NYSDEC, the FFCA requires the recipient regulatory agency to solicit and consider public comments, and approve, approve with modification, or disapprove the plan within six months of receipt. The regulatory agency must then issue an order requiring compliance with the approved plan.

The plan is divided into a background volume and a compliance plan volume. The background volume identifies waste streams for which treatment options are needed, lists the preferred options for treatment, and provides information for the compliance plan volume. The compliance plan volume provides schedules with milestones and target dates for achieving compliance with land disposal restrictions. The compliance plan volume for CISS has not been included at this time because a final remedy for the site has not been selected. After a remedy is selected, the background volume will be amended to reflect any additional waste streams, and the compliance plan volume will be developed for submittal to appropriate regulators. This approach for fulfilling the purposes of the FFCA has been proposed by DOE to NYSDEC, the agency responsible for final approval.

Future waste streams identified as a result of ongoing remedial actions will be characterized for inclusion in the final remedy documentation for the site, expected to be published by September 1995.

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EXECUTIVE SUMMARY

Purpose of the Site Treatment Plan

The Proposed Site Treatment Plan (PSTP) for U.S. Department of Energy Oakland Operations Office (DOE/OAK) mixed wastes at the Energy Technology Engineering Center (ETEC) was written in response to the Federal Facility Compliance Act (FFCAct). The FFCAct requires that site treatment plans (STPs or plans) be developed for facilities at which the U.S. Department of Energy (DOE) generates or stores mixed waste. Mixed waste is defined by the FFCAct as any waste containing both a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA), and source, special nuclear, or by-product material subject to the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.).

On April 6, 1993, DOE published *The Schedule for Submitting Plans for the Treatment of Mixed Waste Generated or Stored at Each Site* in the *Federal Register* (58 *FR* 17875, DOE, 1993a) describing its proposed process for developing the site treatment plans. The plans would be developed in three phases: conceptual, draft, and proposed. The conceptual plan presented known treatment needs, capabilities, and preliminary options for treating the mixed waste. The purpose of the draft plan was to identify site-specific preferred options for treating the mixed waste, or for developing technologies where technologies do not exist or need modification. The proposed plan reflects DOE's preferred options, developed with State input and based on existing available information. The options reflect a "bottom-up" approach and have been evaluated for their potential affects on other DOE sites and the overall DOE program. Changes in the preferred options and associated schedules were also made between the draft and proposed site treatment plans as a result of evaluations from the DOE-wide perspective. These may change further as a result of discussions with affected states and public comments before the approval of the PSTP and issuance by the California Department of Toxic Substances Control (DTSC) of an Order (FFCAct Order) requiring DOE to implement the STP for each site.

The PSTP consists of the Compliance Plan Volume, and the Background Volume and its Appendices. The Compliance Plan Volume contains the enforceable milestones associated with the

preferred treatment options. A more detailed discussion of the preferred treatment options, which is provided for informational purposes only, is presented in the Background Volume and its Appendices.

DOE faces increasingly tight budgets throughout the DOE complex and anticipates that funding will continue to be constrained. The schedules in this and other Plans reflect those constraints. DOE has asked regulatory agencies to work with DOE and other interested parties at the site and National level to assist DOE in prioritizing its activities. Through this process, DOE expects that some schedules will be revised before the Site Treatment Plans are approved and FFCAct Orders issued.

Summary of PSTP Proposed Options

Current inventories of DOE/OAK mixed wastes at ETEC are relatively small, with total quantities not exceeding 10 m^3. The largest fraction of this waste consists of potentially contaminated but currently uncharacterized high efficiency particulate air (HEPA) filters and miscellaneous debris and components resulting from decontamination and decommissioning (D&D) activities. Treatment options selected for characterized mixed low-level wastes include offsite shipment for treatment at Hanford (3.2 m^3) and at the Idaho National Engineering Laboratory (INEL) (0.15 m^3). Several recently identified mixed waste streams are still undergoing characterization.

One potentially mixed transuranic (MTRU) waste stream has been identified, consisting of drain line debris. This waste requires further characterization. MTRU waste streams are expected to be shipped to the Waste Isolation Pilot Project (WIPP); although the schedule dates for shipment are dependent upon development of final WIPP Waste Acceptance Criteria (WAC) and approval of the WIPP No-Migration Variance Petition by the EPA and the State of New Mexico.

Future generation of DOE/OAK mixed wastes at ETEC is not anticipated to occur due to environmental restoration (ER) and D & D activities. If mixed wastes are generated that do not meet RCRA Land Disposal Restriction requirements, they will be characterized and addressed in updates to this plan as required.

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

PROPOSED SITE TREATMENT PLAN

EXECUTIVE SUMMARY

The U.S. Department of Energy (DOE) is required by Section 3021(b) of the Resource Conservation and Recovery Act (RCRA), as amended by the Federal Facility Compliance Act, to prepare Site Treatment Plans describing the development of treatment capacities and technologies for treating mixed waste. Mixed waste is defined by the Federal Facilities Compliance Act as waste containing both a hazardous waste subject to RCRA, and source, special nuclear or by-product material subject to the Atomic Energy Act of 1954 (42 U.S.C. 2011 *et seq.*).

On April 6, 1993, DOE published a Federal Register notice (58 FR 17875) describing the proposed process for developing the Site Treatment Plan in three phases, including a Conceptual Site Treatment Plan, a Draft Site Treatment Plan and a Site Treatment Plan. The Fernald Environmental Management Project (FEMP) Conceptual Site Treatment Plan was submitted to the Ohio Environmental Protection Agency (OEPA) in October 1993. The FEMP Draft Site Treatment Plan was submitted to the OEPA in August 1994. The FEMP Proposed Site Treatment Plan (PSTP) is now being provided to the OEPA, the public, the U.S. Environmental Protection Agency (USEPA), and others for review and comment. Upon approval by the OEPA, this PSTP will be the FEMP Site Treatment Plan to be implemented by DOE.

The PSTP is comprised of two parts: the Background Volume and the Plan Volume. The Background Volume identifies the Preferred Options for mixed waste treatment and provides information supporting the selection of those options, while the Plan Volume shows the schedules for activities necessary to implement the Preferred Options.

The FEMP's PSTP focuses on treatment of mixed low level waste currently in storage (2146 m^3) and similar waste expected to be generated over the next five years (1227 m^3). These quantities are presented by FEMP Preferred Option on the following page. Wastes generated at the FEMP resulted from the facility's original mission to process uranium ore concentrates into high purity uranium metal products. A wide variety of chemical and metallurgical process steps supported manufacturing of uranium metal products for use at other DOE sites. On July 10, 1989, after more than 36 years of manufacturing uranium metal products for U.S. Defense Programs, production operations were suspended to focus site resources on environmental remediation and waste management. The remediation process is being conducted in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Additional requirements for mixed waste management which will impact the FEMP's PSTP are established in the Amended Consent Agreement, signed by USEPA and DOE, and the Consent Decree and its Stipulated Amendment, entered into by the State of Ohio and DOE.

The DOE has a Preferred Option for each mixed low level waste stream identified in the FEMP inventory. All of these FEMP mixed low level waste streams can be treated using an existing technology. The Preferred Options include: use of existing on-site equipment and facilities, emphasis on vendor provided mobile treatment, use of an existing DOE facility (for incineration of liquid waste streams only), and use of a commercial disposal facility.

Any wastes characterized as mixed low level waste in the future will be subject to the management process established in the Proposed Site Treatment Plan. Management options for remediation wastes to be generated will be incorporated into the Plan Volume after they have been finalized through the CERCLA process and are not reflected in this version of the Proposed Site Treatment Plan. Updates to the Site Treatment Plan will reflect remediation wastes as they are generated.

In addition to FEMP mixed wastes, one other DOE facility, Battelle Columbus Laboratory, has identified a small volume of mixed waste to be treated at the FEMP, using a FEMP Preferred Option.

The Proposed Site Treatment Plan reflects the site-specific preferred options developed with stakeholder input and is based on existing available information. As reflected in the Plan Volume, treatment of mixed wastes streams currently in inventory is scheduled to be completed in 2001. However, DOE faces increasingly tight budgets throughout the DOE complex and anticipates that funding will continue to be constrained. DOE has asked regulatory agencies to work with DOE and other interested parties at the site and National level to assist DOE in prioritizing its activities. Through this process, DOE expects that some schedules will be revised before the Site Treatment Plans are approved and orders issued.

Emerging technologies or new facilities that provide opportunities to manage waste more safely, effectively, and at lower cost will be evaluated as they are identified. Working closely with stakeholders during the implementation of the Plan, DOE will continue to evaluate technologies that offer potential advantages in the areas of public acceptance, risk abatement, performance and life cycle cost. Should better technology options be identified, DOE may request a plan modification in accordance with provisions of the implementing Federal Facilities Compliance Act.

FEMP PREFERRED OPTIONS	CURRENT QUANTITY OF WASTE IN m^3	5 YEAR RATE OF WASTE IN m^3
HF Neutralization System	20	0
UNH Treatment System	761	0
Thorium Nitrate Treatment System	22	0
Wastewater Treatment	20	6
Ohio Mobile Stabilization System	391	288
Ohio Mobile Chemical Treatment System	494	72
TSCA Incinerator	394	327
Envirocare*	44	534

* The quantity of mixed low level waste specified for Envirocare does not require treatment prior to disposal. The waste will be shipped from the FEMP to Envirocare for final disposition.

EXECUTIVE SUMMARY

Purpose of the Site Treatment Plan

The Proposed Site Treatment Plan (PSTP) for U.S. Department of Energy Oakland Operations Office (DOE/OAK) mixed wastes at General Atomics (GA) was written in response to the Federal Facility Compliance Act (FFCAct). The FFCAct requires that site treatment plans (STPs or plans) be developed for facilities at which DOE generates or stores mixed waste. Mixed waste is defined by the FFCAct as any waste containing both a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA), and source, special nuclear, or by-product material subject to the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.).

On April 6, 1993, DOE published *The Schedule for Submitting Plans for the Treatment of Mixed Waste Generated or Stored at Each Site* in the *Federal Register* (58 *FR* 17875, DOE, 1993a) describing its proposed process for developing the site treatment plans. The plans would be developed in three phases: conceptual, draft, and proposed. The conceptual plan presented known treatment needs, capabilities, and preliminary options for treating the mixed waste. The purpose of the draft plan was to identify site-specific preferred options for treating the mixed waste, or for developing technologies where technologies do not exist or need modification. The proposed plan reflects DOE's preferred options, developed with State input and based on existing available information. The options reflect a "bottom-up" approach and have been evaluated for their potential affects on other DOE sites and the overall DOE program. Changes in the preferred options and associated schedules were also made between the draft and proposed site treatment plans as a result of evaluations from the DOE-wide perspective. These may change further as a result of discussions with affected states and public comments before the approval of the PSTP and issuance by the California Department of Toxic Substances Control (DTSC) of an Order (FFCAct Order) requiring DOE to implement the STP for each site.

The PSTP consists of the Compliance Plan Volume, and the Background Volume and its Appendices. The Compliance Plan Volume contains the enforceable milestones associated with the

preferred treatment options. A more detailed discussion of the preferred treatment options, which is provided for informational purposes only, is presented in the Background Volume and its Appendices.

DOE faces increasingly tight budgets throughout the DOE complex and anticipates that funding will continue to be constrained. The schedules in this and other Plans reflect those constraints. DOE has asked regulatory agencies to work with DOE and other interested parties at the site and National level to assist DOE in prioritizing its activities. Through this process, DOE expects that some schedules will be revised before the Site Treatment Plans are approved and FFCAct Orders issued.

Summary of PSTP Proposed Options

Current inventories of characterized DOE/OAK mixed wastes to be treated onsite at GA consist of contaminated waste waters (approximately 22 m^3) resulting from the New Production Reactor (NPR) program and Hot Cell decontamination and decommissioning (D&D) activities. Current inventories of DOE/OAK mixed wastes to be treated offsite at Hanford are relatively small, with total quantities not exceeding 2.7 m^3. Several recently identified mixed waste streams are still undergoing characterization.

Future generation of small quantities of DOE/OAK mixed wastes at GA is expected due to continued D&D and research activities. Future mixed wastes generated that do not meet RCRA Land Disposal Restriction requirements will be characterized and addressed in updates to this plan as required.

Executive Summary

The U.S. Department of Energy (DOE) is required by Section 3021(b) of the Resource Conservation and Recovery Act (RCRA) (42 U.S.C. 6921), as amended by Section 105(a) of the Federal Facility Compliance Act (FFCAct) (Public Law 102-386), to prepare Site Treatment Plans (STPs) describing the development of treatment capacities and technologies for treating mixed waste. DOE will submit the plans either to the affected State or the U.S. Environmental Protection Agency (EPA). This Grand Junction Projects Office (GJPO) *Proposed Site Treatment Plan* is the final version of the STP and is being submitted to the Colorado Department of Public Health and Environment (CDPHE) for approval, approval with modification, or disapproval. Copies of this GJPO *Proposed Site Treatment Plan* are also being provided to EPA Region 8 and others for review.

STPs are required for DOE facilities that generate or store mixed waste, defined by the FFCAct as waste containing both a hazardous component subject to RCRA and source, special nuclear, or by-product material subject to the Atomic Energy Act of 1954. On April 6, 1993, DOE published a *Federal Register* notice (58 FR 17875) describing its proposed process for developing the STPs in three phases, including a Conceptual STP, a Draft STP, and a Proposed STP. This GJPO *Proposed Site Treatment Plan* is based on existing available information and reflects DOE's preferred options that were developed with input from CDPHE. The options reflect the "bottom-up" approach and a coordinated effort among DOE Albuquerque Operations Office laboratories and facilities; and these options were evaluated for impacts to the overall DOE-wide program.

The GJPO *Proposed Site Treatment Plan* is organized in two separate, but integrated, volumes. The "Background Volume" provides the detailed discussion of the preferred treatment options for mixed waste at GJPO. It contains information on the waste streams and treatability groups associated with each treatment option and describes uncertainties associated with each option. The "Background Volume" reflects regulator and stakeholder input received during development of the STP. The "Compliance Plan Volume" is a short, focused document that describes the preferred treatment options and associated schedules for mixed waste that is not in compliance with the RCRA Land Disposal Restrictions (LDR) storage prohibition. The "Compliance Plan Volume" presents all information required by the FFCAct. It also describes a mechanism to implement the STP and establishes milestones to be enforced by an implementing order. The "Compliance Plan Volume" references, but does not duplicate, information provided in the "Background Volume" regarding treatment options.

Only five of 15 waste streams discussed in the "Background Volume" are considered to be not in compliance with the LDR storage prohibition; these waste streams are addressed in the "Compliance Plan Volume." Two of those five waste streams are expected to qualify for off-site shipment to a commercial facility for treatment and disposal. On-site neutralization and stabilization treatability studies are proposed for two waste streams totaling only 10.4 kilograms. The remaining waste stream requires further characterization before a treatment technology or disposal facility can be selected.

Schedules are proposed in the "Compliance Plan Volume," in accordance with the FFCAct, for key activities required to accomplish treatment or additional characterization to develop or identify an appropriate treatment option or facility. These schedules presume the need for regulatory agency approval of the GJPO *Proposed Site Treatment Plan* and issuance of an implementing order.

However, DOE–GJPO intends to accelerate, to the extent possible, the schedules for mixed-waste treatment activities to demonstrate LDR compliance at GJPO before it becomes necessary to approve the STP (by no later than October 6, 1995). Should DOE–GJPO be unable to demonstrate LDR compliance before this time, the schedules and milestones in the GJPO *Proposed Site Treatment Plan* will become enforceable through the issuance of an implementing order that will require compliance with the plan.

Hanford Site Executive Summary on the Federal Facilities Compliance Act

U.S. Department of Energy • Richland Operations Office • April 1995

Background

The Department of Energy (DOE) is required by the Federal Facilities Compliance Act (FFCA) to prepare site treatment plans describing the development of the treatment capacities and technologies for treating mixed wastes. The FFCA pertains to two locations in Washington State: the Hanford Site and the Puget Sound Naval Shipyard. The FFCA also requires federal facilities that generate or store mixed waste to prepare and submit mixed waste information for a national inventory report. This report provides site specific information for a Chief Financial Officers' report to Congress.

The Hanford Site has been an integral member of the team that has met all the requirements outlined under the FFCA. The only aspect of the FFCA that hasn't applied to the Hanford Site is the development of a site treatment plan.

Hanford is exempt from development of a site treatment plan because it already has a document that meets the legal requirements specified under the FFCA. Under Hanford's Federal Facility Agreement and Consent Order [commonly called the Tri-Party Agreement (TPA)], DOE-Richland is required to develop a report on land disposal of restricted mixed wastes (LDR Report). The Washington State Department of Ecology (Ecology) and the Environmental Protection Agency (EPA) have agreed that the LDR Report meets the legal requirements of a site treatment plan.

The LDR report and the annual update reports include: waste characterization information, storage data, treatment information, waste reduction information, schedules, and progress made in achieving and maintaining compliance. This report, first issued in 1990, has been updated annually. It is submitted to Ecology and EPA for comments and is a publicly released document for stakeholder review.

Effects on Hanford

Hanford has been the key player in mixed waste storage and treatment throughout the entire DOE complex, and will continue to be so. The Hanford Site contains 51% of all the mixed waste across the DOE complex. Hanford's tank farms currently store and manage 67% of the high level waste stored throughout the complex.

Hanford has been receiving mixed waste from an average of 25 offsite generators per year since 1991. This is allowed by a 1989 permit application and a 1991 Central Waste Complex permit application. Additional offsite waste is to be reviewed as part of the FFCA process. Hanford is the only DOE site that has received mixed wastes from other DOE sites and the Office of Naval Reactors during this time.

Since 1991, Hanford has received submarine reactor compartments totaling 33,000 cubic meters (25,230 cubic yards) and 956 cubic meters (1,250 cubic yards) of other mixed waste.

Hanford is still receiving mixed wastes from approved offsite generators. Receipt of offsite mixed waste will continue at the Hanford Site until September 30, 1995. After that time, only mixed wastes approved under the FFCA consent orders, or submarine reactor compartments, will be received at the Hanford Site. The shipment of offsite mixed waste to Hanford reduces or eliminates for many sites their stored wastes. As a result, some of the sites no longer have mixed waste and are exempt from developing a site treatment plan. The current configuration in the Proposed Site Treatment Plans (PSTP) identify approximately 100 cubic meters (131 cubic yards) from thirteen offsite generators that propose to send mixed waste to Hanford for treatment.

Hanford is also leading the effort to privatize the treatment of its mixed wastes. In regard to the FFCA, the Hanford Site is proposing an innovative treatment methodology to EPA and Ecology. In lieu of building a $140M treatment facility with DOE funds, DOE now proposes to contract with private firms to provide mixed waste treatment services. Designated facilities needing mixed waste treatment would ship their waste directly to the private firm for treatment. The privatization activity is currently under negotiation with the regulators to modify the TPA to allow this option.

In view of recent budget cuts and future budget uncertainties, the DOE faces a significant challenge in maintaining an environmental program that complies with environmental laws. Hanford is working closely with its regulatory agencies and stakeholders to develop less costly and more efficient approaches to achieving compliance while recognizing fiscal constraints.

Hanford is moving forward on several fronts to meet this challenge, including initiatives to improve internal efficiency and productivity, to involve regulatory agencies and stakeholders in a "bottom-up" process for setting environmental management budgets and priorities, and to seek increased flexibility in the appropriation process for our environmental management programs.

Stakeholder Involvement

The DOE and Ecology are committed to a continuing, open dialogue on the site treatment plans. A 90-day joint comment period on both the Puget Sound Naval Shipyard PSTP and Hanford's role in the overall process will run from April 6 through July 5. The agencies will hold two public meetings in Washington State. The first on Tuesday, May 2 in Bremerton, and the second on Wednesday, May 3 in the Tri-Cities.

Summaries of all site treatment plans, and full texts of plans from sites proposing to send wastes to Hanford will be available soon in the Hanford information repositories.

For more information, call Hanford Cleanup toll-free

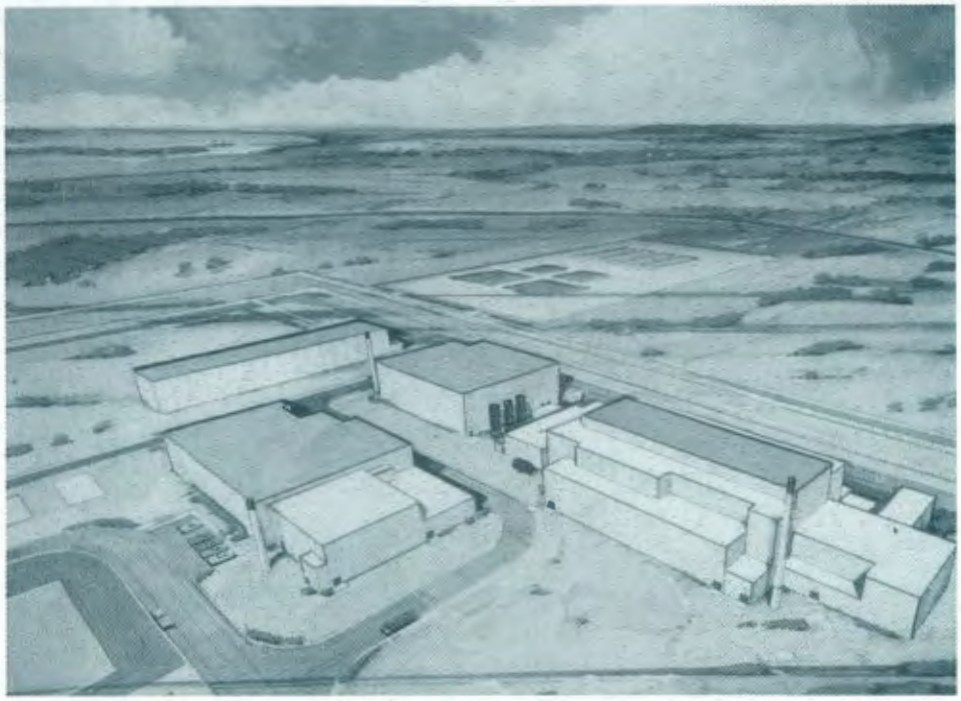
1-800-321-2008

Printed on Recycled Paper

Idaho National Engineering Laboratory

INEL

March 30, 1995



In April Of This Year the Department of Energy (DOE) will be sending the state of Idaho its plan to treat mixed wastes stored at the INEL. The plan will substantially affect the future of the INEL and Eastern Idaho.

Your Comments To The State Of Idaho Could Impact the type of mixed waste treatment and the treatment schedules described in the INEL Proposed Site Treatment Plan.

Idaho National Engineering Laboratory

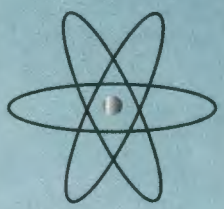
Proposed Site Treatment Plan Summary

WASTE MANAGEMENT
Less is Best

How Is Mixed Waste Generated?

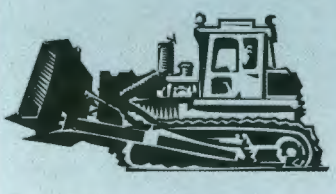
Nuclear Research

U.S. Navy



Energy Programs

National Defense



Cleanup Programs

This summary provides a brief overview of the type and amount of INEL wastes to be treated under the INEL Proposed Site Treatment Plan (or Plan) and offsite wastes that are proposed for treatment at the INEL. The summary describes DOE's responsibilities under the Federal Facility Compliance Act (FFCAct) that prompted development of the INEL Plan. The summary also explains how stakeholders have been involved in the development of the Plan, the upcoming negotiation process with the state of Idaho and how the public can continue to influence future mixed waste treatment activities at the INEL.

What Wastes Are Affected?

The INEL Proposed Site Treatment Plan affects only mixed waste. Mixed waste contains both hazardous waste and radioactive materials. Examples of mixed waste are soil, clothing, and bricks that have been contaminated with radioactive materials and hazardous waste, residues from nuclear fuel processing, and chemicals contaminated with radioactive materials.

How Much Mixed Waste Is At The INEL?

The INEL has approximately 2,676,236 cubic feet (75,784 cubic meters) of mixed waste in storage; about 12.6% of all DOE mixed waste. This amount would fill about 600 railroad boxcars equal to a train about 6 miles long. The mixed waste stored at the INEL was generated during normal operations and cleanup activities. Most of it will remain in storage until appropriate treatment becomes available. Continuing operations, environmental restoration activities, decontamination and decommissioning activities and research activities will generate mixed waste in the future.

Mixed Waste From Other Sites May Come To Idaho

The INEL is one of the larger DOE sites that has or is planning to develop specialized treatment for its own mixed waste. As a result, other sites have requested that small amounts of their mixed waste be treated at the INEL

	INEL Mixed Transuranic Inventory	INEL Mixed Low-Level Inventory	INEL High-Level Inventory	Projected Off site Waste to INEL[2]
Cubic meters in storage[1]	39,165	25,782	10,837	≈ 200 - 500
Number of mixed waste streams	116	218	2	≈ 100 - 200
Cubic meters projected over the next 5 years.	19	870	3,652	≈ 200 - 500

1. Variability in quantities from those listed in the Draft Site Treatment Plan are due to minor generation, waste treatment and continued characterization.

2. Variability in projected offsite waste volumes and numbers reflect uncertainties in offsite treatment needs and impacts from upcoming negotiations.

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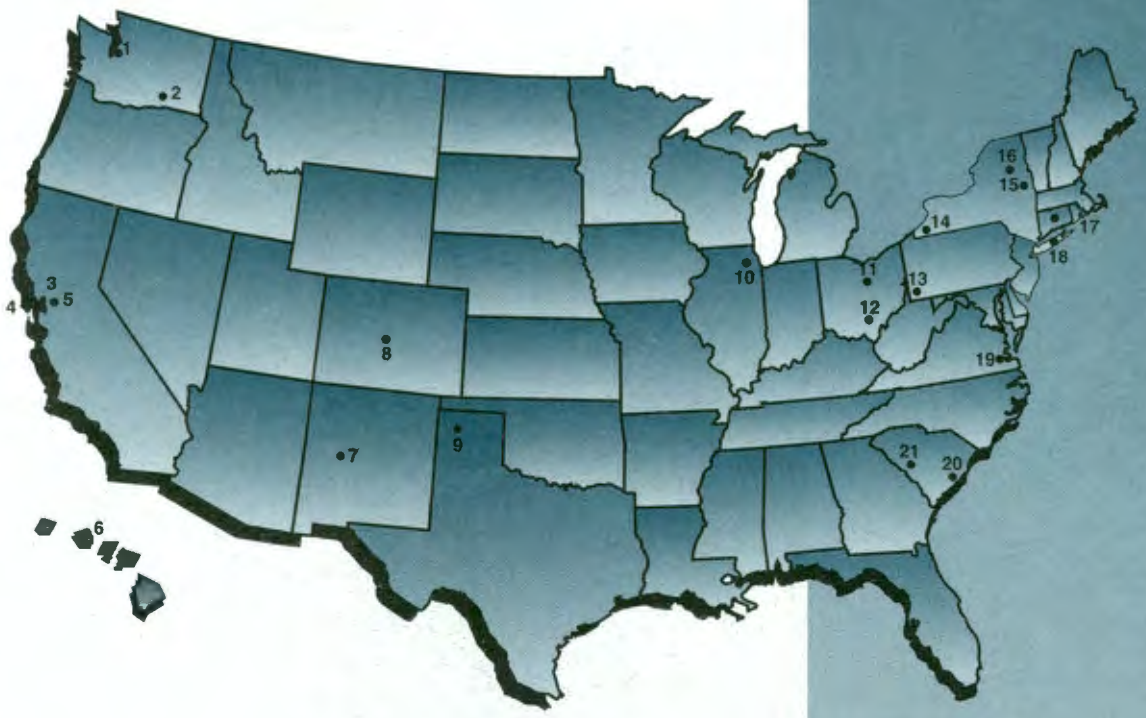
facilities. Meeting these requests will enhance DOE's overall capabilities to effectively treat all types of DOE mixed waste.

The DOE compared its mixed wastes stored and generated at each DOE site with treatment capabilities available, and has proposed that certain wastes go to the major DOE sites that will have the appropriate treatment facilities and technologies. Presently, 21 sites have mixed waste in storage (approximately 200-500 cubic meters) that could be treated at the INEL. These wastes may come to the INEL for treatment based on the outcome of negotiations between the DOE Idaho Operations Office and the state of Idaho. Some INEL waste may also be sent to other DOE sites for treatment. Any waste that is transported to or from the INEL site will meet Department of Transportation and other regulatory agency packaging requirements and will be subject to monitoring and inspection by these agencies.

Receiving Offsite Mixed Waste

The INEL will not receive any offsite waste until the DOE and the state of Idaho are prepared to receive it and an agreement fulfilling the FFCAct is in place.

Sites Requesting Mixed Waste Treatment At The INEL



1. Puget Sound Naval Shipyard - Bremerton, WA
2. Hanford Site - Richland, WA
3. Mare Island Naval Shipyard - Vallejo, CA
4. Lawrence Berkeley Laboratory - Berkeley, CA
5. Lawrence Livermore National Laboratory - Livermore, CA
6. Pearl Harbor Naval Shipyard - Honolulu, HI
7. Inhalation Toxicology Research Institute - Albuquerque, NM
8. Rocky Flats Plant - Golden, CO
9. Pantex Plant - Amarillo, TX
10. Argonne National Laboratory East - Argonne, IL
11. Battelle Columbus Laboratories - Columbus, OH
12. Portsmouth Gaseous Diffusion Plant - Portsmouth, OH
13. Bettis Atomic Power Laboratory - West Miffin, PA
14. West Valley Demonstration Project - West Valley, NY
15. Knolls Atomic Power Laboratory Schenectady - Niskayuna, NY
16. Knolls Atomic Power Laboratory Kesselring - West Milton, NY
17. Knolls Atomic Laboratory Windsor- Windsor, CT
18. Brookhaven National Laboratory - Upton, NY
19. Norfolk Naval Shipyard - Portsmouth, VA
20. Charleston Naval Shipyard - Charleston, SC
21. Savannah River Site - Aiken, SC

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Mixed Waste Site Treatment Plans

are required of facilities where the DOE generates or stores mixed waste.

The Plan Consists Of:

Compliance Plan:

- Schedules
- Milestones

Background Volume:

- Treatment Plan Summary
- Waste Summary
- Related information concerning characterization, storage, and disposal.

What Is The Federal Facility Compliance Act?

The Federal Facility Compliance Act of 1992 (FFCAct) requires the Secretary of Energy to develop Site Treatment Plans for the development of treatment capacity and technologies for treating mixed waste for each facility at which DOE stores or generates these wastes. These plans are to be submitted to respective state regulatory agencies or the U.S. Environmental Protection Agency (EPA) and will identify how DOE will provide the necessary mixed waste treatment capacity.

The FFCAct amends the Resource Conservation and Recovery Act (RCRA), the law that defines requirements for the management of hazardous waste. RCRA contains specific restrictions on the land disposal of hazardous waste, including treatment standards that must be met prior to disposal and storage. In general, DOE sites that store mixed waste are not in compliance with these land disposal restrictions because treatment facilities are not available for mixed waste.

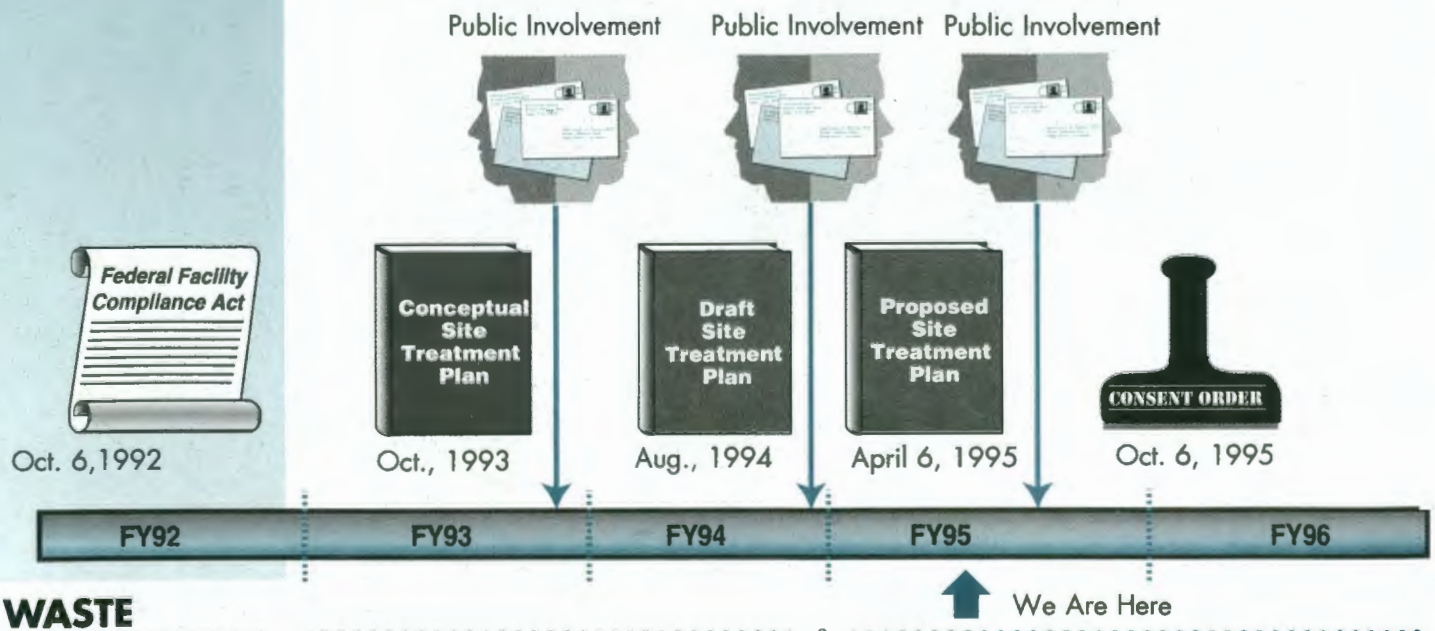
What are the requirements of the FFCAct?

The FFCAct requires DOE to develop treatment plans for its mixed waste. Under the FFCAct, DOE was required to develop a national inventory of mixed waste and provide the inventory to host states and the EPA. Each site including the INEL, was also required to develop a treatment plan identifying the technology and types of facilities needed to treat each mixed waste at their site. DOE followed a three-phased approach for developing each Site Treatment Plan, which includes a Conceptual Plan, a Draft Plan, and a Proposed Plan. These phases are now complete at the INEL. Upon submission of a Plan to the appropriate regulatory agency, the FFCAct requires the recipient agency to solicit and consider public comments, and approve, approve with modification, or disapprove the Plan within six months. Upon approval of a Plan, the agency must issue an order requiring compliance with the approved plan. In this instance, this will be accomplished with a Consent Order issued by the Idaho Department of Health and Welfare.

What Makes Up The INEL Proposed Site Treatment Plan?

The INEL Proposed Site Treatment Plan is made up of a Compliance Plan Volume and a Background Volume. The Plan describes how DOE-Idaho proposes to treat or develop treatment for mixed waste and the schedules to accomplish these tasks. The Plan also contains the information used to develop the Plan.

Where Are We In The Process?



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How Has The Public Contributed?

blic opinion and public comments have been sought while developing each phase of the Site Treatment Plan. DOE's nationwide FFCAct public participation activities provide each DOE site the flexibility to interact directly with local stakeholders while being guided by the overall national effort. This national effort provides a liaison with national stakeholder groups such as the National Governors Association and Tribal Groups.

Public involvement for the FFCAct at the INEL has been integrated into the overall public participation program already in place for environmental restoration and waste management activities.

During development of the INEL Site Treatment Plan, public Focus Group meetings were held on the Conceptual Site Treatment Plan. Briefings on the Draft Site Treatment Plan were held in Twin Falls, Boise, Moscow, and Idaho Falls to solicit blic opinion early in the process. DOE vited community residents, INEL neighbors, the media, elected officials, government agencies and many others to represent a wide spectrum of perspectives including agriculture, environmental protection, health care, and economic development. DOE also briefed the Environmental Management Site-Specific Advisory Board-INEL, a local citizens review board, on the Draft Site Treatment Plan, and responded to its comments and concerns. DOE has regional INEL offices in Pocatello, Twin Falls, and Boise to provide information to local residents on INEL waste management activities. These regional offices currently have copies of the Conceptual Site Treatment Plan, Draft Site Treatment Plan, fact sheets, and other articles explaining the mixed waste planning process and treatment technologies.

How Can I Continue To Participate?

Once DOE submits the INEL Plan to the state of Idaho, the FFCAct requires the state to conduct a public review and comment period before approving the Plan. DOE will work with the state on appropriate paths for involving and informing the public on the Site Treatment Plan progress.

DOE has and continues to seek public opinion on the Site Treatment Plan. Stakeholders are encouraged to contact Bob Starck at the DOE Idaho Operations Office at (208)526-1122 or Rensay Owen at the Idaho Department of Health and Welfare's INEL Extension Office (208)528-2650 for additional information concerning the INEL Proposed Site Treatment Plan or other INEL waste management information.

State Of Idaho Responsibilities

Once the Plan is submitted to the state of Idaho, the state is responsible for soliciting comments on the Plan. The state of Idaho (within six months of DOE's submittal) must:

(1) consult with any affected state (a state that may send waste to or receive waste from the INEL) and the EPA,
(2) publish a notice of availability, and
(3) consider public comment in making its determination to approve, disapprove, or approve with modification, the STP.

Information Locations

The INEL Proposed Site Treatment Plan will be available for review at a number of locations.

Regional INEL Offices

INEL Pocatello Office
(208) 233-4731
1651 Alvin Ricken Dr.
Pocatello, ID 83201

INEL Twin Falls Office
(208) 734-0463
233 2nd Street North,
uite B
win Falls, ID 83301

INEL Boise Office
(208) 334-9572
816 West Bannock,
Suite 306
Boise, ID 83702

Government Document Sections of the Following Libraries:

- INEL Technical Library/DOE Public Reading Room, Idaho Falls
- Shoshone-Bannock Library, Ft. Hall
- Idaho State University Library, Pocatello
- University of Idaho Library, Moscow
- Boise Public Library, Boise
- Twin Falls Public Library, Twin Falls
- Idaho Falls Public Library, Idaho Falls

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How Will We Treat Mixed Waste?

Like non-radioactive hazardous wastes generated and treated by commercial industries, DOE must treat mixed waste to comply with hazardous waste regulations found in the RCRA. Hazardous waste treatment is generally available. However, treatment of mixed waste requires special considerations due to its radioactivity. The INEL Plan identifies existing and planned treatment technologies needed for the mixed waste at the INEL (Exhibit 1). These wastes can be broken into three general categories based on the level and type of radioactivity in the waste.

Mixed Low-Level Waste Treatment

Mixed low-level wastes are very different in their makeup (for example, clothing, metals, liquids, and building materials) and need diverse treatment technologies. Until new facilities are ready, DOE will treat these wastes in existing, relatively small-scale waste management facilities at the INEL.

Existing treatments proposed and considered to treat the mixed low-level wastes at the INEL are found in two main facilities that are currently operating: the Waste Reduction Operations Complex, and the Waste Experimental Reduction Facility. Each facility has several different types of treatment methods to prepare wastes for safe disposal.

The Sodium Processing Facility is available at the INEL and will treat mixed low-level waste containing sodium or other reactive metals.

Future facilities proposed and considered to treat the mixed low-level waste include the Advanced Mixed Waste Treatment Project (including capabilities previously identified as the Idaho Waste Processing Facility). It could replace most of the existing facilities and treat the largest share of mixed low-level waste at the INEL.

Types Of Mixed Waste

Mixed Low-Level Waste - Waste containing both hazardous waste and radioactive materials not otherwise classified below.
(This category also includes waste with less that 100 nanocuries/gram of alpha-emitting transuranic radionuclides with half life greater than 20 years.)

Mixed Transuranic Waste - Waste which contains both hazardous waste and radioactive materials with over 100 nanocuries/gram of alpha-emitting transuranic radionuclides with half life greater than 20 years.

High-Level Waste - Waste which results from the reprocessing of spent nuclear fuel, including solid waste derived from the liquid that contains a combination of transuranic and fission products in quantities requiring permanent isolation.

Mixed waste stored at the INEL until treatment technologies and options are developed

Existing Major Facilities

Waste Reduction Operations Complex (WROC)
is currently operational and will support the treatment of INEL mixed low-level waste. The treatment methods at the WROC are: separation, encapsulation, and chemical treatment.
Proposed Operation Date: 1998

Waste Experimental Reduction Facility (WERF)
is currently operational and will support the treatment of INEL mixed low-level waste. The treatment methods at the WERF are: thermal (controlled air incineration) and, stabilization.
Proposed Operation Date: 1996

New Waste Calcining Facility (NWCF)
is currently operational and will continue to treat liquid high-level waste pending a maintenance turnaround. The treatment methods at the NWCF are: chemical and separation treatment.
Proposed Operation Date: 1997

Sodium Processing Facility (SPF)
is designed to treat mixed low-level waste containing sodium or other reactive metals. The treatment method available is: chemical.
Proposed Operation Date: 1997

Exhibit 1 - Proposed Options

Proposed Major Facilities

Advanced Mixed Waste Treatment Project (Adv. MWTP, formerly known as IWPF) could replace most of the existing facilities and treat the largest share of mixed low-level waste at the INEL. The Adv. MWTP is also intended to treat the Mixed Transuranic Waste requiring more than repackaging before shipment to WIPP. The treatment methods available at the Adv. MWTP are: thermal, decontamination, encapsulation.
Proposed Operation Date: 2024

Remote Treatment Facility (RTF) is another treatment facility which is proposed to treat low-level waste as well as some transuranic waste. The RTF is also being evaluated to determine if it could be used to treat all of the INEL's remote handled mixed waste. The treatment method available is: chemical treatment (others could also be utilized).
Proposed Operation Date: 2021

Waste Immobilization Facility (WIF) is designed to treat the calcined high-level waste. The treatment method available is: thermal treatment, stabilization.
Proposed Operation Date: 2054

Treatment Methods

Thermal Treatment - Includes incineration or destruction of the hazardous component by the application of high temperatures.

Stabilization - Includes solidification by adding cement, grouting the waste, or melting the waste into a glass-like material, immobilizing the hazardous and radioactive materials.

Decontamination - Includes removing the hazardous or radioactive component from the waste by water washing, pellet blasting, or grinding.

Chemical Treatment - Includes the neutralization of the waste or chemical oxidation or reduction.

Separation - Includes the removal of metals, suspended solids or organic materials from liquid waste streams by ion exchange, evaporation, or filtering.

Encapsulation - Includes the containment of individual waste particles in a polymer or asphalt-like matrix.

Environmental impacts, as evaluated in the Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Environmental Impact Statement (SNF & INEL EIS) will also continue to be considered in evaluating options, as will the evaluations in the Programmatic Environmental Management Environmental Impact Statement (EM PEIS) now in progress.

Mixed Transuranic Waste Treatment

According to current national plans, DOE will repackage and ship most of the INEL mixed transuranic waste to the Waste Isolation Pilot Plant (WIPP) in New Mexico for disposal. Future treatment for mixed transuranic waste requiring more than repackaging before shipment to WIPP is also planned at the proposed Advanced Mixed Waste Treatment Project.

High Level Waste Treatment

The liquid and calcined high-level wastes at the INEL need very specialized treatment processes. The New Waste Calcining Facility is planned to continue to treat liquid high-level waste. This process dries the waste, putting it into a solid granular form for continued storage until final treatment is available. Future treatment facilities being evaluated for high-level waste include the Waste Immobilization Facility.

Treatment Optimization

The INEL has commenced a systems analysis effort to optimize and fully integrate treatment and storage options identified in the Proposed Site Treatment Plan. This effort will evaluate existing and proposed treatments to determine if multi-use facilities and treatments can be developed and how the INEL can benefit from commercialization of waste treatment.

How Will The Final Site Treatment Plan Be Developed?

DOE will formally submit the INEL Proposed Site Treatment Plan to the State of Idaho on or before April 6, 1995. The DOE will then begin negotiating a Consent Order with the state of Idaho in the spring of 1995. The consent order will establish an enforceable framework in which DOE will develop and apply treatment or otherwise meet mixed waste regulations for all mixed wastes currently in storage and anticipated to be generated or received in the future.

Summary

Treating the mixed waste stored at the INEL will be a major milestone in complying with state and federal regulations, and increasing protection to human health and our environment. These activities will include operating existing facilities, developing new technologies, and constructing and operating new facilities. Developing the unique ability to treat mixed waste at the INEL has encouraged other DOE sites to request treatment of small amounts of their waste in Idaho; a request that results in enhancing DOE's overall capabilities to effectively treat all types of mixed waste. The INEL Proposed Site Treatment Plan will influence many major INEL and local activities for the next forty years. With an estimated cost of approximately six billion dollars over this period, the future of waste treatment at the INEL will influence the economic stability and well being of Eastern Idaho while resolving our critical waste management issues.

It is critical to DOE that stakeholders keep pace with and understand the activities at the INEL. DOE encourages the public to comment on and become involved with these activities. Our next steps in reaching an approved Site Treatment Plan will include your comments to the state of Idaho. Copies of the Proposed Site Treatment Plan will be made available on or before April 10, 1995, at Regional INEL Outreach Offices located in Twin Falls, Pocatello, and Boise and at the INEL Technical Library in Idaho Falls. If you have comments or questions regarding the Plan or other mixed waste activities at the INEL, please contact the state of Idaho and/or the DOE.

Public Involvement Opportunity

The public can get more information or request a technical briefing by calling the regional INEL Outreach Offices in:

- Pocatello, (208)233-4731
- Twin Falls, (208)734-0463
- Boise, (208)334-9572

or by calling the INEL's toll-free number;

800-708-2680

A Comment Process for the INEL Proposed Site Treatment Plan will be developed by the state of Idaho. Please contact the following for further information:

Rensay Owen, Idaho Department of Health and Welfare, Division of Environmental Quality, (208)528-2650

Bob Starck, Department Of Energy, Idaho Operations Office (208)526-1122

The INEL Site Treatment Plan development is a project of the Department of Energy's Idaho Operations Office.

For More Information, Call: 1-800-708-2680

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PROPOSED SITE TREATMENT PLAN FOR THE KCP

Executive Summary

In October 1992, Congress passed the Federal Facilities Compliance Act (FFCAct), as an amendment to the Solid Waste Disposal Act. One of the principle impacts of the FFCAct was the requirement of the Department of Energy (DOE) to negotiate with the state regulatory agency at each DOE site and develop a plan for the management of the mixed waste. The KCP currently has one drum of mixed waste designated for treatment and disposal at a commercial facility prior to October 6, 1995. The KCP is submitting a contingency plan to the Missouri Department of Natural Resources (MDNR) in the event mixed waste is generated in the future.

This Proposed Site Treatment Plan (PSTP) for the Kansas City Plant (KCP), is the third iteration of this process. This document is formatted consistent with the PSTPs from other DOE sites in order to facilitate comparison of the various plans by stakeholders. The first and second editions of this plan were both submitted to the Missouri Department of Natural Resources (MDNR) and placed in the public library reading room. Both of these actions were conveyed to the public through the KCP's Environmental Newsletter "Focus on the Environment." The KCP has received comments from MDNR on both of the previous publications (Conceptual Site Treatment Plan (CSTP) and the Draft Site Treatment Plan (DSTP)). These comments have been helpful in the development of this proposed version of the final Site Treatment Plan (STP). Similar to the other publications, this PSTP will also be placed in a public reading room and submitted to MDNR. Comments received on this document will be addressed when the final STP is drafted and if appropriate incorporated into the Site Treatment Plan.

In the DSTP, the KCP identified two very small mixed waste streams then present at the KCP. The total inventory of this mixed waste was three standard 55 gallon steel drums. The primary radioactive isotope associated with this waste is Promethium-147 (Pm-147). One of these waste streams, PM-147 Organic, has been transferred to the Grand Junction Project Office (GJPO) for use in a pilot treatability study of a thermal desorption mobile treatment unit (MTU). The remaining mixed waste meets the definition of hazardous debris as published in 40 CFR 268.2, and will be managed through the use of a debris immobilization technology (macroencapsulation), and disposed of at a commercial mixed waste facility, Envirocare of Utah. The stream which is being used in the pilot study at GJPO will be returned to the KCP as two separate waste streams. The radioactive waste portion will be managed as a LLW and the organic liquid portion will be managed as hazardous waste.

The potential exists for the KCP to generate mixed waste in the future by, for example, upset conditions to existing processes or through bringing new processes online from other facilities (new work). The KCP is not expected to generate mixed waste in the future which is unmanageable within the one year storage limitation of 40 CFR 268.50. The KCP will maintain an appropriate storage facility to insure that compliant storage is available and maintained in the event that mixed waste is generated.

The KCP has instituted administrative controls which will help prevent future generation of mixed waste from its current processes. The Department of Energy is currently consolidating its manufacturing facilities. As a result of this consolidation, the KCP will be manufacturing products which have traditionally been fabricated at other facilities. Procedures are in place to review the waste from these new processes before production comes on line. This pre-manufacturing knowledge of the processes will allow the KCP to provide for management of the waste prior to its existence at the plant.

The KCP does not expect to negotiate an administrative order on consent for management of its mixed waste. Current plans are to ship the remaining mixed waste stream to Envirocare in the third quarter of calendar year 1995.

The KCP proposes to establish a contingency plan with MDNR for the management of mixed waste generated through upset conditions or new work which would require storage in excess of the one year storage limitation imposed under 40 CFR 268.50.

EXECUTIVE SUMMARY FOR THE KAPL-KESSELRING PROPOSED SITE TREATMENT PLAN

The Federal Facility Compliance Act of 1992 (FFCAct) requires the U.S. Department of Energy (DOE) to prepare Site Treatment Plans (STPs) to address treatment of mixed radioactive and hazardous waste for each DOE site which generates and stores mixed waste. These plans are to be submitted to the states (or the U.S. Environmental Protection Agency (EPA) in cases where the state has not been delegated authority to regulate mixed waste) for approval. Owing to the joint Navy/DOE nature of the Naval Nuclear Propulsion Program (NNPP) and pursuant to the legislative history of the FFCAct, NNPP facilities which generate and store mixed waste, including Knolls Atomic Power Laboratory-Kesselring Site (KAPL-Kesselring), are included in the FFCAct process and have prepared STPs. The KAPL-Kesselring Proposed Site Treatment Plan (PSTP) is being provided to the New York State Department of Environmental Conservation for approval in accordance with the FFCAct.

KAPL-Kesselring generates very small amounts of mixed waste as a result of research and development for the design and operation of Naval nuclear propulsion plants. KAPL-Kesselring currently has approximately 1.82 cubic meters of mixed waste in storage, 0.45 cubic meters of mixed waste undergoing on-site processing and projects to generate approximately 45.45 cubic meters over the next five years (16.73 cubic meters of the 45.45 cubic meters is expected to be placed in storage pending availability of treatment following completion of on-site processing). These amounts represent less than 0.024 percent of the total amount of mixed waste stored and generated at DOE facilities.

As outlined in an April 6, 1993 Federal Register notice (58 FR 17875 as modified in 60 FR 10840, February 28, 1995), the STPs were developed in three stages. Conceptual Site Treatment Plans (CSTPs), which identified the range of potentially feasible treatment options for each mixed waste stream, were completed and submitted to state and EPA regulators in October 1993. Draft Site Treatment Plans (DSTPs), completed and submitted to state and EPA regulators in August 1994, discussed the evaluation of treatment options and identified the site's preferred treatment option for each waste stream. PSTPs, which contain DOE's preferred options developed after evaluation and integration with the site-specific options in other sites' DSTPs, are being submitted to state and EPA regulators in March 1995. This three step process was intended to facilitate early interaction with the regulators and other stakeholders to maximize the likelihood that the STPs will ultimately be approved by October 1995 as required by the FFCAct.

Prior to submittal of the DSTPs in August 1994, KAPL-Kesselring determined preferred treatment options for each waste stream by comparing all feasible treatment options (including on-site treatment, use of mobile treatment systems, commercial treatment, and treatment at other DOE facilities) in several fundamental areas (including regulatory compliance, treatment effectiveness, environment/health/safety concerns, cost, and implementability). This approach

was used by all sites. Based on the very small volumes of KAPL-Kesselring waste streams requiring treatment following completion of on-site processing, these evaluations indicated that off-site treatment at other DOE facilities is economically and technically preferable to other options. KAPL-Kesselring identified potentially technically capable DOE facilities for each waste stream based on an evaluation of available treatment facility information, then coordinated with the other DOE sites to confirm treatment capability and select preferred options. Several of the preferred treatment options now identified in the PSTP have been changed from those identified in the DSTP based on further evaluations to resolve technical uncertainties and based on the DOE Options Analysis Team (OAT) evaluations to improve the efficiency of the complex wide treatment configuration.

In addition to identifying the proposed treatment option for each KAPL-Kesselring mixed waste stream, the PSTP also identifies proposed schedules for shipment of each waste stream to the selected treatment facility, and proposed arrangements for pre-treatment storage and post-treatment residual management for each waste stream. A single schedule milestone, for shipment to the treatment facility within 18 or 24 months of the start of facility operations, is proposed for each waste stream. Thus, pre-treatment storage on-site at KAPL-Kesselring until the selected treatment facilities are available is proposed. Projected schedules for the start of operation of selected treatment facilities are identified, except where this information was not available for inclusion in the PSTP. The PSTP also proposes commitments to perform additional evaluations and work with the New York State Department of Environmental Conservation to determine whether alternative treatment options should be selected in the event completion of a targeted treatment facility is delayed (or in the event the initial projected schedule is not acceptable for cases where a projected schedule is not currently available).

The KAPL-Kesselring PSTP proposes that treatment residuals from KAPL-Kesselring mixed waste streams be stored at the treatment sites until DOE complex-wide mixed waste disposal arrangements are established. This proposal is based on the very small volumes of KAPL-Kesselring's mixed waste streams, the desire to minimize shipments, and technical concerns associated with different radionuclides and hazardous constituents in the residues. Given the very small volumes of KAPL-Kesselring's mixed waste streams, these streams will likely be blended with other waste streams at the treatment sites to facilitate treatment. Therefore, treatment residuals will likely be a mixture of KAPL-Kesselring's and other sites' residuals which may contain different radionuclides and hazardous constituents from the original KAPL-Kesselring waste streams. KAPL-Kesselring and the NNPP consider this technical justification supports having very small volumes of treatment residuals remain at the treatment sites vice being returned to KAPL-Kesselring.

The following table contains a listing of the mixed waste streams and proposed treatment options identified in the KAPL-Kesselring PSTP. The table also identifies the proposed schedule milestones, projected shipping dates, and estimated costs for implementing each proposed treatment option. If the targeted treatment facilities are completed according to currently identified schedules, the majority of KAPL-Kesselring's mixed waste streams will be

treated by 2001, and the total cost for treating all waste streams will be about $ 565,000. KAPL-Kesselring and the NNPP believe the KAPL-Kesselring PSTP balances the concerns of expeditious completion of treatment, cost/efficiency, minimizing shipments, and minimizing risk/liability, and represents the best overall plan for achieving compliance with Land Disposal Restriction requirements for KAPL-Kesselring mixed waste.

Waste Stream ID #	Waste Stream Name	Current Inventory (M3)	5 Year Projected Inventory (M3)	Preferred Option	Facility Name	Projected Start Date of Facility Operation	Proposed Milestone	Projected Shipping Date	Estimated Cost
KK-W002	Cadmium-Plated Solids	0.02	1.00	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$27,526
KK-W003	Oils	0.00	0.25	SR-S018	Savannah River CIF	Feb. 1996	Start of ops. + 24 months	Feb. 1998	$16,862
KK-W004	Miscellaneous Laboratory Chemicals without Metals	0.00	0.25	IN-S015	INEL IWPF Incinerator	Not Available	Start of ops. + 18 months	Not Available	$24,918
KK-W005	Organic Debris	1.00	0.60	SR-S018	Savannah River CIF	Feb. 1996	Start of ops. + 24 months	Feb. 1998	$23,088
KK-W006	Inorganic Debris and Equipment	0.70	1.00	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$63,626
KK-W007	Inorganic Sludges/Particulates	0.10	0.93	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$38,028
KK-W008	Organic Sludges/Particulates	0.00	0.75	SR-S018	Savannah River CIF	Feb. 1996	Start of ops. + 24 months	Feb. 1998	$17,791
KK-W009	Organic Debris without Metals	0.00	0.40	SR-S018	Savannah River CIF	Feb. 1996	Start of ops. + 24 months	Feb. 1998	$13,584
KK-W010	Elemental Lead (Lead Bricks, Sheets, or Wool)	0.00	1.00	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$63,760
KK-W011	Cutting Oils and Liquids	0.00	0.40	SR-S018	Savannah River CIF	Feb. 1996	Start of ops. + 24 months	Feb. 1998	$15,362
KK-W012	Miscellaneous Laboratory Chemicals	0.00	0.25	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$28,643
KK-W013	Soils	0.00	7.50	IN-S015	INEL IWPF Incinerator	Not Available	Start of ops. + 18 months	Not Available	$90,846
KK-W014	Mercury Contaminated Organics	0.00	0.20	IN-S128	INEL WEDF Mercury Retort Facility	Apr. 1999	Start of ops. + 18 months	Oct. 2000	$23,130
KK-W015	Mercury Contaminated Inorganics	0.00	0.20	IN-S128	INEL WEDF Mercury Retort Facility	Apr. 1999	Start of ops. + 18 months	Oct. 2000	$23,873
KK-W016	Elemental Mercury	0.00	0.001	IN-S128	INEL WEDF Mercury Retort Facility	Apr. 1999	Start of ops. + 18 months	Oct. 2000	$21,645
KK-W017	PCB Contaminated Waste	0.00	2.00	IN-S015	INEL IWPF Incinerator	Not Available	Start of ops. + 18 months	Not Available	$72,135

EXECUTIVE SUMMARY FOR THE KAPL-KNOLLS PROPOSED SITE TREATMENT PLAN

The Federal Facility Compliance Act of 1992 (FFCAct) requires the U.S. Department of Energy (DOE) to prepare Site Treatment Plans (STPs) to address treatment of mixed radioactive and hazardous waste for each DOE site which generates and stores mixed waste. These plans are to be submitted to the states (or the U.S. Environmental Protection Agency (EPA) in cases where the state has not been delegated authority to regulate mixed waste) for approval. Owing to the joint Navy/DOE nature of the Naval Nuclear Propulsion Program (NNPP) and pursuant to the legislative history of the FFCAct, NNPP facilities which generate and store mixed waste, including Knolls Atomic Power Laboratory (KAPL-Knolls), are included in the FFCAct process and have prepared STPs. The KAPL-Knolls Proposed Site Treatment Plan (PSTP) is being provided to New York State Department of Environmental Conservation (NYSDEC) for approval in accordance with the FFCAct.

KAPL-Knolls generates very small amounts of mixed waste as a result of research and development for the design and operation of Naval nuclear propulsion plants. KAPL-Knolls currently has approximately 1.57 cubic meters of mixed waste in storage and 7.58 cubic meters of mixed waste undergoing on-site processing, and projects to generate approximately 38.34 cubic meters over the next five years (28.81 cubic meters of the 38.34 cubic meters is expected to be placed in storage pending availability of treatment following completion of on-site processing.) These amounts represent less than 0.029 percent of the total amount of mixed waste stored and generated at DOE facilities.

As outlined in an April 6, 1993 Federal Register notice (58 FR 17875 as modified in 60 FR 10840, February 28, 1995), the STPs were developed in three stages. Conceptual Site Treatment Plans (CSTPs), which identified the range of potentially feasible treatment options for each mixed waste stream, were completed and submitted to state and EPA regulators in October 1993. Draft Site Treatment Plans (DSTPs), completed and submitted to state and EPA regulators in August 1994, discussed the evaluation of treatment options and identified the site's preferred treatment option for each waste stream. PSTPs, which contain DOE's preferred options developed after evaluation and integration with the site-specific options in other sites' DSTPs, are being submitted to state and EPA regulators in March 1995. This three step process was intended to facilitate early interaction with the regulators and other stakeholders to maximize the likelihood that the STPs will ultimately be approved by October 1995 as required by the FFCAct.

Prior to submittal of the DSTPs in August 1994, KAPL-Knolls determined preferred treatment options for each waste stream by comparing all feasible treatment options (including on-site treatment, use of mobile treatment systems, commercial treatment, and treatment at other DOE facilities) in several fundamental areas (including regulatory compliance, treatment effectiveness, environment/health/safety concerns, cost, and implementability). This approach was used by all sites. Based on the very small volumes of KAPL-Knolls waste streams requiring treatment following completion of on-site processing, these evaluations indicated

that off-site treatment at other DOE facilities is economically and technically preferable to other options. KAPL-Knolls identified potentially technically capable DOE facilities for each waste stream based on an evaluation of available treatment facility information, then coordinated with the other DOE sites to confirm treatment capability and select preferred options. Several of the preferred treatment options now identified in the PSTP have been changed from those identified in the DSTP based on further evaluations to resolve technical uncertainties and based on the DOE Options Analysis Team (OAT) evaluations to improve the efficiency of the complex wide treatment configuration.

In addition to identifying the proposed treatment option for each KAPL-Knolls mixed waste stream, the PSTP also identifies proposed schedules for shipment of each waste stream to the selected treatment facility, and proposed arrangements for pre-treatment storage and post-treatment residual management for each waste stream. A single schedule milestone, for shipment to the treatment facility within 18 or 24 months of the start of facility operations, is proposed for each waste stream. Thus, pre-treatment storage on-site at KAPL-Knolls until the selected treatment facilities are available is proposed. Projected schedules for the start of operation of selected treatment facilities are identified, except where this information was not available for inclusion in the PSTP. The PSTP also proposes commitments to perform additional evaluations and work with NYSDEC to determine whether alternative treatment options should be selected in the event completion of a targeted treatment facility is delayed (or in the event the initial projected schedule is not acceptable for cases where a projected schedule is not currently available).

The KAPK-Knolls PSTP proposes that treatment residuals from KAPL-Knolls mixed waste streams be stored at the treatment sites until DOE complex-wide mixed waste disposal arrangements are established. This proposal is based on the very small volumes of KAPL-Knolls' mixed waste streams, the desire to minimize shipments, and technical concerns associated with different radionuclides and hazardous constituents in the residues. Given the very small volumes of KAPL-Knolls' mixed waste streams, these streams will likely be blended with other waste streams at the treatment sites to facilitate treatment. Therefore, treatment residuals will likely be a mixture of KAPL-Knolls' and other sites' residuals which may contain different radionuclides and hazardous constituents from the original KAPL-Knolls waste streams. KAPL-Knolls and the NNPP consider this technical justification supports having very small volumes of treatment residuals remain at the treatment sites vice being returned to KAPL-Knolls.

The following table contains a listing of the mixed waste streams and proposed treatment options identified in the KAPL-Knolls PSTP. The table also identifies the proposed schedule milestones, projected shipping dates, and estimated costs for implementing each proposed treatment option. If the targeted treatment facilities are completed according to currently identified schedules, the majority of KAPL-Knolls' mixed waste streams will be treated by 2001, and the total cost for treating all waste streams will be about $770,000. KAPL-Knolls and the NNPP believe the KAPL-Knolls PSTP balances the concerns of expeditious completion of treatment, cost/efficiency, minimizing shipments, and minimizing risk/liability, and represents the best overall plan for achieving compliance with Land Disposal Restriction requirements for KAPL-Knolls mixed waste.

Waste Stream ID #	Waste Stream Name	Current Inventory (M3)	5 Year Projected Inventory (M3)	Preferred Option	Facility Name	Projected Start Date of Facility Operation	Proposed Milestone	Projected Shipping Date	Estimated Cost
KA-W001	Miscellaneous Laboratory Chemicals without Metals	0.00	2.00	IN-S015	INEL IWPF Incinerator	Not Available	Start of ops. + 18 months	Not Available	$36,825
KA-W002	Cutting Oils and Liquids	0.00	0.10	SR-S018	Savannah River CIF	Feb. 1996	Start of ops. + 24 months	Feb. 1998	$10,812
KA-W003	Trichloroethylene	0.20	0.10	SR-S018	Savannah River CIF	Feb. 1996	Start of ops. + 24 months	Feb. 1998	$9,792
KA-W005	Asbestos Contaminated with Mercury	0.20	0.00	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$24,477
KA-W006	Freon 113 on Rags	0.40	0.00	SR-S018	Savannah River CIF	Feb. 1996	Start of ops. + 24 months	Feb. 1998	$9,983
KA-W007	Oils	0.23	2.00	SR-S018	Savannah River CIF	Feb. 1996	Start of ops. + 24 months	Feb. 1998	$45,490
KA-W008	Miscellaneous Laboratory Chemicals	0.00	0.60	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$30,051
KA-W009	Organic Debris	0.05	2.00	SR-S018	Savannah River CIF	Feb. 1996	Start of ops. + 24 months	Feb. 1998	$11,795
KA-W010	Inorganic Debris and Equipment	0.021	0.90	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$40,694
KA-W011	Elemental Lead (Lead Bricks, Sheets or Wool)	0.35	1.20	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$134,712
KA-W012	Inorganic Sludges and Particulates	0.00	0.60	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$31,038
KA-W013	Organic Debris without Metals	0.00	0.40	SR-S018	Savannah River CIF	Feb. 1996	Start of ops. + 24 months	Feb. 1998	$13,663
KA-W014	Organic Sludges and Particulates	0.00	0.40	SR-S018	Savannah River CIF	Feb. 1996	Start of ops. + 24 months	Feb. 1998	$16,983
KA-W015	Soils	0.00	16.80	IN-S015	INEL IWPF Incinerator	Not Available	Start of ops. + 18 months	Not Available	$218,817
KA-W016	Transuranic Debris	0.00	0.18	WP-S001	Waste Isolation Pilot Project	Dec. 1997	Jun. 1999	Jun. 1999	TBD
KA-W018	Mercury Contaminated Organics	0.00	1.00	IN-S128	INEL WEDF Mercury Retort Facility	Apr. 1999	Start of ops. + 18 months	Oct. 2000	$46,560
KA-W019	Mercury Contaminated Inorganics	0.10	0.30	IN-S128	INEL WEDF Mercury Retort Facility	Apr. 1999	Start of ops. + 18 months	Oct. 2000	$25,440
KA-W020	Elemental Mercury	0.02	0.08	IN-S128	INEL WEDF Mercury Retort Facility	Apr. 1999	Start of ops. + 18 months	Oct. 2000	$39,960
KA-W021	PCB Contaminated Waste	0.00	0.15	IN-S015	INEL IWPF Incinerator	Not Available	Start of ops. + 18 months	Not Available	$22,471

EXECUTIVE SUMMARY FOR THE KAPL – WINDSOR PROPOSED SITE TREATMENT PLAN

The Federal Facility Compliance Act of 1992 (FFCAct) requires the U.S. Department of Energy (DOE) to prepare Site Treatment Plans (STPs) to address treatment of mixed radioactive and hazardous waste for each DOE site which generates and stores mixed waste. These plans are to be submitted to the states (or the U.S. Environmental Protection Agency (EPA) in cases where the state has not been delegated authority to regulate mixed waste) for approval. Owing to the joint Navy/DOE nature of the Naval Nuclear Propulsion Program (NNPP) and pursuant to the legislative history of the FFCAct, NNPP facilities which generate and store mixed waste, including Knolls Atomic Power Laboratory-Windsor Site (KAPL-Windsor), are included in the FFCAct process and have prepared STPs. The KAPL-Windsor Proposed Site Treatment Plan is being provided to the State of Connecticut Department of Environmental Protection for approval in accordance with the FFCAct.

KAPL-Windsor generates very small amounts of mixed waste as a result of research and development for the design and operation of Naval nuclear propulsion plants. KAPL-Windsor currently has 0.0 cubic meters of mixed waste in storage, 0.28 cubic meters of mixed waste undergoing on-site processing and projects to generate approximately 50.60 cubic meters over the next five years (12.87 cubic meters of the 50.60 cubic meters is expected to be placed in storage pending availability of treatment following completion of on-site processing). These amounts represent less than 0.024 percent of the total amount of mixed waste stored and generated at DOE facilities.

As outlined in an April 6, 1993 Federal Register notice (58 FR 17875 as modified in 60 FR 10840, February 28, 1995), the STPs were developed in three stages. Conceptual Site Treatment Plans (CSTPs), which identified the range of potentially feasible treatment options for each mixed waste stream, were completed and submitted to state and EPA regulators in October 1993. Draft Site Treatment Plans (DSTPs), completed and submitted to state and EPA regulators in August 1994, discussed the evaluation of treatment options and identified the site's preferred treatment option for each waste stream. PSTPs, which contain DOE's preferred options developed after evaluation and integration with the site-specific options in other sites' DSTPs, are being submitted to state and EPA regulators in March 1995. This three step process was intended to facilitate early interaction with the regulators and other stakeholders to maximize the likelihood that the STPs will ultimately be approved by October 1995 as required by the FFCAct.

Prior to submittal of the DSTPs in August 1994, KAPL-Windsor determined preferred treatment options for each waste stream by comparing all feasible treatment options (including on-site treatment, use of mobile treatment systems, commercial treatment, and treatment at other DOE facilities) in several fundamental areas (including regulatory compliance, treatment effectiveness, environment/health/safety concerns, cost, and implementability). This approach was used by all sites. Based on the very small volumes of KAPL-Windsor waste streams requiring treatment following completion of on-site processing, these evaluations indicated

that off-site treatment at other DOE facilities is economically and technically preferable to other options. KAPL-Windsor identified potentially technically capable DOE facilities for each waste stream based on an evaluation of available treatment facility information, then coordinated with the other DOE sites to confirm treatment capability and select preferred options. Several of the preferred treatment options now identified in the PSTP have been changed from those identified in the DSTP based on further evaluations to resolve technical uncertainties and based on the DOE Options Analysis Team (OAT) evaluations to improve the efficiency of the complex wide treatment configuration.

In addition to identifying the proposed treatment option for each KAPL-Windsor mixed waste stream, the PSTP also identifies proposed schedules for shipment of each waste stream to the selected treatment facility, and proposed arrangements for pre-treatment storage and post-treatment residual management for each waste stream. A single schedule milestone, for shipment to the treatment facility within 18 or 24 months of the start of facility operations, is proposed for each waste stream. Thus, pre-treatment storage on-site at KAPL-Windsor until the selected treatment facilities are available is proposed. Projected schedules for the start of operation of selected treatment facilities are identified, except where this information was not available for inclusion in the PSTP. The PSTP also proposes commitments to perform additional evaluations and work with the State of Connecticut Department of Environmental Protection to determine whether alternative treatment options should be selected in the event completion of a targeted treatment facility is delayed (or in the event the initial projected schedule is not acceptable for cases where a projected schedule is not currently available).

The KAPL-Windsor PSTP proposes that treatment residuals from KAPL-Windsor mixed waste streams be stored at the treatment sites until DOE complex-wide mixed waste disposal arrangements are established. This proposal is based on the very small volumes of KAPL-Windsor's mixed waste streams, the desire to minimize shipments, and technical concerns associated with different radionuclides and hazardous constituents in the residues. Given the very small volumes of KAPL-Windsor's mixed waste streams, these streams will likely be blended with other waste streams at the treatment sites to facilitate treatment. Therefore, treatment residuals will likely be a mixture of KAPL-Windsor's and other sites' residuals which may contain different radionuclides and hazardous constituents from the original KAPL-Windsor waste streams. KAPL-Windsor and the NNPP consider this technical justification supports having very small volumes of treatment residuals remain at the treatment sites vice being returned to KAPL-Windsor.

The following table contains a listing of the mixed waste streams and proposed treatment options identified in the KAPL-Windsor PSTP. The table also identifies the proposed schedule milestones, projected shipping dates, and estimated costs for implementing each proposed treatment option. If the targeted treatment facilities are completed according to currently identified schedules, the majority of KAPL-Windsor's mixed waste streams will be treated by 2001, and the total cost for treating all waste streams will be about $400,000. KAPL-Windsor and the NNPP believe the KAPL-Windsor PSTP balances the concerns of expeditious completion of treatment, cost/efficiency, minimizing shipments, and minimizing risk/liability, and represents the best overall plan for achieving compliance with Land Disposal Restriction requirements for KAPL-Windsor mixed waste.

Waste Stream ID #	Waste Stream Name	Current Inventory (M3)	5 Year Projected Inventory (M3)	Preferred Option	Facility Name	Projected Start Date of Facility Operation	Proposed Milestone	Projected Shipping Date	Estimated Cost
KW-W001	Oils	0.00	0.45	SR-S018	Savannah River CIF	Feb. 1996	Start of ops. + 24 months	Feb. 1998	$15,766
KW-W002	Miscellaneous Laboratory Chemicals	0.00	0.02	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$21,334
KW-W003	Organic Debris	0.00	1.50	SR-S018	Savannah River CIF	Feb. 1996	Start of ops. + 24 months	Feb. 1998	$24,562
KW-W004	Inorganic Debris and Equipment	0.00	2.38	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$29,223
KW-W005	Inorganic Sludges/Particulates	0.00	0.20	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$30,310
KW-W006	Organic Sludges/Particulates	0.00	1.60	SR-S018	Savannah River CIF	Feb. 1996	Start of ops. + 24 months	Feb. 1998	$24,080
KW-W007	Elemental Lead (Lead bricks, sheets or wool)	0.00	1.67	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$89,255
KW-W008	Miscellaneous Laboratory Chemicals Without Metals	0.00	0.30	IN-S015	INEL IWPF Incinerator	Not Available	Start of ops. + 18 months	Not Available	$26,570
KW-W009	Soils	0.00	4.20	IN-S015	INEL IWPF Incinerator	Not Available	Start of ops. + 18 months	Not Available	$60,544
KW-W010	Mercury Contaminated Organics	0.00	0.05	IN-S128	INEL WEDF Mercury Retort Facility	Apr. 1999	Start of ops. + 18 months	Oct. 2000	$22,016
KW-W011	Mercury Contaminated Inorganics	0.00	0.50	IN-S128	INEL WEDF Mercury Retort Facility	Apr. 1999	Start of ops. + 18 months	Oct. 2000	$34,160
KW-W012	Elemental Mercury	0.00	0.001	IN-S128	INEL WEDF Mercury Retort Facility	Apr. 1999	Start of ops. + 18 months	Oct. 2000	$22,445

EXECUTIVE SUMMARY

Purpose of the Site Treatment Plan

The Proposed Site Treatment Plan (PSTP) for the Lawrence Berkeley Laboratory (LBL) was written in response to the Federal Facility Compliance Act (FFCAct). The FFCAct requires that site treatment plans (STPs or plans) be developed for facilities at which the U.S. Department of Energy (DOE) generates or stores mixed waste. Mixed waste is defined by the FFCAct as any waste containing both a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) and source, special nuclear, or by-product material subject to the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.).

On April 6, 1993, DOE published *The Schedule for Submitting Plans for the Treatment of Mixed Waste Generated or Stored at Each Site* in the *Federal Register* (58 *FR* 17875) describing its proposed process for developing the site treatment plans. The plans would be developed in three phases: conceptual, draft, and proposed. The conceptual plan presented known treatment needs, capabilities, and preliminary options for treating the mixed waste. The purpose of the draft plan was to identify site-specific preferred options for treating the mixed waste, or for developing technologies where technologies do not exist or need modification. The proposed plan reflects DOE's preferred options, developed with State input and based on existing available information. The options reflect a "bottom-up" approach and have been evaluated for their potential affects on other DOE sites and the overall DOE program. Changes in the preferred options and associated schedules were also made between the draft and proposed site treatment plans as a result of evaluations from the DOE-wide perspective. These may change further as a result of discussions with affected states and public comments before the approval of the PSTP and issuance by the California Department of Toxic Substances Control (DTSC) of an Order (FFCAct Order) requiring DOE to implement the STP for each site.

The PSTP consists of the Compliance Plan Volume, and the Background Volume and its Appendices. The Compliance Plan Volume contains the enforceable milestones associated with the preferred treatment options. A more detailed discussion of the preferred treatment options, which is provided for informational purposes only, is presented in the Background Volume and its Appendices.

DOE faces increasingly tight budgets throughout the DOE complex and anticipates that funding will continue to be constrained. The schedules in this and other Plans reflect those constraints. DOE has asked regulatory agencies to work with DOE and other interested parties at the site and National level to assist DOE in prioritizing its activities. Through this process, DOE expects that some schedules will be revised before the Site Treatment Plans are approved and FFCAct Orders issued.

Summary of PSTP Proposed Options for LBL

Current inventories of mixed low-level wastes at LBL are relatively small, with total known quantities not exceeding 6.25 m^3. All mixed waste is proposed to either be characterized, undergo additional technology assessment, or to be shipped offsite for treatment at: the Idaho National Engineering Laboratory (INEL) in Idaho (5.41 m^3), the Oak Ridge National Laboratory in Tennessee (0.42 m^3), or the Hanford Site in Washington (0.42 m^3). Some wastes will be neutralized at LBL before being shipped offsite to the INEL (1.74 m^3). Schedules for these activities vary by waste stream.

Future generation of small quantities of mixed wastes at LBL is expected due to continued laboratory operations. Future mixed wastes generated that do not meet RCRA Land Disposal Restriction requirements will be characterized and addressed in updates to this plan as required.

EXECUTIVE SUMMARY

Purpose of the Site Treatment Plan

The Proposed Site Treatment Plan (PSTP) for the Lawrence Livermore National Laboratory (LLNL) was written in response to the Federal Facility Compliance Act (FFCAct). The FFCAct requires that site treatment plans (STPs or plans) be developed for facilities at which the U.S. Department of Energy (DOE) generates or stores mixed waste. Mixed waste is defined by the FFCAct as any waste containing both a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) and source, special nuclear, or by-product material subject to the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.).

On April 6, 1993, DOE published *The Schedule for Submitting Plans for the Treatment of Mixed Waste Generated or Stored at Each Site* in the *Federal Register* (58 *FR* 17875) describing its proposed process for developing the site treatment plans. The plans would be developed in three phases: conceptual, draft, and proposed. The conceptual plan presented known treatment needs, capabilities, and preliminary options for treating the mixed waste. The purpose of the draft plan was to identify site-specific preferred options for treating the mixed waste, or for developing technologies where technologies do not exist or need modification. The proposed plan reflects DOE's preferred options, developed with State input and based on existing available information. The options reflect a "bottom-up" approach and have been evaluated for their potential effects on other DOE sites and the overall DOE program. Changes in the preferred options and associated schedules were also made between the draft and proposed site treatment plans as a result of evaluations from the DOE-wide perspective. These may change further as a result of discussions with affected states and public comments before the approval of the PSTP and issuance by the California Department of Toxic Substances Control (DTSC) of an Order (FFCAct Order) requiring

DOE to implement the STP developed for each site.

The PSTP consists of the Compliance Plan Volume and the Background Volume with Appendices. The Compliance Plan Volume contains the enforceable milestones associated with the preferred treatment options. A more detailed discussion of the preferred treatment options, which is provided for informational purposes only, is presented in the Background Volume and Appendices.

DOE faces increasingly tight budgets throughout the DOE complex and anticipates that funding will continue to be constrained. The schedules in this and other Plans reflect those constraints. DOE has asked regulatory agencies to work with DOE and other interested parties at the site and National level to assist DOE in prioritizing its activities. Through this process, DOE expects that some schedules will be revised before the Site Treatment Plans are approved and FFCAct Orders issued.

Summary of PSTP Proposed Options for LLNL

Current inventories of mixed waste at LLNL account for a total of approximately 650 m^3, including 196.5 m^3 of potential transuranic mixed waste. In addition, one waste stream at LLNL requires further characterization. Mixed wastes will be treated either onsite (371 m^3) or shipped offsite to the Idaho National Engineering Laboratory (75.5 m^3), the Hanford site in Washington (7 m^3), or the Waste Isolation Pilot Plant in New Mexico for waste determined to be transuranic. Schedules for waste treatment and shipment vary by waste stream.

Mixed wastes at LLNL will continue to be generated in the future due to laboratory operations. Future mixed wastes generated that do not meet RCRA Land Disposal Restriction requirements will be characterized and addressed in updates to this plan as required.

EXECUTIVE SUMMARY

Purpose of the Site Treatment Plan

The Proposed Site Treatment Plan (PSTP) for U.S. Department of Energy Oakland Operations Office (DOE/OAK) mixed wastes at the former Laboratory for Energy-Related Health Research (LEHR) was written in response to the Federal Facility Compliance Act (FFCAct). The FFCAct requires that site treatment plans (STPs or plans) be developed for facilities at which the DOE generates or stores mixed waste. Mixed waste is defined by the FFCAct as any waste containing both a hazardous waste subject to the Resource Conservation and Recovery Act (RCRA), and source, special nuclear, or by-product material subject to the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.).

On April 6, 1993, DOE published *The Schedule for Submitting Plans for the Treatment of Mixed Waste Generated or Stored at Each Site* in the *Federal Register* (58 *FR* 17875, DOE, 1993a) describing its proposed process for developing the site treatment plans. The plans would be developed in three phases: conceptual, draft, and proposed. The conceptual plan presented known treatment needs, capabilities, and preliminary options for treating the mixed waste. The purpose of the draft plan was to identify site-specific preferred options for treating the mixed waste, or for developing technologies where technologies do not exist or need modification. At the time this PSTP was developed, no DOE-related mixed waste was present at the former LEHR site. The proposed plan describes DOE's process for managing mixed wastes that may be generated in the future. For DOE Oakland Operations Office (DOE/OAK) mixed wastes located at sites in California, the plans must be submitted to the State of California Department of Toxic Substances Control (DTSC) for approval, approval with modification, or disapproval.

The PSTP consists of the Compliance Plan Volume, and the Background Volume and its Appendices. The Compliance Plan Volume contains the enforceable milestones associated with the

preferred treatment options. A more detailed discussion of the preferred treatment options, which is provided for informational purposes only, is presented in the Background Volume and its Appendices.

Summary of PSTP Proposed Options

There are currently no DOE/OAK mixed wastes at the former LEHR site (all DOE/OAK mixed low-level wastes (MLLW) were shipped offsite by January 1995). Future generation of DOE/OAK mixed wastes at this site may occur due to ongoing environmental restoration and decontamination and decommissioning activities. Future mixed wastes generated that are subject to the FFCAct and do not meet RCRA Land Disposal Restriction requirements will be characterized and addressed in updates to this plan as required.

EXECUTIVE SUMMARY

Los Alamos National Laboratory (LANL) is a research and development facility operated for the Department of Energy (DOE) by the University of California. The Federal Facilities Compliance Act (FFCAct) of October 6, 1992, requires the DOE to prepare a plan to treat mixed waste to the standards of the Land Disposal Restrictions (LDRs) for each DOE facility that generates or stores mixed waste. Upon approval of the Site Treatment Plan (STP) by the regulator, the New Mexico Environmental Department (NMED), an FFCAct Order requiring compliance with the approved plan will be issued.

DOE negotiated a Federal Facilities Compliance Agreement (FFCAgreement) with EPA Region 6 to treat mixed waste and achieve compliance with LDRs. The State of New Mexico was not a signatory of that agreement. The FFCAct Order and STP will replace the FFCAgreement.

This Proposed Site Treatment Plan (PSTP) comprises two volumes: the Background Volume contains detailed discussion of the waste streams and the preferred options and is provided for informational purposes only; and the Compliance Plan Volume proposes overall schedules with dates to achieve compliance with the LDRs. The PSTP is the basis for discussions before the NMED issues an FFCAct Order.

LANL generates two types of mixed waste, low-level mixed waste (LLMW) and mixed transuranic waste (MTRU). These two waste are distinguished by the level of radioactive contamination. The quantities and diversity of these waste represent the diversity of activities expected at a national research facility.

LANL has approximately 600 cubic meters (m^3) (equal to to 3000 drum equivalents) of LLMW in storage. The waste is made up of just over 5000 separate items, individual containers of waste, that have been combined into 31 treatability groups, each with a preferred treatment option as shown in Table ES-1. LANL just completed recharacterizing the LLMW as required by the FFCAgreement. LLMW information in this report reflects the results of that characterization work and resulted in a significant decrease in the volume reported in past documentation.

The plan for treating LLMW relies on off-site commercial treatment, on-site treatment using mobile skid-mount treatment units shared with other DOE sites, and the possible use of the existing controlled-air incinerator (CAI).

The DOE Albuquerque Operations Office (DOE–AL) prepared the AL Mixed Waste Treatment Plan (ALMWTP) that uses the resources of the sites reporting to DOE–AL to treat the LLMW at those sites. Under the plan, different sites are responsible for providing different mobile treatment capacity that will be moved to different sites providing on-site treatment capacity. The Grand Junction Project Office (GJPO) manages the overall program and maintains a schedule of mobile treatment availability to the sites.

Schedules for treating LLMW using mobile treatment units given in the Compliance Plan Volume are based on this schedule.

The CAI is a demonstrated technology that could treat a significant portion of the LLMW in a relatively short time. It is therefore selected as a preferred treatment option. However, the CAI is the subject of considerable stakeholder concerns, questions about permit status, and funding uncertainty. The Compliance Plan commits to providing a schedule for operating the CAI for mixed waste treatment after a Record of Decision (ROD) is reached for National Environmental Policy Act (NEPA) actions for the CAI. The schedule for operation for mixed waste treatment will be provided only if operation is consistent with the ROD. Alternative mobile treatment units will be developed as parallel preferred treatment options.

Over 1200 LLMW items (14 m^3) are suspect for radioactive contamination. A field sort, survey, and decontamination operation will determine whether these waste are contaminated with radioactivity. If not, they will be treated at commercial off-site facilities. If they are contaminated, the waste fall into the defined treatability groups and will be handled with the preferred option identified for that treatability group.

LANL has identified approximately 3800 m^3 (equivalent to 20,000 drums) of MTRU in storage. MTRU has been stored since 1971, before hazardous waste regulations were in place. The hazardous components of the transuranic waste are therefore not well defined. Activities to improve characterization of MRTU waste are the subject of the revised waste analysis plan that will be submitted to NMED in March 1995. Activities to improve storage of these waste is the subject of a separate compliance order. The preferred option to meet FFCAct requirements follows the DOE national policy on MTRU, which is shipment to the Waste Isolation Pilot Plant (WIPP).

TABLE ES-1. Summary of LANL Low-level Mixed Waste and Preferred Treatment Options.

Treatability group	MWIR waste ID	Inventory as of 09/30/94 (m^3)	Preferred treatment option	MWIR treatment ID	Alternate treatment option	Treatment site	STP section
IPA wastes	LA-W901	15.89	DSSI	DS-5001	CAI/hydrothermal	off-site	3.1.1
scintillation fluids	LA-W902	2.47	DSSI	DS-5001	CAI/hydrothermal	off-site	3.1.1
subtotal		18.36					
lead blankets	LA-W903	0.74	commercial treatment	LA-S806	macroencapsulation	off-site	3.1.2
soil with heavy metals	LA-W904	10.53	commercial treatment	LA-S806	chelator extraction	off-site	3.1.2
ER soil	LA-W905	39.32	commercial treatment	LA-S806	macroencapsulation	off-site	3.1.2
subtotal		50.59					
aqueous organic liquids	LA-W906	1.65	CAI/evaporative oxidation	LA-S007/GJ-S801C	hydrothermal	on-site	3.1.3
halogenated organic liquids	LA-W907	16.58	CAI/hydrothermal	LA-S007/LA-S804	DETOX	on-site	3.1.4
nonhalogenated organic liquids	LA-W908	14.34	CAI/hydrothermal	LA-S007/LA-S804	DETOX	on-site	3.1.4
PCB wastes with RCRA components	LA-W910	0.74	CAI/hydrothermal	LA-S007/LA-S804	DETOX	on-site	3.1.4
bulk oils	LA-W909	3.75	CAI/hydrothermal	LA-S007/LA-S804	DETOX	on-site	3.1.4
subtotal		35.41					
organic-contaminated combustible solids	LA-W911	28.32	CAI/thermal desorption	LA-S006/GJ-S801B	TBD	on-site	3.1.5

Treatability group	MWIR waste ID	Inventory as of 09/30/94 (m^3)	Preferred treatment option	MWIR treatment ID	Alternate treatment option	Treatment site	STP section
combustible debris	LA-W912	13.82	CAI/macroencapsulation	LA-S006/PX-S803	TBD	on-site	3.1.6
aqueous wastes with heavy metals	LA-W913	1.85	chemical plating waste skid	LA-S004	evaporative oxidation	on-site	3.1.7
corrosive solutions	LA-W914	1.36	chemical plating waste skid	LA-S004	evaporative oxidation	on-site	3.1.7
aqueous cyanides, nitrates, chromates, and arsenates	LA-W915	0.13	chemical plating waste skid	LA-S004	evaporative oxidation	on-site	3.1.7
subtotal		3.34					
water-reactive wastes	LA-W916	6.03	water-reactive metals skid	LA-S003	TBD	on-site	3.1.8
compressed gases requiring scrubbing	LA-W917	0.35	gas scrubbing skid	LA-S801	TBD	on-site	3.1.9
compressed gases requiring oxidation	LA-W918	0.08	gas oxidation skid	LA-S801	CAI	on-site	3.1.10
organic-contaminated noncombustible solids	LA-W919	7.82	thermal desorption	GJ-S801B	TBD	on-site	3.1.11
elemental mercury	LA-W920	0.50	amalgamation	PI-S801	triple distillation	on-site	3.1.12
activated or inseparable lead	LA-W921	15.60	macroencapsulation	PX-S803	TBD	on-site	3.1.13
noncombustible debris	LA-W922	5.62	macroencapsulation	PX-S803	TBD	on-site	3.1.13
subtotal		21.22					
inorganic solid oxidizers	LA-W923	0.20	hydrothermal	LA-S804	TBD	on-site	3.2.1
lead wastes—TBD	LA-W924	51.44	TBD	LA-S701	TBD	TBD	3.3
mercury wastes—TBD	LA-W925	18.30	TBD	LA-S701	TBD	TBD	3.3

Treatability group	MWIR waste ID	Inventory as of 09/30/94 (m^3)	Preferred treatment option	MWIR treatment ID	Alternate treatment option	Treatment site	STP section
biochemical laboratory wastes	LA-W927	1.34	TBD	LA-S701	TBD	TBD	3.3
compressed gases—TBD	LA-W926	1.25	TBD	LA-S701	TBD	TBD	3.3
dewatered treatment sludge	LA-W928	268.17	TBD	LA-S701	TBD	TBD	3.3
subtotal		346.50					
nonradioactive or suspect waste items	LA-W929	14.24	sort, survey, and decontaminate	GJ-S804	see appendix	on-site	3.4.1
surface-contaminated lead	LA-W930	56.20	lead decontamination trailer	LA-S001	TBD	on-site	3.4.2
lead requiring sorting	LA-W931	9.97	sort by treatment	LA-S701	NA	on-site	3.4.3
TOTAL		**608.61**					

EXECUTIVE SUMMARY FOR THE MINS PROPOSED SITE TREATMENT PLAN

The Federal Facility Compliance Act of 1992 (FFCAct) requires the U.S. Department of Energy (DOE) to prepare Site Treatment Plans (STPs) to address treatment of mixed radioactive and hazardous waste for each DOE site which generates and stores mixed waste. These plans are to be submitted to the states (or the U.S. Environmental Protection Agency (EPA) in cases where the state has not been delegated authority to regulate mixed waste) for approval. Owing to the joint Navy/DOE nature of the Naval Nuclear Propulsion Program (NNPP) and pursuant to the legislative history of the FFCAct, NNPP facilities which generate and store mixed waste, including Mare Island Naval Shipyard (MINS), are included in the FFCAct process and have prepared STPs. The MINS Proposed Site Treatment Plan (PSTP) is being provided to the California Department of Toxic Substance Control for approval in accordance with the FFCAct.

MINS generates very small amounts of mixed waste as a result of maintenance and repair work performed on Naval nuclear propulsion plants. MINS currently has approximately 25.45 cubic meters of mixed waste in storage, 1.32 cubic meters of mixed waste undergoing on-site processing, and projects to generate approximately 44.88 cubic meters prior to scheduled shipyard closure in April 1996 (14.73 cubic meters of the 44.88 cubic meters is expected to be placed in storage pending availability of treatment following completion of on-site processing). These amounts represent less than 0.034 percent of the total amount of mixed waste stored and generated at DOE facilities.

As outlined in an April 6, 1993 Federal Register notice (58 FR 17875 as modified in 60 FR 10840, February 28, 1995), the STPs were developed in three stages. Conceptual Site Treatment Plans (CSTPs), which identified the range of potentially feasible treatment options for each mixed waste stream, were completed and submitted to state and EPA regulators in October 1993. Draft Site Treatment Plans (DSTPs), completed and submitted to state and EPA regulators in August 1994, discussed the evaluation of treatment options and identified the site's preferred treatment option for each waste stream. PSTPs, which contain DOE's preferred options developed after evaluation and integration with the site-specific options in other sites' DSTPs, are being submitted to state and EPA regulators in March 1995. This three step process was intended to facilitate early interaction with the regulators and other stakeholders to maximize the likelihood that the STPs will ultimately be approved by October 1995 as required by the FFCAct.

Prior to submittal of the DSTPs in August 1994, MINS determined preferred treatment options for each waste stream by comparing all feasible treatment options (including on-site treatment, use of mobile treatment systems, commercial treatment, and treatment at other DOE facilities) in several fundamental areas (including regulatory compliance, treatment effectiveness, environment/health/safety concerns, cost, and implementability). This approach was used by all sites. Based on the very small volumes of MINS's waste streams requiring treatment following completion of on-site processing, these evaluations indicated that off-site treatment at other DOE facilities is economically and technically preferable to other options. MINS identified potentially technically capable DOE facilities for each waste stream based on

an evaluation of available treatment facility information, then coordinated with the other DOE sites to confirm treatment capability and select preferred options. Several of the preferred treatment options now identified in the PSTP have been changed from those identified in the DSTP based on further evaluations to resolve technical uncertainties and based on the DOE Options Analysis Team (OAT) evaluations to improve the efficiency of the complex wide treatment configuration.

In addition to identifying the proposed treatment option for each MINS mixed waste stream, the PSTP also identifies proposed schedules for shipment of each waste stream to the selected treatment facility, and proposed arrangements for pre-treatment storage and post-treatment residual management for each waste stream. To support base closure schedules, a single schedule milestone, for shipment to the treatment facility by January 1996, is proposed for each MINS waste stream. Thus, pre-treatment storage at the selected treatment facility is proposed. MINS and the NNPP consider support of base closure is sufficient justification for having very small volumes of MINS waste stored at treatment sites prior to the availability of the selected treatment facilities. Projected schedules for the start of operation of selected treatment facilities are identified, except where this information was not available for inclusion in the PSTP.

The MINS PSTP proposes that treatment residuals from MINS mixed waste streams be stored at the treatment sites until DOE complex-wide mixed waste disposal arrangements are established. This proposal is based on supporting MINS's base closure schedule, the very small volumes of MINS's mixed waste streams, the desire to minimize shipments, and technical concerns associated with different radionuclides and hazardous constituents in the residues. Given the very small volumes of MINS's mixed waste streams, these streams will likely be blended with other waste streams at the treatment sites to facilitate treatment. Therefore, treatment residuals will likely be a mixture of MINS's and other sites' residuals which may contain different radionuclides and hazardous constituents from the original MINS waste streams. MINS and the NNPP consider this technical justification supports having very small volumes of treatment residuals remain at the treatment sites vice being returned to MINS.

The following table contains a listing of the mixed waste streams and proposed treatment options identified in the MINS PSTP. The table also identifies the proposed schedule milestones, projected shipping dates, and estimated costs for implementing each proposed treatment option. If the PSTP proposals are approved, all of MINS's mixed waste streams will be shipped to the treatment site by January 1996 to support the base closure schedule, and the total cost for treating all waste streams will be about $ 428,000. MINS and the NNPP believe the MINS PSTP balances the concerns of expeditious completion of treatment, cost/efficiency, minimizing shipments, and minimizing risk/liability, and represents the best overall plan for achieving compliance with Land Disposal Restriction requirements for MINS mixed waste.

Waste Stream ID #	Waste Stream Name	Current Inventory (M3)	5 Year Projected Inventory (M3)	Preferred Option	Facility Name	Projected Start Date of Facility Operation	Proposed Milestone	Projected Shipping Date	Estimated Cost
MI-W001	Solid Waste with Heavy Metals	5.31	1.81	IN-S005	INEL WERF Incinerator	Jan. 1996	Jan. 1996	Jan. 1996	$38,471
MI-W002	Solidified Solution with Heavy Metals	0.85	0.00	IN-S011	INEL WEDF Stabilization Unit	Apr. 1999	Jan. 1996	Jan. 1996	$27,207
MI-W003	Paint Chips Containing Heavy Metals	0.47	1.32	IN-S004	INEL WERF Stabilization Unit	Jan. 1996	Jan. 1996	Jan. 1996	$9,529
MI-W004	Equipment Containing Thallium	0.40	0.00	PX-S803	INEL Pantex Mobile Macroencapsulation Unit	Not Available	Jan. 1996	Jan. 1996	$10,458
MI-W005	Solid Waste with Petroleum Products	10.20	2.08	IN-S005	INEL WERF Incinerator	Jan. 1996	Jan. 1996	Jan. 1996	$137,061
MI-W006	Materials Containing Asbestos	1.74	4.44	NONE	None	Not Applicable	Not Applicable	Not Applicable	TBD
MI-W007	Lead Bricks, Sheets, Wool, Scrapings	2.76	0.58	PX-S803	INEL Pantex Mobile Macroencapsulation Unit	Not Available	Jan. 1996	Jan. 1996	$62,674
MI-W008	Brass and Bronze	2.83	2.33	PX-S803	INEL Pantex Mobile Macroencapsulation Unit	Not Available	Jan. 1996	Jan. 1996	$77,327
MI-W009	Solid Waste with Corrosives	0.14	0.00	IN-S011	INEL WEDF Stabilization Unit	Apr. 1999	Jan. 1996	Jan. 1996	$9,010
MI-W010	Batteries and Film Packs with Mercury	0.19	0.045	PX-S803	INEL Pantex Mobile Macroencapsulation Unit	Not Available	Jan. 1996	Jan. 1996	$9,264
MI-W011	Materials Containing PCBs	0.11	0.62	IN-S015	INEL IWPF Incinerator	Not Available	Jan. 1996	Jan. 1996	$10,502
MI-W012	Combustible Debris	0.21	0.42	IN-S005	INEL WERF Incinerator	Jan. 1996	Jan. 1996	Jan. 1996	$10,207
MI-W013	Organic Process Residues	0.00	1.06	IN-S004	INEL WERF Stabilization Unit	Jan. 1996	Jan. 1996	Jan. 1996	$17,173
MI-W014	Inorganic Debris with Heavy Metals without Mercury	0.24	0.02	IN-S004	INEL WERF Stabilization Unit	Jan. 1996	Jan. 1996	Jan. 1996	$9,505

EXECUTIVE SUMMARY

for the

MOUND FACILITY, MIAMISBURG, OHIO

PROPOSED SITE TREATMENT PLAN

Site Treatment Plans (STPs) are required for facilities at which DOE generates or stores mixed waste; mixed waste contains both a hazardous waste subject to the Resource Conservation and Recovery Act, and a source, special nuclear or by-product material subject to the Atomic Energy Act of 1954. On April 6, 1993, DOE published a Federal Register notice (58 FR 17875) describing its proposed process for developing the STP in three phases, including a Conceptual STP, a Draft STP, and a Final Proposed STP. The purpose of these Plans is to identify the preferred options for treating the mixed waste at Mound Facility or for developing treatment technologies where technologies do not exist or need modification. The PSTP is DOE's proposal to manage these wastes. The preferred options have been reviewed for DOE-wide impacts and were evaluated by the Options Analysis Team (OAT) to formulate the "wise" configuration for treatment for the overall DOE program. The preferred options could change between the Proposed STP and approval of the final STP by the Ohio EPA, based on continuing discussions with regulators and continuing analysis of DOE-wide impacts.

Since 1947, Mound Facility's mission has been the development of processes for the nuclear weapons program, production of non-nuclear components for nuclear weapons, and diagnostic testing of explosive and nuclear components. With the DOE consolidation of non-nuclear manufacturing, the current mission assignment for Mound is changing to include clean-up of contaminated buildings and land, along with commercial economic development of the site.

The treatment ranking hierarchy preferred by the Ohio EPA is (1) modify or build on-site treatment, (2) on-site portable/mobile units, (3) Ohio option (off-site, in state), and last (4) off-site out-of-state. Treatment technology evaluation consisted of listing feasible alternatives, screening the selected technologies, and performing an evaluation of the remaining technologies. The evaluation is based on the Treatment Selection Guides developed by the DOE FFCAct Task Force. The scores were based on the available information at this time. This procedure could produce different preferred options if redone in the future, particularly as new technologies mature. As technologies are developed and system efficiencies are sought to reduce costs and expedite treatment, a new preferred option may surface. When changes are determined to be appropriate, DOE will consult with the state to request approval.

The waste streams with DOE preferred options along with volume in storage and estimated treatment residual volume are summarized in the table below.

Summary of Mound Facility Mixed Waste Streams and Preferred Treatment Options

MWIR#	WASTE STREAM	VOL.(m^3)	PREFERRED OPTION	EST. RESIDUAL VOL. (m^3)
W001	Scintillation Cocktail	43.3	Commercial Treatment	6.8
W013	Waste Oils	27.4	Commercial Treatment	0.2
W008	Kerosene, PCB's	1.1	TSCA Incinerator	0.1
W012	Lead Loaded Gloves	0.0204	Encapsulation	0.11
W007	Lead-Acid Batteries	0.85	Survey/Decon	1.1
W004	Lead Shapes	5.0	Surface Decon	2.0
W009	Absorbed Oil PCB's	0.227	Thermal Desorb/TSCA	1.2
W005	Liquid Mercury	0.018	Amalgamation	0.025
W010/11	Lab Packs	0.16	Sort/Survey/Analyze	0.3
W014	NE Waste	19.9	Sort/Survey/Analyze	2.5
W002	TRU Corrosives	2.1	WIPP	2.1
W003	TRU Lead Gloves	1.3	WIPP	1.3
TOTAL		101.38 m^3		17.74 m^3

EXECUTIVE SUMMARY

Site Treatment Plans (STPs) are required for facilities at which the U.S. Department of Energy (DOE) generates or stores mixed waste, which is defined by the Federal Facility Compliance Act (FFCAct) as waste containing both a hazardous waste subject to the Resource Conservation and Recovery Act and a radioactive material, subject to the Atomic Energy Act. On April 6, 1993, DOE published a *Federal Register* notice (58 FR 17875) describing its proposed process for developing the STPs in three phases including a Conceptual, a Draft, and a Final Site Treatment Plan. The Final Site Treatment Plan has been renamed to the Proposed Site Treatment Plan (PSTP) for the purposes of scoping and clarity. Similar to the Draft Site Treatment Plan (DSTP), the PSTP reflects more refined DOE preferred options and schedules that are based on the most accurate existing information. All of the DOE Nevada Operations Office STP iterations have been developed with the state of Nevada's input. The options and schedules reflect a "bottoms-up" approach and have been evaluated for impacts on other DOE sites, as well as impacts to the overall DOE program. Changes may have occurred in the preferred option and associated schedules between the DSTP, submitted to the state of Nevada and U.S. Environmental Protection Agency August 1994, and the PSTP as evaluation progresses from the DOE-wide perspective. Changes may have also occurred as a result of state-to-state discussion prior to the submission and approval of the PSTP and issuance of the Consent Order (CO).

To the extent practicable, the PSTP identifies specific treatment facilities for treating the mixed waste and proposes schedules as set forth in the FFCAct. When treatment options are not possible due to the lack of characterization data, plans and schedules for characterizing wastes, undertaking technology assessments, and providing the required plans and schedules for developing capacity are provided as appropriate. All schedule information presented is subject to change depending on CO negotiations between the DOE and the state of Nevada. For new facilities, the schedule is dependent upon decisions made during the design phase and is contingent on funding availability. Assumptions and professional judgments related to the type of treatment technology, location of the treatment facility, contracting mechanism, project approval process, and cost were used to develop the schedules. Any variation of the assumptions will impact the schedules. Cost data used in developing options and schedules are planning estimates only.

The schedules in this PSTP have not yet been integrated with those of other DOE sites from a technical, complex-wide perspective. Moreover, DOE faces increasingly tight budgets throughout the DOE complex and anticipates that funding will continue to be constrained. The schedules in this and other STPs reflect those constraints. DOE has asked regulatory agencies to work with DOE and other interested parties at the site and national level to assist DOE in prioritizing its activities. Through this process, DOE expects that some schedules will be revised before the STPs are approved and COs issued.

Emerging or new technologies not yet considered that provide opportunities to manage waste more safely and effectively and at a lower cost than current technologies identified in the PSTP may be developed in the future. Working closely with regulators and others during the implementation of the STP process, DOE shall continue to evaluate and develop technologies that offer potential advantages in the areas of public acceptance, risk abatement, performance, and life cycle cost. Impacts caused by changes to compliance documents and/or improved technologies shall be evaluated for possible modification to this PSTP. Changes, revisions, and modifications to this PSTP shall be in accordance with the provisions outlined in the CO.

The Background Volume (BV), in conjunction with the Plan Volume (PV), comprises the PSTP. The PV provides overall schedules with milestones and target dates for achieving compliance with Land Disposal Restrictions, and a general framework for the establishment and review of milestones and target dates. Additional discussion contained in the BV is provided for informational purposes only.

EXECUTIVE SUMMARY FOR THE NNS PROPOSED SITE TREATMENT PLAN

The Federal Facility Compliance Act of 1992 (FFCAct) requires the U.S. Department of Energy (DOE) to prepare Site Treatment Plans (STPs) to address treatment of mixed radioactive and hazardous waste for each DOE site which generates and stores mixed waste. These plans are to be submitted to the States (or the U.S. Environmental Protection Agency (EPA) in cases where the state has not been delegated authority to regulate mixed waste) for approval. Owing to the joint Navy/DOE nature of the Naval Nuclear Propulsion Program (NNPP) and pursuant to the legislative history of the FFCAct, NNPP facilities which generate and store mixed waste, including Norfolk Naval Shipyard (NNS), are included in the FFCAct process and have prepared STPs. The NNS Proposed Site Treatment Plan (PSTP) is being provided to EPA Region III for approval in accordance with the FFCAct.

NNS generates very small amounts of mixed waste as a result of maintenance and repair work performed on Naval nuclear propulsion plants. NNS currently has 0.0 cubic meters of mixed waste in storage, 5.07 cubic meters of mixed waste undergoing processing and projects to generate approximately 62.75 cubic meters over the next five years (11.8 cubic meters of the 62.75 cubic meters is expected to be placed in storage pending availability of treatment following completion of on-site processing). These amounts represent less than .03 percent of the total amounts of mixed waste stored and generated at DOE facilities.

As outlined in an April 6, 1993 Federal Register notice (58 FR 17875 as modified in 60 FR 10840, February 28, 1995), the STPs were developed in three stages. Conceptual Site Treatment Plans (CSTPs), which identified the range of potentially feasible treatment options for each mixed waste stream, were completed and submitted to state and EPA regulators in October 1993. Draft Site Treatment Plans (DSTPs), completed and submitted to state and EPA regulators in August 1994, discussed the evaluation of treatment options and identified the site's preferred treatment option for each waste stream. PSTPs, which contain DOE's preferred options developed after evaluation and integration with the site-specific options in other site's DSTPs, are being submitted to state and EPA regulators in March 1995. This three step process was intended to facilitate early interaction with the regulators and other stakeholders to maximize the likelihood that the plans will ultimately be approved by October 1995 as required by the FFCAct.

Prior to submittal of the DSTPs in August 1994, NNS determined preferred treatment options for each waste stream by comparing all feasible treatment options (including on-site treatment, use of mobile treatment systems, commercial treatment, and treatment at other DOE facilities) in several fundamental areas (including regulatory compliance, treatment effectiveness, environment/health/safety concerns, cost, and implementability). This approach was used by all sites. Based on the very small volumes of NNS's waste streams requiring treatment following completion of on-site processing, these evaluations indicated that off-site treatment at other DOE facilities is economically and technically preferable to other options. NNS identified potentially technically capable DOE facilities for each waste stream based on

an evaluation of available treatment facility information, then coordinated with the other DOE sites to confirm treatment capability and select preferred options. Several of the preferred treatment options now identified in the PSTP have been changed from those identified in the DSTP based on further evaluations to resolve technical uncertainties and based on the DOE Options Analysis Team (OAT) evaluations to improve the efficiency of the complex wide treatment configuration.

In addition to identifying the proposed treatment option for each NNS mixed waste stream, the PSTP also identifies proposed schedules for shipment of each waste stream to the selected treatment facility, and proposed arrangements for pre-treatment storage and post-treatment residual management for each waste stream. A single schedule milestone, for shipment to the treatment facility within 18 or 24 months of the start of facility operations, is proposed for each waste stream. Thus, pre-treatment storage on-site at NNS until the selected treatment facilities are available is proposed. Projected schedules for the start of operation of selected treatment facilities are identified, except where this information was not available for inclusion in the PSTP. The PSTP also proposes commitments to perform additional evaluations and work with the EPA Region III to determine whether alternative treatment options should be selected in the event completion of a targeted treatment facility is delayed (or in the event the initial projected schedule is not acceptable for cases where a projected schedule is not currently available).

The NNS PSTP proposes that treatment residuals from NNS mixed waste streams be stored at the treatment sites until DOE complex-wide mixed waste disposal arrangements are established. This proposal is based on the very small volumes of NNS's mixed waste streams, the desire to minimize shipments, and technical concerns associated with different radionuclides and hazardous constituents in the residues. Given the very small volumes of NNS's mixed waste streams, these streams will likely be blended with other waste streams at the treatment sites to facilitate treatment. Therefore, treatment residuals will likely be a mixture of NNS's and other sites' residuals which may contain different radionuclides and hazardous constituents from the original NNS waste streams. NNS and the NNPP consider this technical justification supports having very small volumes of treatment residuals remain at the treatment sites vice being returned to NNS.

The following table contains a listing of the mixed waste streams and proposed treatment options identified in the NNS PSTP. The table also identifies the proposed schedule milestones, projected shipping dates, and estimated costs for implementing each proposed treatment option. If the targeted treatment facilities are completed according to currently identified schedules, the majority of NNS's mixed waste streams will be treated by 1998, and the total cost for treating all waste streams will be approximately $271,000. NNS and the NNPP believe the NNS PSTP balances the concerns of expeditious completion of treatment, cost/efficiency, minimizing shipments, and minimizing risk/liability, and represents the best overall plan for achieving compliance with Land Disposal Restriction requirements for NNS mixed waste.

Waste Stream ID #	Waste Stream Name	Current Inventory (M3)	5 Year Projected Inventory (M3)	Preferred Option	Facility Name	Projected Start Date of Facility Operation	Proposed Milestone	Projected Shipping Date	Estimated Cost
NN-W001	Lead/Chromium Based Paint Chips	0.00	2.15	IN-S004	INEL WERF Stabilization Unit	Jan. 1996	Start of ops. + 18 months	Jul. 1997	$64,786
NN-W002	Solid Waste Contaminated with Potassium Chromate Solution	0.00	2.05	SR-S018	Savannah River CIF	Feb. 1996	Start of ops. + 24 months	Feb. 1998	$18,890
NN-W003	Debris with Heavy Metals	0.00	7.60	PX-S803	INEL Pantex Mobile Macroencapsulation Unit	Not Available	Start of ops. + 18 months	Not Available	$187,593

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Oak Ridge Reservation Proposed Site Treatment Plan

U.S. Department of Energy **March 31, 1995**

Site treatment plans (STPs) are required for facilities at which the U.S. Department of Energy (DOE) generates or stores mixed waste, defined by the Federal Facility Compliance Act (FFCAct) as waste containing both a hazardous waste subject to the Resource Conservation and Recovery Act (RCRA) and a source, special nuclear, or by-product material subject to the Atomic Energy Act of 1954 (42 USC 2011, et seq.). On April 6, 1993, DOE published a *Federal Register* notice (58 *FR* 17875) describing its proposed process for developing the STPs in three phases, including a conceptual STP, a draft STP, and a final proposed STP (PSTP).

The purpose of the PSTP is to report to the Tennessee Department of Environment and Conservation the DOE-preferred options (i.e., treatment method, facility, and schedule) for treating mixed waste at the DOE Oak Ridge Operations Office (DOE-OR) Oak Ridge Reservation to meet the RCRA Land Disposal Restrictions (RCRA LDR) treatment standards. The PSTP identifies specific facilities or approaches and schedules for treatment of many mixed wastes. For other waste types, options presented include continued waste characterization, development, and/or modification of treatment technologies to provide the needed capacity. The PSTP also is being provided to the U.S. Environmental Protection Agency as the Appendix B treatment methods plan required by the Oak Ridge Reservation Land Disposal Restrictions Federal Facility Compliance Agreement.

The amount of mixed waste currently stored on the Oak Ridge Reservation is 62.33 million kg. A large portion of this waste, 24.60 million kg, already has been treated to LDR standards and is not covered further by the FFCAct. The plan proposes to defer treatment decisions for another 1.96 million kg of mixed waste that is subject to the provisions of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to the Record of Decision (ROD) which will be reached for each stream. Treatment methods, facilities and schedules (or activities leading to treatment) for the remaining 35.77 million kg of mixed waste are presented in the PSTP. The untreated inventory addressed by the plan includes some 166 waste streams (161 low-level and 5 transuranic), with an annual generation rate of less than 1 million kg (virtually all low-level). Waste streams have been regrouped and reduced in number from over 400 to 170 in order to simplify reporting requirements.

The main treatment strategies reflected in the PSTP for these wastes are as follows.

1. Existing and modified on-site facilities (wastewater treatment plants and the TSCA Incinerator) will be used to treat mixed waste when possible. Some 3.76 million kg of mixed waste are targeted for treatment using existing capacity. Although mixed waste treatment capability on the reservation is limited, significant progress has been made in treating aqueous and organic liquid mixed waste since the promulgation of the FFCAct using these systems. Over 2.5 million kg of mixed waste was treated on the Oak Ridge Reservation in FY 1994 alone.

2. Commercial treatment will be pursued for several waste types, including large-volume sludges and soils. The plan identifies 28.78 million kg of mixed low-level waste to be treated through a combination of existing and modified on-site facilities and commercial capabilities.Proof of process treatment contracts have been awarded for waste streams which comprise approximately half of the untreated inventory addressed by the plan.

3. Some 1.97 million kg of contact and remote handled mixed transuranic wastes will be treated only as necessary to meet the waste acceptance criteria (WAC) of the Waste Isolation Pilot Plant (WIPP). The plan proposes construction of a new facility to provide the needed treatment capability. The capital cost of this

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facility, in constant 1995 dollars, has been estimated to be about $290M.

4. Approximately 1.27 million kg of mixed low-level waste requires further characterization for treatment and/or technology assessment to support disposal or the development of a treatment schedule.

The PSTP has been organized into five chapters to reflect these strategies. Chapter 1 provides an introduction to the plan, including roles and responsibilities. Chapter 2 describes the proposed legal framework for implementation. Chapters 3 and 4 discuss treatment methods, facilities, and schedules for mixed low-level waste and mixed transuranic waste. Chapter 5 briefly discusses high-level waste, which is neither generated nor stored on the Oak Ridge Reservation.

Treatment schedules in the final PSTP are not the same as those developed for the August 1994 Draft Site Treatment Plan. Substantial reductions in DOE budgets are being projected. This has resulted in significant changes to the schedules presented in the final PSTP. The DOE-OR waste management budget by 1998 is expected to be over 30% less than present funding levels. Such reductions complicate planning and have forced the extension of many treatment schedules. The most significant impact is that the TPF, originally proposed as a 1998 line item with repackaging completed by 2020, has been delayed to a 2017 start with repackaging not completed until 2039. Impacts to mixed low-level waste treatment have been less severe but are still significant. The work-off schedules for mixed low-level waste will take approximately 20 years, with the as-generated treatment phase not expected to be achieved until the year 2016. Only treatment in existing facilities has been largely unaffected by the budget reductions as described in this plan. Resources for implementing the schedules presented in the PSTP are included in the existing FY 1996 budget. Funding to implement the PSTP beyond FY 1996 will be requested by DOE-OR.

In response to the budget reductions faced by DOE, activities are under way to identify alternate treatment strategies that can be implemented on a much shorter schedule than those currently presented in the PSTP. Particular emphasis is being placed on evaluating use of existing facilities for treating and repackaging mixed transuranic wastes. Modification of existing facilities may offer significant cost and schedule advantages over constructing new facilities. Also, new or developing waste management technologies may be discovered that are safer, more effective, and more cost-efficient than the current technologies considered in this PSTP. Working closely with regulators and others during the implementation of the STP, DOE will continue to evaluate near-term deployment alternatives and technologies that offer potential advantages in the areas of public acceptance, risk abatement, performance, and life-cycle cost. Should better technologies or implementation alternatives be discovered, DOE may request a modification of the STP in accordance with provisions of the STP and/or the related Order.

Definitions

Mixed Waste: Mixed waste is waste that contains both hazardous waste and radioactive material (source, special nuclear, or by-product material as regulated by the Atomic Energy Act of 1954 [42 U.S.C. 2011 et seq.]). Mixed waste is classified by DOE according to the type of radioactive waste that it contains as either mixed low-level waste (MLLW), or mixed transuranic waste (MTRU). DOE's high-level waste (HLW) is assumed to be mixed waste because it contains hazardous components or exhibits the characteristic of corrosivity.

Low-Level Waste: Low-level waste (LLW) is radioactive material that is not classified as high-level waste, TRU waste, spent fuel, or uranium or thorium mill tailings.

Transuranic Waste: Transuranic waste (TRU) refers to radioactive materials contaminated with greater than 100 nanocuries per gram of alpha-emitting radionuclides with half-lives greater than 20 years.

High-Level Waste: High-level waste (HLW) is highly radioactive material containing fission products, traces of uranium and plutonium, and other transuranic elements, that result from chemical processing of spent nuclear fuel.

Life Cycle Cost: The life cycle cost is the sum total of costs estimated to be incurred in the design, development, production, operation, maintenance, support, and final disposition of a major system over its anticipated useful life span.

Constant Dollars: Constant dollars are a unit of cost measurement in which the current value of the dollar is assumed to remain unchanged in the future. Constant dollars in this Overview use fiscal year 1994 as the current dollar value.

PADUCAH GASEOUS DIFFUSION PLANT

PROPOSED SITE TREATMENT PLAN

EXECUTIVE SUMMARY

The Paducah Gaseous Diffusion Plant (PGDP) is owned by the United States Department of Energy (DOE) and is located in western Kentucky in rural McCracken County. The principal site process is the separation of uranium isotopes through gaseous diffusion. In October 1992, congressional passage of the Energy Policy Act of 1992 established the United States Enrichment Corporation (USEC). The DOE-PGDP and the USEC each have separate and defined roles and responsibilities. In accordance with the Energy Policy Act, the USEC leases and operates the uranium enrichment facility at the PGDP. The primary mission of the DOE-PGDP is environmental restoration and waste management.

The DOE is required by Section 3021(b) of the Resource Conservation and Recovery Act (RCRA), as amended by the Federal Facility Compliance Act (FFC Act), to prepare Site Treatment Plans (STPs) describing the development of treatment capacities and technologies for treating mixed waste, defined by the FFC Act as waste containing both a hazardous waste subject to RCRA, and a source special nuclear or by-product material subject to the Atomic Energy Act of 1954 (42 U.S.C. 2011 *et seq.*). On April 6, 1993, the DOE published a notice, 58 *Federal Register* 17875, describing the proposed process for developing the STPs in three phases, including a Conceptual Site Treatment Plan (CSTP), a Draft Site Treatment Plan (DSTP), and a Proposed STP (PSTP). The DOE-PGDP is also submitting this document to United States Environmental Protection Agency (EPA) Region IV to satisfy the Land Disposal Restrictions (LDRs) Federal Facility Compliance Agreement (FFCA) by developing a final plan setting forth treatment technologies for wastes without existing treatment technologies.

To the extent possible, this PSTP identifies specific treatment facilities for treating the DOE-PGDP mixed waste and proposes schedules as set forth in the FFC Act. Otherwise, to the extent possible, schedules for alternative activities such as waste characterization and technology assessment are provided. All schedule information presented is subject to change and funding availability. Assumptions and professional judgments related to the types of treatment technology, location of the treatment facility, contracting mechanism, project approval process, cost, and other factors were used to develop the estimated schedule.

Alternative, emerging, or new technologies not yet considered may be identified in the future and provide opportunities to manage waste more safely, effectively, and at lower cost than the current technologies in the PSTP. Working with regulators and others during the implementation of the STP, the DOE will continue to evaluate and develop options that offer potential advantages considering such factors as public acceptance, risk abatement, performance, and life-cycle cost. If better options are identified, the DOE may request a modification of its STP in accordance with provisions of the STP and/or the resulting Implementation Order issued by the DOE-PGDP's regulators.

A total of 167 mixed wastestreams have been identified as being generated or stored at the DOE-PGDP. The DOE-PGDP wastestreams were organized into treatment groups. Technologies were screened and treatment options were identified for each of

these treatment groups. Options were then evaluated on the basis of ability to meet the criteria of regulatory compliance, environmental, health and safety, treatment effectiveness, ease of implementation, stakeholder concerns, life-cycle cost, and technology development. A treatment option was selected as a result of this evaluation process. These options were then blended along with the options of the other DOE sites, into a sensible national configuration of treatment systems. This PSTP reflects the "blending" as it affects the DOE-PGDP.

The options selected in the STPs may involve activities that are not currently funded in the approved site or project baselines and may not be incorporated into the project funding profiles. The DOE Headquarter's February 13, 1995 memorandum "Guidelines for Developing fiscal year 1997 Environmental Management Program" was followed in preparation of the PSTP. Implementation of the final treatment options will require consideration of available site or project funding which is subject to congressional appropriations.

The DOE-PGDP has approximately 1033.74 m^3 of mixed waste. The following are the treatment options for the DOE-PGDP's wastestreams. All volumes are considered estimates based on the currently available information. The amount of organic containing liquids targeted for treatment at the TSCA Incinerator in Oak Ridge, Tennessee is 225.74 m^3. The amount of combustible solids targeted for treatment at the TSCA Incinerator is 93.97 m^3. The amount of cyanide bearing waste targeted for the Cyanide Treatment Facility in Oak Ridge, Tennessee is 0.78 m^3. The amount of waste consisting of either solid or liquid inorganic chemicals that contain metal contaminants and/or considered to be corrosive targeted for treatment at the DOE-PGDP's C-400-D facility is 8.4 m^3. The amount of photographic waste targeted for commercial recycling is 2.96 m^3. The amount of sludge and debris waste targeted for commercial stabilization is 112.13 m^3. The amount of Mixed Transuranic (TRU) waste targeted for the Oak Ridge Reservation TRU Processing Facility and then disposal at Waste Isolation Pilot Plant is 1.52 m^3. Also, 588.24 m^3 of waste requires further characterization to determine a proper treatment method.

The DOE-PGDP PSTP consists of two volumes. The Background Volume provides explanatory information and a discussion of the DOE-PGDP proposed options for treatment of the subject waste. It also details the changes to the STP since the DSTP. The Compliance Plan Volume provides overall proposed schedules with milestones and target dates for achieving compliance with LDRs and procedures for converting these target dates into milestones, and other provisions for implementing the approved STP through an Implementation Order issued by the DOE-PGDP's regulators.

The schedules in this PSTP have not yet been integrated with those of other DOE sites from a technical, complex-wide perspective. Moreover, the DOE faces increasingly tight budgets throughout the DOE complex and anticipates that funding will continue to be constrained. The schedules in this and other plans reflect those constraints. The DOE has asked regulatory agencies to work with the DOE and other interested parties at the site and national level to assist the DOE in prioritizing its activities. Through this process, the DOE expects that some schedules will be revised before the STPs are approved and orders issued.

PANTEX PLANT
FEDERAL FACILITY COMPLIANCE ACT
PROPOSED SITE TREATMENT PLAN/COMPLIANCE PLAN

EXECUTIVE SUMMARY

The Pantex Plant, located in the panhandle of Texas near Amarillo, has had the primary mission of nuclear weapons production, evaluation, modification, surveillance, and dismantlement since the mid-late 1950's. These activities have generated a variety of low-level mixed wastes at the Pantex Plant. The Federal Facility Compliance Act (FFCAct), enacted October 6, 1992, required federal facilities which generate or store mixed wastes to develop a treatment plan for these wastes. The FFCAct provided for a three year period of sovereign immunity for RCRA storage requirements to allow for the development and implementation of the plan.

The U.S. Department of Energy (DOE) and the management and operating contractor, Mason & Hanger, Silas-Mason Co., Inc. have developed the Pantex Plant Proposed Site Treatment Plan/Compliance Plan (PSTP) to meet the requirements of the FFCAct. The PSTP is the final step of a three-phase development process, which was designed by the DOE to facilitate public and state participation. The first phase, the Conceptual Site Treatment Plan, was submitted to the state in October 1993. The second phase, the Draft Site Treatment Plan, was submitted to the state in October 1994. The PSTP was submitted to the Texas Natural Resources Conservation Committee (TNRCC) on March 31, 1995. By October 6, 1995, the TNRCC must approve the plan, approve with modification, or disapprove the plan.

The PSTP presents DOE's preferred options for the treatment of mixed waste generated at Pantex, along with proposed schedules for development of these options. The preferred options consist of existing onsite treatment, development of mobile treatment units (MTUs) in accordance with the DOE Albuquerque Operations Office (AL) Mixed Waste Treatment Plan, and offsite commercial treatment.

The existing onsite treatment options are the burning ground and separating, surveying, and decontaminating. The MTU technologies and the DOE-AL sites responsible for development are macroencapsulation, stabilization, and barium sulfate precipitation (Pantex), packed bed reactor/silent discharge plasma (Mound/Los Alamos National Laboratory), hydrothermal oxidation and plating waste skid (Los Alamos National Laboratory), thermal desorption and evaporative oxidation (Grand Junction Project Office), and amalgamation (Pinellas Plant). The MTUs will be operated in the Hazardous Waste Treatment and Processing Facility which is planned to be operational by the year 2001.

The schedules required by the FFCAct are divided into two categories: (1) existing technologies, and (2) nonexisting technologies or technologies that require adaptation. Throughout the development of the PSTP, the preferred treatment options have changed from existing to nonexisting as new treatability studies and value engineering studies have been completed. Due to the immature stage of development of these technologies, Pantex has chosen to narrowly define existing technologies as only those which have been proven on a full production scale on Pantex mixed waste streams.

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EXECUTIVE SUMMARY FOR THE PHNS PROPOSED SITE TREATMENT PLAN

The Federal Facility Compliance Act of 1992 (FFCAct) requires the U.S. Department of Energy (DOE) to prepare Site Treatment Plans (STPs) to address treatment of mixed radioactive and hazardous waste for each DOE site which generates and stores mixed waste. These plans are to be submitted to the states (or the U.S. Environmental Protection Agency (EPA) in cases where the state has not been delegated authority to regulate mixed waste) for approval. Owing to the joint Navy/DOE nature of the Naval Nuclear Propulsion Program (NNPP) and pursuant to the legislative history of the FFCAct, NNPP facilities which generate and store mixed waste, including Pearl Harbor Naval Shipyard (PHNS), are included in the FFCAct process and have prepared STPs. The PHNS Proposed Site Treatment Plan (PSTP) is being provided to EPA Region IX for approval in accordance with the FFCAct.

PHNS generates very small amounts of mixed waste as a result of maintenance and repair work performed on Naval nuclear propulsion plants. PHNS currently has approximately 3.60 cubic meters of mixed waste in storage, 5.76 cubic meters of mixed waste undergoing on-site processing, and projects to generate approximately 16.36 cubic meters over the next five years (17.02 cubic meters is expected to be placed in storage pending availability of treatment following completion of on-site processing). These amounts represent less than 0.016 percent of the total amount of mixed waste stored and generated at DOE facilities.

As outlined in an April 6, 1993 Federal Register notice (58 FR 17875 as modified in 60 FR 10840, February 28, 1995), the STPs were developed in three stages. Conceptual Site Treatment Plans (CSTPs), which identified the range of potentially feasible treatment options for each mixed waste stream, were completed and submitted to state and EPA regulators in October 1993. Draft Site Treatment Plans (DSTPs), completed and submitted to state and EPA regulators in August 1994, discussed the evaluation of treatment options and identified the site's preferred treatment option for each waste stream. PSTPs, which contain DOE's preferred options developed after evaluation and integration with the site-specific options in other sites' DSTPs, are being submitted to state and EPA regulators in March 1995. This three step process was intended to facilitate early interaction with the regulators and other stakeholders to maximize the likelihood that the STPs will ultimately be approved by October 1995 as required by the FFCAct.

Prior to submittal of the DSTPs in August 1994, PHNS determined preferred treatment options for each waste stream by comparing all feasible treatment options (including on-site treatment, use of mobile treatment systems, commercial treatment, and treatment at other DOE facilities) in several fundamental areas (including regulatory compliance, treatment effectiveness, environment/health/safety concerns, cost, and implementability). This approach was used by all sites. Based on the very small volumes of PHNS's waste streams requiring treatment following completion of on-site processing, these evaluations indicated that off-site treatment at other facilities is economically and technically preferable to other options. PHNS identified potentially technically capable facilities for each waste stream based on an evaluation of available treatment facility information, then coordinated with the other sites to confirm treatment capability and select preferred options. Several of the preferred treatment

options now identified in the PSTP have been changed from those identified in the DSTP based on further evaluations to resolve technical uncertainties and based on the DOE Options Analysis Team (OAT) evaluations to improve the efficiency of the complex wide treatment configuration.

In addition to identifying the proposed treatment option for each PHNS mixed waste stream, the PSTP also identifies proposed schedules for shipment of each waste stream to the selected treatment facility, and proposed arrangements for pre-treatment storage and post-treatment residual management for each waste stream. A single schedule milestone, for shipment to the treatment facility within 18 months of the start of facility operations, is proposed for each waste stream. Thus, pre-treatment storage on-site at PHNS until the selected treatment facilities are available is proposed. Projected schedules for the start of operation of selected treatment facilities are identified. The PSTP also proposes commitments to perform additional evaluations and work with the EPA Region IX to determine whether alternative treatment options should be selected in the event completion of a targeted treatment facility is delayed.

The PHNS PSTP proposes that treatment residuals from PHNS's mixed waste streams be stored at the treatment sites until DOE complex-wide mixed waste disposal arrangements are established. This proposal is based on the very small volumes of PHNS's mixed waste streams, the desire to minimize shipments, and technical concerns associated with different radionuclides and hazardous constituents in the residues. Given the very small volumes of PHNS's mixed waste streams, these streams will likely be blended with other waste streams at the treatment sites to facilitate treatment. Therefore, treatment residuals will likely be a mixture of PHNS's and other sites' residuals which may contain different radionuclides and hazardous constituents from the original PHNS's waste streams. PHNS and the NNPP consider this technical justification supports having very small volumes of treatment residuals remain at the treatment sites vice being returned to PHNS.

The following table contains a listing of the mixed waste streams and proposed treatment options identified in the PHNS PSTP. The table also identifies the proposed schedule milestones, projected shipping dates, and estimated costs for implementing each proposed treatment option. If the targeted treatment facilities are completed according to currently identified schedules, all of PHNS's mixed waste streams will be treated by 2001, and the total cost for treating all waste streams will be about $ 470,000. PHNS and the NNPP believe the PHNS PSTP balances the concerns of expeditious completion of treatment, cost/efficiency, minimizing shipments, and minimizing risk/liability, and represents the best overall plan for achieving compliance with Land Disposal Restriction requirements for PHNS mixed waste.

Waste Stream ID #	Waste Stream Name	Current Inventory (M3)	5 Year Projected Inventory (M3)	Preferred Option	Facility Name	Projected Start Date of Facility Operation	Proposed Milestone	Projected Shipping Date	Estimated Cost
PH-W001	Chromate Resin	2.14	0.00	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$85,426
PH-W002	Liquid Containing 1,1,1 Trichloroethane	0.02	0.00	IN-S005	INEL WERF Incinerator	Jan. 1996	Start of ops. + 18 months	Jul. 1997	$33,323
PH-W003	Chromium and Lead Based Paint Chips	0.002	0.50	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$38,086
PH-W004	Solid Waste Contaminated with Chromate	0.05	0.05	IN-S005	INEL WERF Incinerator	Jan. 1996	Start of ops. + 18 months	Jul. 1997	$33,620
PH-W006	Elemental Lead	0.08	0.17	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$33,755
PH-W007	Lead Contaminated Debris	0.04	0.10	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$28,173
PH-W008	Brass and Bronze	0.60	0.90	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$38,873
PH-W013	Filter Media with Dioctyl Phthalate	0.67	15.30	SE-S005	Scientific Ecology Group Inc.	Operational	PSTP scheduled approval + 12 months	Oct. 1996	$179,085

EXECUTIVE SUMMARY

The Portsmouth Gaseous Diffusion Plant (PORTS) is owned by the U.S. Department of Energy (DOE) and is located in the south-central portion of Ohio in rural Pike County. The site's principal process is the separation of uranium isotopes through gaseous diffusion for uranium enrichment. In October 1992, Congressional passage of the Energy Policy Act of 1992 established the United States Enrichment Corporation (USEC). In accordance with the Act, USEC leases and operates the uranium enrichment facilities at PORTS. DOE's primary role at PORTS is in the areas of environmental restoration and waste management. USEC, as owner of the currently generated wastes, is responsible for treatment of these wastes.

DOE is required by Sect. 3021(b) of RCRA, as amended by the Federal Facilities Compliance Act (FFCAct), to prepare site treatment plans for mixed waste (i.e., waste containing both radioactive and RCRA hazardous constituents). The PORTS Proposed Site Treatment Plan (PSTP) is being provided to the state of Ohio and others for review.

The DOE Portsmouth Site Office prepared this PSTP for mixed waste at PORTS. DOE is providing this PSTP for public and regulatory review in accordance with the April 6, 1993, Federal Register notice that requires DOE to submit site treatment plans for facilities at which DOE generates or stores mixed waste (58 FR 17875) according to the schedule published by DOE. The purpose of this PSTP is to identify the preferred options for treating the facility's mixed waste. To the extent feasible, this PSTP identifies specific treatment facilities for treating the mixed waste, including the location of the treatment facilities and proposed schedules as required in the FFCAct.

A total of 79 mixed waste streams have been identified as being generated or in storage at PORTS. All the current and future mixed waste streams are potentially contaminated with low-level radioactive components; no transuranic or high-level waste streams are generated during PORTS operations and are not expected to be generated or stored at PORTS in the future. All current waste streams are believed to be sufficiently characterized to allow evaluation of treatment options. In the draft site treatment plan, these 79 waste streams were divided into 20 treatability groupings on the basis of waste characteristics; technologies were screened and treatment options established for each of these treatability groupings; and options were then evaluated on the basis of their ability to meet the requirements of regulatory compliance, environmental health and safety, treatment effectiveness, implementability, life cycle cost, and technology development. In this PSTP, options were further reevaluated such that consideration was also given to the Ohio Environmental Protection Agency comments, option refinements, and findings of the Options Analysis Team concerning the overall DOE waste management program. An additional evaluation criterion, stakeholder concerns, will be considered after public and regulatory comments are available. A preferred option was selected for each treatability grouping as a result of this evaluation.

Section 3 of this Background Volume summarizes the evaluation process and presents the preferred treatment option as well as other options considered; details of the evaluation are given in Appendix A. Other significant portions of this volume include Sect. 1, which discusses the purpose and scope, presents details of the site, describes the mixed waste categories, and presents information concerning organization of the PSTP, framework for developing the DSTP, and a discussion of related documents and compliance agreements; Sect. 2, a summary of the technology development methodology used; Sect. 6, a discussion of the approach to addressing wastes to be generated in the future; Sect. 7, a description of RCRA storage facilities; and Sect. 8, an approach to disposal of treatment residuals. Appendix B is a summary of the Ohio Option; Appendix C is a summary of available analytical data; Appendix D is the public participation plan; and Appendix E provides detailed cost estimates for the preferred option and for other alternatives that were evaluated. Sections 4 and 5 are relatively minor since no TRU or high-level mixed wastes are generated or stored at PORTS and are not expected to be generated or stored at PORTS in the future.

The Background Volume (Volume I) of the PSTP is a comprehensive background and analysis document that addresses the technical requirements of the FFCAct. It includes a discussion of each alternative considered for each waste stream or group of waste streams. It also includes a discussion of the proposed options' implementation as considered by the DOE Options Analysis Team. This includes the use of vendor supplied and operated mobile treatment units and the location of all treatment. In Appendix A to Volume I, the evaluation process itself and the selection of the preferred option are presented. Included here is the numerical scoring of alternatives considered and the logic for scoring.

The Compliance Plan (Volume II) of the PSTP for PORTS, is the document by which treatment of mixed waste at PORTS will be conducted. It specifically addresses those items required by the FFCAct and is formatted to accept revisions on an annual basis. The preferred option for each waste stream or group of waste streams (grouped by treatability) is presented here, along with a proposed schedule for each preferred option selected. The target schedules as defined in this document are based on the most recent prioritization of estimated 5-year target budgets.

Treatment schedules in the final PSTP are not the same as those presented in the December 1994 draft PSTP. The DOE budget cuts in late December resulted in revised target dates and thus required changes in the treatment schedules. Aqueous wastes, which were projected in the draft plan to be completed by 2001, are now scheduled to be completed in 2009. Likewise, soils contaminated with VOCs were originally scheduled to be treated by fourth quarter 2008 but are now scheduled to be completed by the second quarter, 2011.

The schedules in this Proposed Plan have not yet been integrated with those of other DOE sites from a technical, complex-wide perspective. Moreover, DOE faces increasingly tight budgets throughout the DOE complex and anticipates that funding will continue to be constrained. The schedules in this and other Plans reflect those constraints. DOE has asked regulatory agencies to work with DOE and other interested parties at the site and National level to assist DOE in priortizing its activities.

EXECUTIVE SUMMARY FOR THE PNS PROPOSED SITE TREATMENT PLAN

The Federal Facility Compliance Act of 1992 (FFCAct) requires the U.S. Department of Energy (DOE) to prepare Site Treatment Plans (STPs) to address treatment of mixed radioactive and hazardous waste for each DOE site which generates and stores mixed waste. These plans are to be submitted to the states (or the U.S. Environmental Protection Agency (EPA) in cases where the state has not been delegated authority to regulate mixed waste) for approval. Owing to the joint Navy/DOE nature of the Naval Nuclear Propulsion Program (NNPP) and pursuant to the legislative history of the FFCAct, NNPP facilities which generate and store mixed waste, including Portsmouth Naval Shipyard (PNS), are included in the FFCAct process and have prepared STPs. The PNS Proposed Site Treatment Plan (PSTP) is being provided to EPA Region I for approval in accordance with the FFCAct.

PNS generates very small amounts of mixed waste as a result of maintenance and repair work performed on Naval nuclear propulsion plants. PNS currently has approximately 0.77 cubic meters of mixed waste in storage, 0.0 cubic meters of mixed waste undergoing on-site processing and projects to generate approximately 2.99 cubic meters over the next five years (1.59 cubic meters of the 2.99 cubic meters is expected to be placed in storage pending availability of treatment following completion of on-site processing). These amounts represent less than 0.002 percent of the total amount of mixed waste stored and generated at DOE facilities.

As outlined in an April 6, 1993 Federal Register notice (58 FR 17875 as modified in 60 FR 10840, February 28, 1995), the STPs were developed in three stages. Conceptual Site Treatment Plans (CSTPs), which identified the range of potentially feasible treatment options for each mixed waste stream, were completed and submitted to state and EPA regulators in October 1993. Draft Site Treatment Plans (DSTPs), completed and submitted to state and EPA regulators in August 1994, discussed the evaluation of treatment options and identified the site's preferred treatment option for each waste stream. PSTPs, which contain DOE's preferred options developed after evaluation and integration with the site-specific options in other site's DSTPs, are being submitted to state and EPA regulators in March 1995. This three step process was intended to facilitate early interaction with the regulators and other stakeholders to maximize the likelihood that the STPs will ultimately be approved by October 1995 as required by the FFCAct.

Prior to submittal of the DSTPs in August 1994, PNS determined preferred treatment options for each waste stream by comparing all feasible treatment options (including on-site treatment, use of mobile treatment systems, commercial treatment, and treatment at other DOE facilities) in several fundamental areas (including regulatory compliance, treatment effectiveness, environment/health/safety concerns, cost, and implementability). This approach was used by all sites. Based on the very small volumes of PNS waste streams requiring treatment following completion of on-site processing, these evaluations indicated that off-site

treatment at other DOE facilities is economically and technically preferable to other options. PNS identified potentially technically capable DOE facilities for each waste stream based on an evaluation of available treatment facility information, then coordinated with the other DOE sites to confirm treatment capability and select preferred options. Several of the preferred treatment options now identified in the PSTP have been changed from those identified in the DSTP based on further evaluations to resolve technical uncertainties and based on the DOE Options Analysis Team (OAT) evaluations to improve the efficiency of the complex wide treatment configuration.

In addition to identifying the proposed treatment option for each PNS mixed waste stream, the PSTP also identifies proposed schedules for shipment of each waste stream to the selected treatment facility, and proposed arrangements for pre-treatment storage and post-treatment residual management for each waste stream. A single schedule milestone, for shipment to the treatment facility within 18 or 24 months of the start of facility operations, is proposed for each waste stream. Thus, pre-treatment storage on-site at PNS until the selected treatment facilities are available is proposed. Projected schedules for the start of operation of selected treatment facilities are identified. The PSTP also proposes commitments to perform additional evaluations and work with the EPA Region I to determine whether alternative treatment options should be selected in the event completion of a targeted treatment facility is delayed.

The PNS PSTP proposes that treatment residuals from PNS mixed waste streams be stored at the treatment sites until DOE complex-wide mixed waste disposal arrangements are established. This proposal is based on the very small volumes of PNS's mixed waste streams, the desire to minimize shipments, and technical concerns associated with different radionuclides and hazardous constituents in the residues. Given the very small volumes of PNS's mixed waste streams, these streams will likely be blended with other waste streams at the treatment sites to facilitate treatment. Therefore, treatment residuals will likely be a mixture of PNS's and other sites' residuals which may contain different radionuclides and hazardous constituents from the original PNS waste streams. PNS and the NNPP consider this technical justification supports having very small volumes of treatment residuals remain at the treatment sites vice being returned to PNS.

The following table contains a listing of the mixed waste streams and proposed treatment options identified in the PNS PSTP. The table also identifies the proposed schedule milestones, projected shipping dates, and estimated costs for implementing each proposed treatment option. If the targeted treatment facilities are completed according to currently identified schedules, all of PNS's mixed waste streams will be treated by 2001, and the total cost for treating all waste streams will be approximately $153,000. PNS and the NNPP believe the PNS PSTP balances the concerns of expeditious completion of treatment, cost/efficiency, minimizing shipments, and minimizing risk/liability, and represents the best overall plan for achieving compliance with Land Disposal Restriction requirements for PNS mixed waste.

Waste Stream ID #	Waste Stream Name	Current Inventory (M3)	5 Year Projected Inventory (M3)	Preferred Option	Facility Name	Projected Start Date of Facility Operation	Proposed Milestone	Projected Shipping Date	Estimated Cost
PN-W001	Lead Contaminated Debris	0.142	0.00	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$25,936
PN-W002	Paint Chips Containing Lead and Chromium	0.00	0.20	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$25,614
PN-W003	Solidified Resin with Chromium	0.21	0.00	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$30,889
PN-W004	Brass and Bronze	0.42	1.17	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$31,919
PN-W005	Air Filters Containing Lead	0.00	0.185	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$28,660
PN-W015	Solids Containing Potassium Chromate	0.00	0.03	SR-S018	Savannah River CIF	Feb. 1996	Start of ops. + 24 months	Feb. 1998	$10,200

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EXECUTIVE SUMMARY

The Federal Facility Compliance Act (FFCAct) requires the Department of Energy (DOE) to prepare Site Treatment Plans for how mixed waste, waste containing both hazardous and radioactive components, will be treated. More specifically, the FFCAct requires each individual DOE site that stores or generates mixed waste to develop a Site Treatment Plan.

Even though PPPL is not storing or generating mixed waste, PPPL was identified on the list of DOE sites that would be included in the FFCAct process due to the possibility of the site generating mixed waste, which could require treatment on site. However, PPPL has developed an approach where any potential mixed waste would be treated in the original accumulation container within 90 days of generation. This approach will keep PPPL in compliance with the applicable Resource Conservation and Recovery Act (RCRA) Land Disposal Restrictions. As outlined in Section 2.3, this was discussed with the applicable regulatory agencies.

Since the container treatment approach will keep the site in compliance with the regulations, the Site Treatment Plan (STP) provides only a Background Volume. The Compliance Volume, which would form the basis for an implementing order, is not applicable to the site and therefore not provided. For the future, it is DOE's intent to keep regulators and stakeholders aware of the status of activities affecting the implementation of the FFCAct. As part of this effort, updates to the Background Volume would be provided. If or when it is anticipated that the site would be out of compliance with the Land Disposal Restrictions for mixed waste, a complete Compliance Volume would be submitted. At the present time this Plan does not require the formal approval of the United States Environmental Protection Agency (EPA) or the State of New Jersey.

To be consistent with STP's developed by other DOE sites, the Background Volume is developed in the same format used by the other DOE sites.

The Background Volume consists of the following eight sections:

- Section 1. Introduction. This section discusses the Purpose and Scope, Site History and Mission, Framework for Developing the Site Treatment Plans, the Proposed Plan Organization and related activities.
- Section 2. Methodology. This includes discussions of Assumptions, Preferred Selection Process, Coordination with Regulatory Agencies and Other Stakeholders, Characterization of Mixed Waste and Waste Minimization.
- Section 3. Low Level Mixed Waste Stream. This provides, for each mixed waste stream, a discussion of each mixed waste stream, treatment technology needed and the preferred option.
- Sections 4 and 5. TRU Mixed Waste and High Level Mixed Waste Stream. These two sections are not relevant to PPPL since PPPL currently does not have nor expects to generate any waste within these categories.
- Section 6. Future Generation of Mixed Waste. Identifies, as much as possible, mixed waste not discussed in Section 3 that could result from future restoration or site remediation activities.
- Section 7. Storage Report. Discusses the adequacy of the site's mixed waste storage facilities. PPPL currently does not nor plans to store mixed waste on site. PPPL plans to treat its mixed waste in the original accumulation containers within 90 days of collection, after which the waste is no longer classified as a mixed waste but a low level radioactive waste.

- Section 8. Process for Evaluating Disposal Issues in Support of the Site Treatment Plan. This summarizes the overall process developed by DOE in the area of disposal of mixed waste treatment residuals.

The Compliance plan volume is a shorter and more focused document which provides information regarding implementation of the site Treatment Plan. Since PPPL is not and will not be out of compliance with RCRA Land Disposal Restriction and Storage requirements as explained in the Compliance Plan Volume, the full text of the Compliance Plan Volume will not be provided. It is intended that an update to the Plan would be provided annually.

The above discussion provides an overview of FFCAct planning and plan review and approval process and format of the Proposed Plan. The important feature of the Plan is the discussion of the waste streams and treatment options. The following table provides a summary matrix which identifies each waste stream, the respective waste treatment option and inventory.

PPPL Waste/Treatment Matrix

WASTE NAME	PREFERRED TREATMENT	INVENTORY
Elemental Lead	Macro Encapsulation	0.0
Organic Liquids	Chemical Fixation	0.0
Lead	Stabilization/Solidification	0.0
Metal Debris	Stabilization/Solidification	0.0
Cadmium	Stabilization/Solidification	0.0
Halogenated Oils	Chemical Fixation or Stabilization/Solidification	0.0
Aqueous Solutions with Heavy Metals	Chemical Fixation or Stabilization/Solidification	0.0

All of the waste treatment will be accomplished in the original accumulation containers.

Also, as noted above, Chapter 3 of the Background Volume provides more detail on each of the items in this matrix.

The final stage of the FFCAct is for the regulatory agency to review the plan. DOE plans to be working with the staff of the agency or agencies to discuss issues and to keep them apprised of issues related to the Plan.

EXECUTIVE SUMMARY FOR THE PSNS PROPOSED SITE TREATMENT PLAN

The Federal Facility Compliance Act of 1992 (FFCAct) requires the U.S. Department of Energy (DOE) to prepare Site Treatment Plans (STPs) to address treatment of mixed radioactive and hazardous waste for each DOE site which generates and stores mixed waste. These plans are to be submitted to the states (or the U.S. Environmental Protection Agency (EPA) in cases where the state has not been delegated authority to regulate mixed waste) for approval. Owing to the joint Navy/DOE nature of the Naval Nuclear Propulsion Program (NNPP) and pursuant to the legislative history of the FFCAct, NNPP facilities which generate and store mixed waste, including Puget Sound Naval Shipyard (PSNS), are included in the FFCAct process and have prepared STPs. The PSNS Proposed Site Treatment Plan (PSTP) is being submitted to Washington Department of Ecology for approval in accordance with the FFCAct.

PSNS generates very small amounts of mixed waste as a result of maintenance and repair work performed on Naval nuclear propulsion plants. PSNS currently has approximately 45.07 cubic meters of mixed waste in storage, 60.77 cubic meters of mixed waste undergoing on-site processing, and projects to generate approximately 734.98 cubic meters over the next five years (of this 734.98 cubic meters, 36.43 cubic meters is expected to be placed in storage pending availability of treatment following completion of on-site processing). These amounts represent less than 0.25 percent of the total amount of mixed waste stored and generated at DOE facilities.

PSNS also generates defueled decommissioned reactor compartment disposal packages for burial at Hanford. These reactor compartments are mixed waste because they contain lead; however, treatment of this mixed waste is not required because the macroencapsulation treatment standard for lead is already met as the packages are originally constructed. PSNS projects that over the next 5 years reactor compartment disposal packages totaling 37,000 cubic meters will be shipped to Hanford.

As outlined in an April 6, 1993 Federal Register notice (58 FR 17875 as modified in 60 FR 10840, February 28, 1995), the STPs were developed in three stages. Conceptual Site Treatment Plans (CSTPs), which identified the range of potentially feasible treatment options for each mixed waste stream, were completed and submitted to state and EPA regulators in October 1993. Draft Site Treatment Plans (DSTPs), completed and submitted to state and EPA regulators in August 1994, discussed the evaluation of treatment options and identified the site's preferred treatment option for each waste stream. PSTPs, which contain DOE's preferred options developed after evaluation and integration with the site-specific options in other sites' DSTPs, are being submitted to state and EPA regulators in March 1995. This three step process was intended to facilitate early interaction with the regulators and other stakeholders to maximize the likelihood that the STPs will ultimately be approved by October 1995 as required by the FFCAct.

Prior to submittal of the DSTPs in August 1994, PSNS determined preferred treatment options for each waste stream by comparing all feasible treatment options (including on-site treatment, use of mobile treatment systems, commercial treatment, and treatment at other DOE facilities) in several fundamental areas (including regulatory compliance, treatment effectiveness, environment/health/safety concerns, cost, and implementability). This approach was used by all sites. Based on the very small volumes of PSNS waste streams requiring treatment following completion of on-site processing, these evaluations indicated that off-site treatment at other facilities is economically and technically preferable to other options. PSNS identified potentially technically capable facilities for each waste stream based on an evaluation of available treatment facility information, then coordinated with the other sites to confirm treatment capability and select preferred options. Several of the preferred treatment options now identified in the PSTP have been changed from those identified in the DSTP based on further evaluations to resolve technical uncertainties and based on the DOE Options Analysis Team (OAT) evaluations to improve the efficiency of the complex wide treatment configuration.

In addition to identifying the proposed treatment option for each PSNS mixed waste stream, the PSTP also identifies proposed schedules for shipment of each waste stream to the selected treatment facility, and proposed arrangements for pre-treatment storage and post-treatment residual management for each waste stream. A single schedule milestone, for shipment to the treatment facility within 18 months of the start of facility operations, is proposed for each waste stream. Thus, pre-treatment storage on-site at PSNS until the selected treatment facilities are available is proposed. Projected schedules for the start of operation of selected treatment facilities are identified. The PSTP also proposes commitments to perform additional evaluations and work with the Washington Department of Ecology to determine whether alternative treatment options should be selected in the event completion of a targeted treatment facility is delayed.

The PSNS PSTP proposes that treatment residuals from PSNS mixed waste streams be stored at the treatment sites until DOE complex-wide mixed waste disposal arrangements are established. This proposal is based on the very small volumes of PSNS's mixed waste streams, the desire to minimize shipments, and technical concerns associated with different radionuclides and hazardous constituents in the residues. Given the very small volumes of PSNS's mixed waste streams, these streams will likely be blended with other waste streams at the treatment sites to facilitate treatment. Therefore, treatment residuals will likely be a mixture of PSNS's and other sites' residuals which may contain different radionuclides and hazardous constituents from the original PSNS waste streams. PSNS and the NNPP consider this technical justification supports having very small volumes of treatment residuals remain at the treatment sites vice being returned to PSNS.

The following table contains a listing of the mixed waste streams and proposed treatment options identified in the PSNS PSTP. The table also identifies the proposed schedule milestones, projected shipping dates, and estimated costs for implementing each proposed treatment option. If the targeted treatment facilities are completed according to currently identified schedules, all of PSNS's mixed waste streams will be treated by 2001, and the total cost for treating all waste streams will be about $809,000. PSNS and the NNPP believe the

PSNS PSTP balances the concerns of expeditious completion of treatment, cost/efficiency, minimizing shipments, and minimizing risk/liability, and represents the best overall plan for achieving compliance with Land Disposal Restriction requirements for PSNS mixed waste.

Waste Stream ID #	Waste Stream Name	Current Inventory (M3)	5 Year Projected Inventory (M3)	Preferred Option	Facility Name	Projected Start Date of Facility Operation	Proposed Milestone	Projected Shipping Date	Estimated Cost
PS-W001	Organic Debris with Heavy Metals	4.54	2.14	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$40,000
PS-W002	Paint Chips with Heavy Metals	0.53	1.05	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$15,726
PS-W004	Liquid with F-Listed Solvents	0.25	0.00	IN-S005	INEL WERF Incinerator	Jan. 1996	Start of ops. + 18 months	Jul. 1997	$9,120
PS-W005	Debris with F-Listed Solvents	6.72	0.00	IN-S005	INEL WERF Incinerator	Jan. 1996	Start of ops. + 18 months	Jul. 1997	$67,948
PS-W006	Solidified Liquid with F-Listed Solvents	0.84	0.00	IN-S005	INEL WERF Incinerator	Jan. 1996	Start of ops. + 18 months	Jul. 1997	$28,831
PS-W007	Debris with Heavy Metals and PCBs	3.11	0.50	IN-S005	INEL WERF Incinerator	Jan. 1996	Start of ops. + 18 months	Jul. 1997	$31,595
PS-W009	Paint Thinner with Butyl Alcohol	0.02	0.00	IN-S005	INEL WERF Incinerator	Jan. 1996	Start of ops. + 18 months	Jul. 1997	$8,967
PS-W010	Non-Compressed Filter Media with Dioctyl Phthalate	16.33	19.62	SE-S005	Scientific Ecology Group Inc.	Operational	PSTP scheduled approval + 12 months	Oct. 1996	$354,443
PS-W011	Debris with heavy Metals and F-Listed Solvents	0.19	0.00	IN-S005	INEL WERF Incinerator	Jan. 1996	Start of ops. + 18 months	Jul. 1997	$9,841
PS-W012	Paint Chips with Heavy Metals and PCBs	0.03	0.23	IN-S005	INEL WERF Incinerator	Jan. 1996	Start of ops. + 18 months	Jul. 1997	$10,064
PS-W013	Elemental Lead	0.17	1.10	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$46,843
PS-W014	Particulates with Heavy Metals	0.05	0.33	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$7,242
PS-W017	Inorganic Debris with Heavy Metals	7.11	9.28	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$128,945
PS-W018	Acidic Liquids with Heavy Metals and Toxic Inorganics	0.30	0.00	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	$4,717
PS-W019	Filters with Asbestos and Dioctyl Phthalate	2.18	2.18	IN-S005	INEL WERF Incinerator	Jan. 1996	Start of ops. + 18 months	Jul. 1997	$13,924
PS-W020	Compressed Filter Media with Dioctyl Phthalate	2.70	0.00	IN-S005	INEL WERF Incinerator	Jan. 1996	Start of ops. + 18 months	Jul. 1997	$30,790

March 30, 1995

PROPOSED SITE TREATMENT PLAN EXECUTIVE SUMMARY

DEVELOPED UNDER THE

FEDERAL FACILITY COMPLIANCE ACT

FOR THE

RMI TITANIUM COMPANY EXTRUSION PLANT

ASHTABULA, OHIO

PREPARED FOR
THE UNITED STATES DEPARTMENT OF ENERGY

PROPOSED SITE TREATMENT PLAN
FOR
THE RMI TITANIUM COMPANY
EXTRUSION PLANT

EXECUTIVE SUMMARY

On October 6, 1992, the Federal Facility Compliance Act (FFCAct) was signed into law. The Act directs the U. S. Department of Energy (DOE) to prepare a Site Treatment Plan (STP) for each DOE Site generating or storing mixed waste (A mixed waste is a waste material that contains both radioactive and hazardous constituents). The STP's provide details on the planned treatment of these DOE mixed wastes. Each site's plan must provide a list or inventory of the mixed waste, treatment technology required and the approach or treatment facility that will be used to treat the waste.

This Plan is a result of a three phase development process. A Conceptual Site Treatment Plan (CSTP) which included a mixed waste inventory with potential treatment technologies and a range of treatment options was developed in October of 1993. This was followed in August of 1994 by a Draft Site Treatment Plan in which the treatment options identified in the CSTP were narrowed down to a few or only one preferred option for each waste stream. The Proposed Site Treatment Plan contains the preferred option and the treatment schedule for each waste stream. This is the final stage of the STP process. The Proposed Site Treatment Plan is subject to approval by the Ohio EPA (OEPA) for the RMI Extrusion Plant Decommissioning Project (RMIDP). Upon approval, OEPA will negotiate an order with DOE for compliance.

The PSTP, like the DSTP consists of two major sections or volumes: the Background Volume and the Plan Volume. The Background Volume provides an extensive discussion of the waste streams and proposed options. The Plan Volume is a shorter, more focused description of the plans and schedules for disposition of the wastes.

The Background Volume consists of the following eight sections:

- Section 1. Introduction. This section discusses the Purpose and Scope, Site History and Mission, Framework for Developing the STP, The Proposed Plan Organization and Related Activities.

- Section 2. Methodology. This includes discussions of Assumptions, Preferred Selection Process, Coordination with Regulatory Agencies and Stakeholders, Characterization of Mixed Waste and Waste Minimization.

- Section 3. Low Level Mixed Waste Stream. For each mixed waste stream this section provides a discussion of the waste stream, treatment technology needed and the preferred option.

- Sections 4 and 5. TRU Mixed Waste and High Level Mixed Waste Stream. These sections are not applicable to RMIDP. TRU and High Level wastes were never generated at the RMI Site.

- Section 6. Future Generation of Mixed Wastes. This section identifies, as much as possible, mixed wastes not identified in Section 3 that could result from future restoration or site remediation activities.

- Section 7. Storage Report. This section discusses the adequacy of the Site's waste storage facilities.

- Section 8. Process for Evaluating Disposal Issues in Support of the STP. This summarizes the overall DOE activity in the area of disposal of mixed waste treatment residuals.

The Plan Volume is a shorter, more focused document consisting of the following sections:

- Section 1. Purpose and Scope of the Compliance Plan

- Section 2. Implementation of the Site Treatment Plan. This provides administrative language for the plan.

- Section 3. Low Level Mixed Waste Schedules. This section identifies milestones and target dates for disposition of each mixed waste stream and option.

The following is a summary matrix of the RMI Waste Streams, Preferred Treatment Options and Inventory.

Waste Type	Preferred Treatment	Current Inventory	5 yr.Projected Inventory
Aqueous Liquids	Incineration	1480 kg.	3590 kg.
Organic Liquids	Incineration	1110 kg.	430 kg.
Inorganic Debris	Precipitation and Stabilization	6598 kg.	506 kg.
Organic Debris	Incineration	1879 kg.	366 kg.
Inorganic Sludge	Precipitation and Stabilization	0 kg.	468 kg.

As discussed above, Chapter 3 of the Background Volume provides more detail on each of the items in this matrix

The final stage of the FFCA Planning Process is for the regulatory agency to review the plan. DOE will work with the agency to facilitate approval of the Plan.

The schedules in this Proposed Plan have not yet been integrated with those of other DOE sites from a technical, complex-wide perspective. Moreover, DOE faces increasingly tight budgets throughout the DOE complex and anticipates that funding will continue to be constrained. The schedules in this and other Plans reflect those constraints. DOE has asked regulatory agencies to work with DOE and other interested parties at the national level to assist DOE in prioritizing its activities, Through this process, DOE expects that some schedules will be revised before the Site Treatment Plans are approved and orders issued.

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Executive Summary

This Proposed Site Treatment Plan has been prepared pursuant to Section 3021(b) of the Resource Conservation and Recovery Act, as amended by the Federal Facility Compliance Act of 1992. The plan describes the development of treatment technologies and capacities for treating mixed radioactive and hazardous waste that is subject to the Resource Conservation and Recovery Act Land Disposal Restriction regulations. The plan will be submitted to the Colorado Department of Public Health and Environment for approval, approval with modification, or disapproval. Upon approval of the plan, the Colorado Department of Public Health and Environment will issue a Compliance Order requiring implementation of the plan.

This Proposed Site Treatment Plan consists of a Background Volume and a Compliance Plan Volume. The Background Volume provides information on the process by which the plan was prepared and technical information on the treatment technologies considered during the preparation of the plan. The Compliance Plan Volume describes implementing procedures and provides schedules proposed to be used in the Compliance Order which will be issued by the Colorado Department of Public Health and Environment.

The schedules in this Proposed Site Treatment Plan have not yet been integrated with those of other Department of Energy sites from a technical, complex-wide perspective. Moreover, the Department of Energy faces increasingly tight budgets throughout the complex and anticipates that funding will continue to be constrained. The schedules in this and other sites' plans reflect those constraints. The Department of Energy has asked regulatory agencies to work with the Department and other interested parties at the site and national level to assist the Department in prioritizing its environmental activities. Through this process, the Department of Energy expects that some schedules will be revised before the Site Treatment Plans are approved and orders issued.

This Proposed Site Treatment Plan addresses the treatment of approximately 3,800 cubic meters of solid and liquid mixed low-level waste and 300 cubic meters of solid and liquid transuranic wastes in storage at the site. An additional 5,708 cubic meters of stored mixed low-level waste referred to as Pondcrete and 1,086 cubic meters of Solar Pond Sludge may require treatment as mixed low-level waste, depending on the final Operable Unit 4 closure decision. The projected waste generation rates for the next five years are estimated in the Background Volume as 4,000 cubic meters of mixed low-level waste and 186 cubic meters of mixed transuranic waste requiring treatment.

Mixed low-level wastes are identified for treatment to meet the Land Disposal Restriction treatment standards. Mixed transuranic wastes are proposed for disposal at the Waste Isolation Pilot Plant after any treatment required to ensure these waste are acceptable for transportation to, and disposal at, the Waste Isolation Pilot Plant.

Specific inventory summary information is included for those mixed low-level wastes and mixed transuranic wastes requiring treatment under this plan. It also includes an identification, by waste form, of those wastes for which treatment capacity currently exists, as well as an identification of those wastes for which treatment technologies exist but require adaptation for treatment of mixed wastes.

This plan provides for the characterization of the wastes stored at the Rocky Flats Environmental Technology Site to determine which, if any, waste forms already meet the Land Disposal Restriction standards. Characterization will also gather information necessary to support development of treatment technologies and treatment capacity necessary to treat mixed wastes that do not currently meet the land disposal restriction treatment standards.

This plan identifies technologies suitable for treating mixed wastes from the Rocky Flats Environmental Technology Site so that they comply with the applicable land disposal criteria and can be disposed of when appropriate disposal sites are identified. The plan proposes that onsite microencapsulation, macroencapsulation, and solvent removal treatment systems be designed and installed to treat mixed wastes generated and stored at the Rocky Flats Environmental Technology Site.

This plan describes the development and construction of treatment systems for the onsite treatment of the mixed wastes presently stored at the Rocky Flats Environmental Technology Site. Three treatment systems are planned for treatment of mixed low-level wastes and a fourth system, if required, is planned for treatment of mixed transuranic wastes. The plan also contains the Rocky Flats Environmental Technology Site proposed schedules for developing technologies and treatment capacities for treatment of mixed low-level and mixed transuranic wastes. At any time during the planning and development of these onsite treatment systems, new information may be received that indicates that an offsite treatment alternative is more advantageous to the government. In this circumstance the offsite alternative may be selected and the development of onsite capability may be terminated.

This Proposed Site Treatment Plan also proposes shipping a small volume of mixed low-level wastes to existing or planned offsite facilities for treatment. The plan provides for the use of offsite treatment at commercial and Department of Energy facilities for eight mixed low-level waste forms presently stored at the Rocky Flats Environmental Technology Site.

Upon completion of the treatment of the stored wastes and development of the capacity to treat newly generated wastes in a timely fashion, the Site Treatment Plan will be deemed completed and the Compliance Order terminated.

EXECUTIVE SUMMARY

Sandia National Laboratories, New Mexico (SNL/NM) is a research and development facility operated for the U.S. Department of Energy (DOE) by Sandia Corporation, a subsidiary of Lockheed Martin Corporation. For each DOE facility that generates or stores mixed waste, the Federal Facility Compliance Act (FFCAct) of October 6, 1992, requires DOE to prepare a plan to treat mixed waste to the standards of the Land Disposal Restrictions (LDRs). Upon approval of the Site Treatment Plan by the regulator, the New Mexico Environment Department (NMED), an Order requiring compliance with the approved plan will be issued.

This Proposed Site Treatment Plan (PSTP) comprises two volumes: the Background Volume contains detailed discussion of the waste streams and the preferred treatment options, which is provided for informational purposes only; and a Compliance Plan Volume that proposes overall schedules with target dates for achieving compliance with the LDRs. The PSTP will be issued to the State in March 1995 and will be the basis for discussions prior to the issuance of an Order by the NMED.

Unique tests and experimental programs at SNL/NM and SNL/CA have generated low volumes of a broad variety of mixed wastes. Approximately 150 waste streams have been accumulated since 1989 with a current volume of approximately 70 cubic meters in storage. The waste streams have been combined into 16 treatability groups, each with a preferred treatment option, as shown in Table ES-1. Currently, there is no inventory at SNL/NM for Treatability Group 15 (soils with <50% debris). However, this treatability group name has been retained for purposes of addressing future generated waste streams in this treatability group.

The mixed waste treatment plan at SNL/NM is heavily integrated with the work at other DOE sites that are tasked with developing mobile treatment units for use at multiple sites. This development involves proving-in new applications of technologies that are currently available but will require testing through treatability studies, as allowed by the RCRA regulations for assuring that the treatments are appropriate for the specific waste streams and to develop operating procedures and health and safety plans that protect the workers and the environment.

Other waste streams are being studied for on-site treatment by SNL/NM-investigated methods because of the material's unique nature or handling requirements, such as for explosives, or for development of treatment procedures that will facilitate eventual disposal, such as those required by the Nevada Operations Office for disposal at the Nevada Test Site. Off-site commercial treatment and disposal is an option for a small volume of scintillation cocktails and for waste that may not be treatable to meet the waste acceptance criteria of the Nevada Test Site.

Proposed timeframes for commencing treatment and prerequisite activities are included in the Compliance Plan Volume, based on the activities specified in the FFCAct for which schedules are required in the Site Treatment Plan. Dates for activities required for treatment of waste at SNL reflect the integrated approach of the DOE sites of the Albuquerque Operations Office complex. The management of the integrated mixed waste treatment program is assigned to the Grand Junction Projects Office, Colorado, for coordination of development and deployment of the mobile treatment units. Permitting of the mobile units is being addressed by the DOE in coordination with the National Governors Association and the Western Governors Association.

Table ES-1 Summary of SNL/NM Mixed Waste and Preferred Treatment Options

Treatability Group # and Volume	TG Description	Preferred Treatment Option	Treatment Site and Facility
TG 1 2.7 m^3	Inorganic Debris w/ Explosive	Deactivation	On-site Treatability Study
TG 2 0.04 m^3	Inorganic Debris w/ Water Reactive	Deactivation	On-site Treatability Study
TG 3 0.02 m^3	Reactive Metals	Deactivation	On-site Treatability Study
TG 4 0.04 m^3	Elemental Lead	Macroencapsulation	On-site using Pantex Mobile Treatment Unit
TG 5 0.02 m^3	Aqueous Liquids (Corrosives)	Neutralization and Stabilization	On-site Treatability Study
TG 6 67 ml	Elemental Mercury	Amalgamation	On-site using Pinellas Mobile Treatment Unit
TG 7 0.2 m^3	Organic Liquids I	Incineration	Off-Site Commercial Facility
TG 8 28 m^3	Organic Debris with Organic Contaminants	Thermal Desorption	On-site using GJPO Mobile Treatment Unit
TG 9 7 m^3	Inorganic Debris with TCLP Metals	Macroencapsulation	On-site using Pantex Mobile Treatment Unit
TG 10 29 m^3	Heterogeneous Debris	Sort/Reclassify into TG8 or TG9	On-site
TG 11 2.7 m^3	Organic Liquids II	Hydrothermal Processing	On-site using LANL Mobile Treatment Unit
TG 12 0.6 m^3	Organic Debris with TCLP Metals	Macroencapsulation	On-site using Pantex Mobile Treatment Unit
TG 13 0.01 m^3	Oxidizers	Deactivation	On-site Treatability Study
TG 14 0.01 m^3	Aqueous Liquids with Organic Contaminants	Evaporative Oxidation	Treatability Study at GJPO
TG 15 0.0 m^3	Soils with <50% Debris	NA (no current inventory at SNL/NM)	NA (no current inventory at SNL/NM)
TG 16 0.001 m^3	Cyanide Waste	Oxidation	Treatability Study at LANL

Savannah River Site
Proposed Site Treatment Plan
Executive Summary

March 30, 1995

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SAVANNAH RIVER SITE
MIXED WASTE PROPOSED SITE TREATMENT PLAN
EXECUTIVE SUMMARY

INTRODUCTION

The Federal Facility Compliance Act requires the Department of Energy to undertake a national effort to develop Site Treatment Plans for each of its sites generating or storing mixed waste. Mixed waste contains both a hazardous waste subject to the Resource Conservation and Recovery Act and radioactive material subject to the Atomic Energy Act of 1954.

The Site Treatment Plan for the Savannah River Site proposes how SRS will treat mixed waste that is now stored on the site and mixed waste that will be generated in the future. Also, the Site Treatment Plan identifies Savannah River Site mixed wastes that other Department of Energy facilities could treat and mixed waste from other facilities that the Savannah River Site could treat. If the Site Treatment Plan is approved by the State of South Carolina, the Department of Energy will enter into a compliance order with the State of South Carolina. The compliance order will contain enforceable commitments to treat mixed waste.

PAST AND PRESENT MIXED WASTE REGULATIONS

The history of the Federal Facility Compliance Act began with the Resource Conservation and Recovery Act, enacted by Congress in 1976, and amended in 1980 and 1984. The Hazardous and Solid Waste Amendments of 1984 discouraged placing untreated hazardous waste in or on the land, banned long-term storage without treatment for most hazardous waste generated after the effective date of the restrictions, and established treatment standards. The Department of Energy was storing mixed waste, when the 1984 amendments became effective. Consequently, the Savannah River Site negotiated the Land Disposal Restrictions – Federal Facility Compliance *Agreement* with the Environmental Protection Agency Region IV. The Agreement allowed continuation of storage while the Savannah River Site developed new treatment capabilities. Because the State of South Carolina did not participate in the Land Disposal Restrictions – Federal Facility Compliance *Agreement*, the Federal Facilities Compliance *Act* required the Department of Energy and the Savannah River Site to develop a Site Treatment Plan.

Requirements of the Federal Facility Compliance Act

The Resource Conservation and Recovery Act, as amended by the Federal Facility Compliance Act of 1992, requires the Department of Energy to:

- Prepare Site Treatment Plans describing existing treatment capacities and technologies for treating mixed waste; and,
- Provide schedules for developing more treatment capacity and new waste treatment technologies.

Each Site Treatment Plan will be reviewed either by the state where the facility is located, or by the Environmental Protection Agency. The State of South Carolina will review the Site Treatment Plan for the Savannah River Site. The State of South Carolina will also consult with all other states that might be impacted (for example, by treating a mixed waste shipped from the Savannah River Site) by the Site Treatment Plan. The State of South Carolina has the option to:

- Approve the Site Treatment Plan presented by the Department of Energy;
- Approve the Site Treatment Plan with modification; or,
- Disapprove the Site Treatment Plan.

When the State of South Carolina issues a compliance order based on the approved Site Treatment Plan for the Savannah River Site, the Department of Energy will not be subject to fines and penalties for violations of the Land Disposal Restrictions prohibition of storing mixed waste, as long as it remains in compliance with the approved Site Treatment Plan and the compliance order.

DEVELOPMENT OF THE SAVANNAH RIVER SITE TREATMENT PLAN

The Site Treatment Plan for the Savannah River Site was developed in three stages:

1. Conceptual Site Treatment Plan, issued in October 1993;
2. Draft Site Treatment Plan, issued in August 1994; and,
3. Proposed Site Treatment Plan, issued in March 1995.

The Conceptual Site Treatment Plan and the Draft Site Treatment were reviewed by the State of South Carolina, the Environmental Protection Agency, and members of the public. Their comments have been considered in the development of the Proposed Site Treatment Plan.

Conceptual Site Treatment Plan

The Savannah River Site Conceptual Site Treatment Plan described three strategies to treat mixed wastes:

1. Onsite treatment;
2. Offsite treatment at other Department of Energy facilities; and,
3. Vendor treatment either onsite or at the vendor's site.

Draft Site Treatment Plan

The Draft Site Treatment Plan narrowed the treatment strategies identified in the Conceptual Site Treatment Plan to one preferred waste treatment option for each mixed waste stream. Also, the Draft Site Treatment Plan identified those streams for which a treatment option would have to be developed. Treatment at the Savannah River Site of waste streams proposed by other Department of Energy and Department of Defense facilities was addressed, as well.

Proposed Site Treatment Plan

The Proposed Site Treatment Plan identifies schedules for implementation of preferred treatment options for the mixed waste streams. If a preferred option cannot be identified, the Proposed Site Treatment Plan presents a schedule for identifying an option. If technology does not exist to treat the mixed waste, a research program to develop a treatment is proposed. If a waste stream is not sufficiently characterized to select a preferred treatment option, the Proposed Site Treatment Plan offers a schedule for characterizing the waste and developing a treatment plan.

HIGHLIGHTS OF THE PROPOSED SITE TREATMENT PLAN

Selecting the Preferred Waste Treatment Option

The Savannah River Site's method to select a preferred waste treatment option used a three-step approach:

1. Initial screening;
2. In-depth options analysis; and,
3. Engineering assessment.

Initial Screening

Process experts identified waste treatments for the Savannah River Site mixed waste streams during initial screening. Many different treatment methods were considered. The process experts usually screened out treatment methods that were still in the experimental stage. Nevertheless, new and innovative treatment methods are just now coming into existence. These new treatment technologies will be followed closely as they mature. (See Emerging Technologies.)

In-Depth Options Analysis

Promising treatment options identified in initial screening were next subjected to a rigorous In-Depth Options Analysis. Process experts defined requirements and used a numerical rating system to make the assessments thorough, consistent, and comparable. Scores were assigned based on how well the waste treatment option satisfied requirements for:

- Environment,
- Health and safety,
- Engineering, and
- Public acceptance.

Project cost was also considered. The numerical score from the in-depth analysis for each waste treatment option was one of the important factors used in the final engineering assessment.

Engineering Assessment

Experienced engineers and scientists chose the preferred option. They applied their expertise and knowledge to the in-depth analysis scores. They made sure the choice of the preferred waste treatment option was considered from many perspectives. Particular attention was paid to waste treatment options with in-depth options analysis scores that ranked close together. These engineers and scientists provided vital input to the selection of preferred options. They added the knowledge and experience that cannot be found in a mathematical model.

Options Analysis Team Waste Treatment Method Selection

The Department of Energy formed an Options Analysis Team composed of DOE experts from across the complex, who are well versed in all the many and complicated facets of mixed waste management. The Options Analysis Team reviewed the Site Treatment Plans for all the sites in the Department of Energy complex. They identified certain treatments that several sites could use together to avoid expensive duplication of facilities. The Options Analysis Team developed a configuration of treatment facilities for the Department of Energy complex that is cost effective, maximizes use of existing facilities, and minimizes the volume of waste transported across state lines.

Mixed Waste Volume and Preferred Treatment Option

Table 1 summarizes the volume of the mixed waste at the Savannah River Site. This volume includes mixed waste now in storage and mixed waste projected to be generated during the next five years.

Table 1 – Savannah River Site Total Mixed Waste Streams

	Low-Level Mixed Waste	Transuranic Mixed Waste	Low-Level Mixed Waste (Managed as transuranic)	High-Level Mixed Waste	Total Onsite Mixed Waste	Proposed Mixed Waste from Other DOE and DOD Sites
Volume (m^3)	12,830	5,182	3,061	142,474	163,565	18
Volume Percent of Total	8	3	2	87	100	<1 (of onsite waste)

The high-level waste streams listed in Table 1 will be treated at the Defense Waste Processing Facility. The Defense Waste Processing Facility turns the waste into leach-resistant glass. Transuranic mixed waste listed in Table 1 will be characterized, treated, and repackaged to meet the Waste Acceptance Criteria for disposal at the Waste Isolation Pilot Plant in Carlsbad, New Mexico.

Table 2 summarizes the preferred waste treatment options for the Savannah River Site's low-level mixed waste streams and mixed waste from the Department of Defense Naval Reactors program. (See ***Offsite Waste*** for information about the Naval Reactors program waste.)

Table 2 – Proposed Site Treatment Plan Preferred Treatment Options for Low-Level Mixed Waste Streams

Facility	Recommended Treatment	Volume (m^3)	Volume Percent
Consolidated Incineration Facility (Existing)	Incinerate and stabilize treatment residuals with cement.	4,516	35
M Area Vendor (Proposed)	Fuse into a leach-resistant glass-like material.	2,471	19
Savannah River Technology Center (Existing)	Bind the constituents of concern in a leach-resistant resin by ion exchange.	881	7
Containment Building - SRS(Proposed)	Macroencapsulate in stainless steel boxes, or with polymer.	1,445	11
D Area - SRS (Existing)	Bind the constituents of concern in a leach-resistant resin by ion exchange.	10	<1
Effluent Treatment Facility - SRS (Existing)	Bind the constituents of concern in a leach-resistant resin by ion exchange.	<1	<1
In-Tank Precipitation Facility (Existing)	Wash with acid to remove constituents of concern, which are themselves fused into glass in the Defense Waste Processing Facility.	33	<1
Offsite Vendor (Existing)	Remove of the constituents of concern and recycling the decontaminated material.	112	1
On-site DOE Mobile Treatment Facility (Proposed)	Thermal oxidation	19	<1
Offsite DOE Facilities(Proposed)	Amalgamation, deactivation, and stabilization.	3	<1
10-100 nCi/g wastes	To be further characterized	3061	24
Treatment to be determined		279	2
	TOTAL	12,830 *	100%

* Does not include mixed low-level waste meeting treatment standard.

Uncertainties and Areas for Additional Review

Mixed wastes containing transuranic elements need to be characterized. Characterization will tell what waste is to be sent to the Waste Isolation Pilot Plant for final disposal. The equipment and facilities for characterization have to be developed.

Job Control Waste with Enriched Uranium and Solvent Applicators (identified as waste stream SR-W056) has no treatment process currently identified. The waste contains a large amount of uranium. A research program is proposed to find out what treatment options may exist for this waste.

Waste streams containing mercury, identified in Table 2 for treatment in an "offsite DOE facility," are presumed to be treated in the amalgamation facility at Idaho National Engineering Laboratory. Only the conceptual design of this facility has been completed. It is tentatively scheduled to begin construction in the first quarter of 1997.

Tritiated Oil with Mercury (identified as waste stream SR-W036) was selected for treatment by a Department of Energy mobile packed bed reactor. The Savannah River Site will work with the designers to make sure the particular needs for treatment of this waste are met.

Uranium/Chromium Solution (identified as waste stream SR-W031) and Soils from Spill Remediation (identified as waste stream SR-W048) will require identification of a preferred treatment option. Lack of funding prevented treatment by an on-site vendor, as originally planned.

Offsite Waste

Waste generators at other DOE and DOD sites proposed mixed wastes to be treated at Savannah River Site facilities. Technical experts compared the wastes' characteristics to the waste acceptance criteria of specific Savannah River Site treatment facilities. The Savannah River Site has tentatively agreed to

treat only 18 cubic meters of waste from offsite. This material comes from the Naval Reactors Program. The Consolidated Incineration Facility has the technical ability to treat the Naval Reactors liquid and solid waste streams.

Future Waste Generation

Production operations will contribute little to the future generation of mixed waste at the Savannah River Site. Most future waste generation will come from environmental restoration projects, waste management, and decontamination and decommissioning activities.

Emerging Technologies

The Proposed Site Treatment Plan presents a comprehensive package of preferred treatment options and implementation schedules. Nevertheless, the Department of Energy and the Savannah River Site continue to look for new and emerging technologies. If technologies to treat the mixed waste more safely, more efficiently, or more cost-effectively are discovered, modification of the Site Treatment Plan and compliance order may be requested.

Treatment schedules

The Proposed Site Treatment Plan contains schedules for the waste treatment programs. The schedules include construction of new facilities, refurbishment of existing facilities, and contracting with vendors. The schedules in this Proposed Plan have not yet been integrated with those of other DOE sites from a technical, complex-wide perspective. Moreover, DOE faces increasingly tight budgets throughout the DOE complex, and anticipates that funding will continue to be constrained. The schedules in this and other Plans reflect those constraints. DOE has asked regulatory agencies to work with DOE and other interested parties at the site and National level to assist DOE in prioritizing its activities. Through this process, DOE expects that some schedules will be revised, before the Site Treatment Plans are approved and orders issued. Funding impacts on the Savannah River Site mixed waste treatment program include: prolonging treatment at CIF, beginning TRU waste characterization and treatment in 2022, and searching for other treatments for two additional streams that could have been treated by an on-site vendor in 1996-97, had funding been available.

Milestone Approach

DOE proposed to establish schedules as either "milestones" or "target dates." Milestones and target dates would be established in accordance with available environmental management funding for the site. Milestones are enforceable deadlines that can be established for near-term activities, because there is greater fiscal and technical certainty about these activities. Target dates are non-enforceable goal deadlines for longer term activities. After receipt of the approved funding program that reflects the final Congressional appropriation for the current fiscal year, milestones for the current fiscal year would be established, adjusting the affected target dates as necessary. To the extent practical, this process would coincide with the process for the Annual Site Treatment Plan Updates, and would be conducted in a consistent time frame across the DOE sites.

Storage

The Savannah River Site operates several mixed waste storage facilities. Needs for future storage of mixed low-level waste and mixed transuranic waste are being defined by studies in progress.

GLOSSARY

AMALGAMATION	A chemical process in which mercury, a liquid metal, reacts with another material to form a solid. The mercury cannot escape the solid into the environment.
ATOM	The smallest particle into which any material can be cut and still maintain its particular chemical characteristics.
ATOMIC NUMBER	The number of protons an element has in its nucleus. Atomic numbers now go from 1 to 110.
CHARACTERIZATION	Determination of physical, chemical, and radiological components of a waste
COMPLIANCE ORDER	Legal, binding agreement issued by the State of South Carolina requiring a person, group, or organization to accomplish a specified course of action successfully
COST EFFECTIVE	The best buy for the taxpayer
CURIE	Disintegration of 37 billion unstable atomic nuclei in one second, which produces rays or particles
DECONTAMINATION AND DECOMMISSIONING	The process in which an old facility at the Savannah River Site is safely torn down and the hazardous and radioactive material disposed of.
DEFENSE WASTE PROCESSING FACILITY	A waste treatment facility now under construction that will be able to turn high level waste into leach-resistant glass
DOE COMPLEX	All the locations where DOE has operating and administrative facilities
EFFLUENT TREATMENT FACILITY	A Savannah River Site waste water treatment facility.
EMERGING TECHNOLOGIES	New methods for waste treatment that are still in the experimental or laboratory stage of development.
ENRICHED URANIUM	Uranium that has more of the isotope U-235 than occurs in nature
ENVIRONMENTAL PROTECTION AGENCY	Federal Agency tasked with developing regulations to support environmental legislation and enforcing environmental laws and regulations
HAZARDOUS WASTE	Waste that the Resource Conservation and Recovery Act defines as hazardous
HIGH-LEVEL MIXED WASTE	Waste produced from reprocessing nuclear reactor fuel elements

INCINERATION	Breaking the waste into carbon dioxide, water, and small amounts of acid through burning with oxygen
ION	A atom or combination of atoms that has an electrical charge
ION EXCHANGE	Replacing one ion (usually an undesirable one) with another ion (usually a desirable one)
ISOTOPE	Any of two or more elements with the same number of protons in the nucleus, but different number of neutrons
JOB CONTROL WASTE	Discarded materials such as laboratory coats, paper, plastic, and towels used in operations and preventative maintenance activities.
MATHEMATICAL MODEL	A computer program that adds up and summarizes the results of an analysis
MILESTONES	Enforceable deadlines that can be established for near-term activities, because there is greater fiscal and technical certainty about these activities
MIXED WASTE	Waste that contains RCRA hazardous and radioactive components
NANOCURIE (nCi)	One-billionth of a Curie
NEUTRON	A particle in the nucleus of an atom with no electrical charge
NUCLEUS	The heavy core of an atom, composed of protons and neutron.
OPTIONS ANALYSIS TEAM	DOE experts from across the complex, who are well versed in all the many and complicated facets of mixed waste management
PRECIPITATION	A chemical reaction that causes a solid to form in a mixture of liquids
PROCESS EXPERTS	Scientist and engineers who through training and experience are very familiar with chemical and mechanical methods for treating waste and are knowledgeable about the capabilities of existing facilities and the Savannah River Site
PROTON	A particle in the nucleus of an atom with a positive electrical charge

RADIOACTIVE	The property of some unstable elements to emit rays or particles from their nuclei
RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)	A Federal law that controls management of hazardous waste
SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (SCDHEC)	State Agency tasked with developing regulations to support environmental legislation and enforcing environmental laws and regulations in the State of South Carolina
TARGET DATES	Non-enforceable goal deadlines for longer term activities
TRANSURANIC ELEMENTS	Man-made radioactive elements that have an atomic number higher than uranium (92). There are now about eighteen transuranic elements. Plutonium (atomic number 94) is a transuranic element
TRANSURANIC MIXED WASTE	Waste that contains hazardous materials and transuranic elements
TREATMENT RESIDUALS	Solid, or liquid materials left over from a waste after it has been treated
TREATMENT TECHNOLOGY	The chemical or mechanical method of making waste meet environmental regulations
TRITIATED OIL	Waste lubricating oil that has been contaminated with tritium
TRITIUM	An isotope of hydrogen with two neutrons in the nucleus. Tritium is radioactive.
VENDOR	A private company in business to sell goods and services to individuals, companies, and the government

Site A/Plot M
Proposed Site Treatment Plan

EXECUTIVE SUMMARY

The Federal Facility Compliance Act requires the Department of Energy (DOE) to prepare Site Treatment Plans for how mixed waste, waste containing both hazardous and radioactive components, will be treated. More specifically, the FFCA requires each individual DOE site that stores or generates mixed waste to develop a Site Treatment Plan.

Site A/Plot M was identified on the list of DOE sites that would be included in the FFCA process due to the possibility of mixed waste being generated as a result of characterization activities and potential remediation activities. However, the characterization program has not generated mixed waste and any additional remediation activities, if required would take place after FY 1997.

Since no mixed waste has been generated, this Proposed Site Treatment Plan (PSTP) provides only a Background Volume and does not include a Compliance Plan Volume. For the future, the intent is to provide updates to the Background Volume. If or when it is anticipated that mixed waste would be generated, the update would identify preferred treatment options and schedules.

To be consistent with PSTP developed by other DOE sites, the Background Volume is developed in the same format used by the other DOE sites. Consequently, a portion of the information presented in the PSTP is generic to the overall FFCA process and may not specifically be applicable to Site A at this time.

The Site A/Plot M Proposed Site Treatment Plan is being submitted to the Illinois Environmental Protection Agency, Illinois Department of Nuclear Safety and others for review.

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EXECUTIVE SUMMARY

Purpose of the Site Treatment Plan

The Proposed Site Treatment Plan (PSTP) for U.S. Department of Energy (DOE) mixed wastes at the Missouri University Research Reactor (MURR) was written in response to the Federal Facility Compliance Act (FFCAct). The FFCAct requires that site treatment plans (STPs or plans) be developed for facilities at which the DOE generates or stores mixed waste. Mixed waste is defined by the FFCAct as any waste containing both a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA), and source, special nuclear, or by-product material subject to the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.).

On April 6, 1993, DOE published *The Schedule for Submitting Plans for the Treatment of Mixed Waste Generated or Stored at Each Site* in the *Federal Register* (58 *FR* 17875, DOE, 1993a) describing its proposed process for developing the site treatment plans. The plans would be developed in three phases: conceptual, draft, and proposed. The conceptual plan presented known treatment needs, capabilities, and preliminary options for treating the mixed waste. The purpose of the draft plan was to identify site-specific preferred options for treating the mixed waste, or for developing technologies where technologies do not exist or need modification. The proposed plan reflects DOE's preferred options, developed with state input and based on existing available information. The options reflect a "bottom-up" approach and have been evaluated for their potential affects on other DOE sites and the overall DOE program. Changes in the preferred options and associated schedules were also made between the draft and proposed site treatment plans as a result of evaluations from the DOE-wide perspective. These may change further as a result of discussions with affected states and public comments before the approval of the PSTP and issuance by the Missouri Department of Natural Resources (MDNR) of an Order (FFCAct Order) requiring DOE to implement the STP for each site.

The PSTP consists of the Compliance Plan Volume, and the Background Volume and its Appendices. The Compliance Plan Volume contains the enforceable milestones associated with the

preferred treatment options. A more detailed discussion of the preferred treatment options, which is provided for informational purposes only, is presented in the Background Volume and its Appendices.

DOE faces increasingly tight budgets throughout the DOE complex and anticipates that funding will continue to be constrained. The schedules in this and other Plans reflect those constraints. DOE has asked regulatory agencies to work with DOE and other interested parties at the site and National level to assist DOE in prioritizing its activities. Through this process, DOE expects that some schedules will be revised before the Site Treatment Plans are approved and FFCAct Orders issued.

Summary of PSTP Proposed Options

Current inventories of DOE/OAK mixed wastes at MURR are relatively small, consisting of about 1 m^3 of mixed low-level waste (MLLW, 5 drums), comprised of debris and contaminated equipment, and 0.1 m^3 of mixed transuranic (MTRU) waste (0.5 drum), consisting of solid residues from analytical samples, spent reagents, and experimental apparatus components. Future generation of these two types of waste (until project completion in 1998) is expected to bring the total quantity of waste produced to 5 m^3 (24 drums) of MLLW and 1 m^3 of MTRU waste. If generation of these mixed wastes do not meet RCRA Land Disposal Restriction requirements, they will be characterized and addressed in updates to this plan as required.

The MLLW is expected to be shipped to the Hanford Waste Receiving and Processing (WRAP) IIA facility for treatment. The MTRU waste streams are expected to be shipped to the Waste Isolation Pilot Plant (WIPP); although the schedule dates for shipment are dependent upon development of final WIPP Waste Acceptance Criteria (WAC) and approval of the WIPP No-Migration Variance Petition by the EPA and the State of New Mexico.

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EXECUTIVE SUMMARY

WELDON SPRING SITE PROPOSED SITE TREATMENT PLAN

The Weldon Spring Site (WSS) is located in St. Charles County, Missouri, about 30 miles west of St. Louis. The site consists of two geographically distinct areas: the 217-acre chemical plant area and a 9-acre limestone quarry, which is about 4 miles south-southwest of the chemical plant area.

The U.S. Environmental Protection Agency (EPA) listed the quarry on the National Priorities List (NPL) in 1987, and the chemical plant area was added to this listing in 1989. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Record of Decision (ROD) for the quarry was signed by the EPA in September 1990 and by the DOE in March 1991. The ROD for remediation of the chemical plant area was signed in September 1993.

The inventory of mixed low-level waste (MLLW) at the Weldon Spring site is composed almost entirely of containerized materials resulting from consolidation and containerization of waste chemicals abandoned at the facility and from hazardous debris generated during building dismantlement. Mixed waste is waste that contains both radioactive and hazardous components. Wastes in this current inventory have been characterized by a combination of process knowledge and sampling and analysis. Additional waste will be generated over the next 5 years from operations of the 2 on-site water treatment plants, excavation of wastes from the quarry, and from other waste cleanup and consolidation activities.

The Federal Facility Compliance Act (FFCA) requires DOE sites to prepare site treatment plans describing the development of treatment capacities and technologies for treating mixed waste. The plan was developed in three phases: (1) a "Conceptual Site Treatment Plan" - completed in October 1993, (2) a "Draft Site Treatment Plan" - completed in August 1994, and (3) a "Proposed Final Site Treatment Plan" - completed in March 1995. The FFCA requires the State to approve, approve with modification, or disapprove the Weldon Spring site's final plan after considering public comments and consulting with affected states and the EPA.

The Weldon Spring site's mixed waste inventory is categorized into the following treatability groupings:

- o Aqueous Liquids
- o Inorganic Sludges/Particulates
- o Inorganic Debris/Metal/Batteries
- o Contaminated Debris
- o Reactives/Oxidizers
- o Organic Liquids
- o Organic Sludges
- o Liquid Mercury

The Chemical Plant Record of Decision addresses remedial action of the chemical plant wastes. A major component of this remedy includes on-site treatment of contaminated sludge in a chemical stabilization/solidification (CSS) facility on site. Treated waste, which no longer exhibits a hazardous characteristic, will be disposed in an engineered disposal cell facility on site.

A large quantity of the mixed wastes included in the WSS mixed waste inventory are amenable to treatment by the CSS process. Several mixed waste streams are amenable to treatment in the site water treatment plant with pretreatment by a batch process. The remainder of the mixed wastes are either organics requiring thermal destruction or miscellaneous wastes requiring other types of treatment. The following table summarizes the mixed waste treatability groupings and quantities with the proposed treatment option(s):

Water Treatment Plant	Chemical Stabilization/ Solidification	Oxidation On-site or Incineration Offsite	Other
Aqueous Liquids (7.5 m^3)	Inorganic Sludges/ Particulates (75.2 m^3) Inorganic Debris/ Metal/Batteries (1840.9 m^3) Contaminated Debris (15.2 m^3)	Organic Liquids (57.5 m^3) Organic Sludges (3.7 m^3)	Liquid Mercury (Amalgamation) (.4 m^3) Reactives/ Oxidizers (Deactivation) (20.9 m^3)

It is planned to treat all the waste streams on-site with the exception of the organic liquids/organic sludges. The current preferred option is to treat these wastes at the Oak Ridge incinerator. The alternative option for these waste streams is to treat on-site by the Delphi Research, Inc. wet oxidation process called DETOX. The Weldon Spring site is under consideration as a prospective site for the pilot scale testing of this process. Delphi has been awarded a DOE treatment demonstration contract administered by DOE's Morgantown Energy Technology Center.

The schedules proposed for waste treatment are dependent upon current projected funding levels. Potential budget reductions could adversely impact waste treatment schedules.

EXECUTIVE SUMMARY
PROPOSED SITE TREATMENT PLAN (PSTP)

REGULATORY BACKGROUND

On October 6, 1992 the Federal Facilities Compliance Act (FFCAct) was enacted as an amendment to the Resource Conservation and Recovery Act (RCRA). The FFCAct requires Department of Energy (DOE) facilities that are generating or storing mixed waste to develop plans for treating their mixed waste inventories. Treatment plans can include on-site treatment at the generating facility, off-site treatment at a commercial facility, or off-site treatment at another DOE facility. The purpose of the Plan is to describe the development of treatment capacities and technologies for treating mixed waste.

To meet the Site Treatment Plan (STP) requirement of the FFCAct, the DOE developed a three-step approach. First, the WVDP prepared a Conceptual Site Treatment Plan (CSTP) that identified the technology needs, treatment capabilities, and existing plans and options for treating its mixed waste. The WVDP CSTP was submitted to New York State in October 1993 for review. Second, a Draft Site Treatment Plan (DSTP) was prepared which incorporated NYSDEC's comments on the CSTP, provided an analysis of the treatment options identified in the CSTP, and identified the preferred method of treatment for each waste stream. The DSTP was submitted to NYSDEC in August 1994. Third, following modification to address input on the DSTP by New York State Department of Environmental Conservation (NYSDEC) and other stakeholders, this Proposed Site Treatment Plan (PSTP) has been prepared for final review. (The PSTP addresses wastes in inventory at the WVDP through September 1, 1994 and will be updated annually to include wastes which will be generated in the future).

Following approval by NYSDEC, the Plan Volume of the PSTP will be incorporated into a Consent Order.

PSTP STRUCTURE

The PSTP is divided into two volumes: the Background Volume and the Plan Volume. The Background Volume provides a detailed discussion of the preferred option or options, identifies the waste stream(s), and addresses and gives explanatory information for the Plan Volume. The Plan Volume provides specific plans and schedules for treating waste streams.

SUMMARY TABLES

The preferred treatment options that have been identified for the WVDP waste streams are presented in tables ES-1, ES-2, ES-3, and ES-4. For the purpose of providing a summary of the preferred treatment options, the tables have been categorized as on-site treatment (table ES-1), off-site commercial treatment (table ES-2), off-site DOE treatment (table ES-3), and wastes that need further characterization/evaluation (table ES-4). Information on the current volume of waste, treatment type, preferred treatment option, and alternative options are provided in the tables.

If further information is needed you may contact:

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TABLE ES-1

PREFERRED OPTION - ON-SITE TREATMENT*				
TREATABILITY GROUP	VOLUME M^3 9/1/94	TREATMENT TYPE	PREFERRED OPTIONS	PSTP BACKGROUND/PLAN VOLUME SECTION NUMBER
-Aqueous Liq's, Toxic Metals w/o Merc.	0.0976	Evaporation and Stabilization	IRTS	3.1.4
-Aqueous Liq's, Toxic Organics	0.0218			
-Aqueous Liq's, Ignitable	0.0019			
-Inorganic Sludges, Toxic Metals w/o Mercury	0.0024			
-TRU Elem. Lead, Toxic Metals w/o Mercury	0.0723	Decontamination	CSRF**	4.2.1
-Elem. Lead, Toxic Metals w/o Mercury	1.2608			
-Batteries, Lead-acid, Toxic Metals w/o Mercury	0.0573			
-Uncategorized Metal Debris, Toxic Metals w/o Mercury	0.0001			
-Inorg. Sludges & Particulates, Toxic Metals w/Mercury	30***	Stabilization - HLW	Vit. Facility	5.1.2/5.1
-Aqueous Liq's, Toxic Metals w/o Mercury	45.42***			
-Inorg. Particulates, Toxic Metals w/o Mercury	0.4413	Deactivation and Stabilization	IRTS	3.1.6
-Aqueous Liq's, Ignitable, Corrosive, or Reactive Only	0.596	Aqueous - Neutralization	IWSF	3.1.1
-Org. Liq's, Ignitable, Corrosive, or Reactive Only	0.0018			

* WVDP cannot accept off-site waste for treatment (see Background Volume, section 1.2)

** Pretreatment only - see table ES-2 for treatment options

*** These volumes represent the actual high level waste volumes and do not include fluctuations due to additions of caustic water for "washing and filtering." As of September 1, 1994, the total volume of the caustic solution was 461 m^3.

TABLE ES-2

PREFERRED OPTION - OFF-SITE COMMERCIAL			
TREATABILITY GROUP	VOLUME M^3 9/1/94	TREATMENT TYPE	PSTP BACKGROUND/PLAN VOLUME SECTION NUMBER
-Org. Liq's, Toxic Org's	0.163	Organic Destruction Non-aqueous	3.1.3
-Org. Liq's, Toxic Org's, and Metals w/o Mercury	4.3916		
-Org. Liq's, Toxic Metals w/Mercury	0.0001		
-Org. Liq's, Ignitable, Corrosive, or Reac.	0.0649		
-Org. Liq's Toxic Metals w/o Mercury	0.0307		
-Org. Liq's, React. Only	0.0004		
-Org. Liq's, Toxic Organics, Ignitable	0.0183		
-Glass Debris, Toxic Metals w/Mercury**	0.0408	Roast/Retort	3.1.5
-Heterogeneous Debris, Toxic Metals w/Mercury**	1.6047		
-Elemental Mercury, Toxic Metals w/Mercury**	0.0004	Amalgamation	3.1.9
-TRU Elem. Lead Toxic Metals w/o Mercury	tbd*	Macroencapsulation of Lead	3.1.8
-Elem. Lead Toxic Metals w/o Metals	tbd*		
Uncategorized Metal Debris, Toxic Metals w/o Mercury	0.0001	Reclamation of Non-radioactive Fusible Links	3.1.2
Batteries, Lead-acid, Toxic Metals w/o Metals	0.0573	Reclamation of Non-radioactive Battery	3.1.2

* Lead waste will be decontaminated on site and recycled/reused if possible. Until the lead has been decontaminated, the volume of fixed contaminated lead requiring macroencapsulation is undetermined.

** INEL's WEDF Facility is an alternate option in the event off-site the commercial facility cannot accept DOE waste.

TABLE ES-3

PREFERRED OPTION - OFF-SITE DOE				
TREATABILITY GROUP	**VOLUME M^3 9/1/94**	**TREATMENT TYPE**	**PREFERRED OPTION**	**PSTP BACKGROUND/PLAN VOLUME SECTION NUMBER**
-PCB-contaminated Material	1.7155	Org. Destruction	TSCA Incin. ORNL	3.1.7

TABLE ES-4

NEEDS FURTHER CHARACTERIZATION OR EVALUATION			
WASTE STREAM DESCRIPTION	VOLUME M^3 09/01/94	PSTP BACKGROUND VOLUME SECTION NUMBER	PSTP PLAN VOLUME SECTION NUMBER
Organic Liquids, Toxic Organics	0.0105	3.3.3	3.3
Aqueous Liquids, Corrosive	0.0881	3.3.1	3.3
Unknown Solid, Toxic Metals w/o Mercury	0.0196	3.3.4	3.3
Solid Process Residues, Toxic Metals w/o Mercury	6.6173	3.3.5	3.3
TRU Solid Process Residues, Toxic Metals w/o Mercury	0.0417	3.3.7	3.3
Aqueous Liquids, Toxic Organics	0.0318	3.3.2	3.3
Unknown, Toxic Metals w/o Mercury	0.0260	3.3.6	3.3
Predominantly Combustible Debris	.0674	3.3.8	3.3
Uncategorized Heterogeneous Debris, Toxic Metals w/Mercury	66.81	3.3.9	3.3
Organic Sludges, Toxic Metals w/o Mercury, Ignitable, Corrosive, or Reactive Only	0.0652	3.3.10	3.3