Status of the Decommissioning Program

2023 Annual Report

Division of Decommissioning, Uranium Recovery, and Waste Programs
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Enclosure 1

CONTENTS

LIST OF TABLES

ABBREVIATIONS

ACL	alternate concentration limit
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	*Code of Federal Regulations*
CO	confirmatory order
COVID-19	Coronavirus Disease 2019
CRR	completion review report
DandD	Decommissioning and Decontamination
DECON	active decommissioning
DG	draft regulatory guide
DoD	U.S. Department of Defense
DOE	U.S. Department of Energy
DOE-WVDP	U.S. Department of Energy—West Valley Demonstration Project
DP	decommissioning plan
DRP	discrete radioactive particle
DUWP	Division of Decommissioning, Uranium Recovery, and Waste Programs
EIS	environmental impact statement
EPA	U.S Environmental Protection Agency
ESADA	Empire State Atomic Development Associates
ET	evapotranspiration
EVESR	ESADA Vallecitos Experimental Superheat Reactor
FAQ	frequently asked question
FR	*Federal Register*
FY	fiscal year
GCAP	groundwater corrective action program
GEH	GE Hitachi Nuclear Energy
GETR	General Electric Test Reactor
GIS	geographic information system
GPS	global positioning system
HMC	Homestake Mining Company of California
IAEA	International Atomic Energy Agency
IMC	inspection manual chapter
ISFSI	independent spent fuel storage installation
ISG	interim staff guidance
KINS	Korea Institute for Nuclear Safety
LAR	license amendment request
LTP	license termination plan
LTR-UNRES	License Termination Rule criteria for unrestricted use
LTSP	long-term surveillance plan
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MCNP	Monte Carlo N-Particle®
MPC	multipurpose canister
MOU	memorandum of understanding
MPPB	Main Plant Process Building
N/A	not applicable
NEA	Nuclear Energy Agency
NFS	Nuclear Fuel Services
NMED	New Mexico Environment Department
NMSS	Office of Nuclear Material Safety and Safeguards

NOW	New Opportunities of Waterbury, Inc.
NPL	National Priorities List
NPS	U.S. National Park Service
NRA	Ghanian Nuclear Regulatory Authority
NRC	U.S. Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
NTU	Navajo Technical University
NYSERDA	New York State Energy Research and Development Authority
PiMAL	Phantom with Moving Arms and Legs
PNNL	Pacific Northwest National Laboratory
PSDAR	postshutdown decommissioning activities report
RAMP	Radiation Protection Computer Code, Analysis, and Maintenance Program
RAR	research assistance request
RDFA	reactor decommissioning financial assurance
RES	Office of Nuclear Regulatory Research
RG	regulatory guide
RUG	RAMP Users Group
SADA	Spatial Analysis and Decision Assistance
SAFSTOR	long-term storage
SER	safety evaluation report
SLDA	Shallow Land Disposal Area
SSSB	Surface Ship Support Barge
TBD	to be determined
TCEQ	Texas Commission on Environmental Quality
TMI	Three Mile Island Nuclear Station
UMS	Universal Multipurpose Systems
UMTRCA	Uranium Mill Tailings Radiation Control Act
UNC	United Nuclear Corporation
UNR	user need request
USACE	U.S. Army Corps of Engineers
VBWR	Vallecitos Boiling Water Reactor
VSP	Visual Sample Plan
WNI	Western Nuclear Incorporated
WPTES	NEA Working Party on Technical, Environmental and Safety Aspects of Decommissioning and Legacy Management
WVDP	West Valley Demonstration Project

1 INTRODUCTION

This report summarizes decommissioning activities at nuclear facilities in the United States. Specifically, it serves as a reference document about U.S. Nuclear Regulatory Commission (NRC) decommissioning activities in fiscal year (FY) 2023, including the decommissioning of power reactors, research and test reactors, complex materials sites, uranium recovery facilities, and fuel cycle facilities. As such, this report discusses the current progress and accomplishments of the NRC's Decommissioning Program, gives contact information supplied by Agreement States on the decommissioning sites within those States, and identifies key Decommissioning Program activities that the NRC staff will undertake in the coming year. The information in this report is current as of September 30, 2023.

As of September 30, 2023, 25 nuclear power and early demonstration reactors, 2 research and test reactors, 8 complex materials facilities,[1] 5 Title II[2] uranium recovery facilities, and part of 1 fuel cycle facility are undergoing decommissioning or are in long-term safe storage under NRC jurisdiction.[3] Of the 25 power and early demonstration reactors in decommissioning, 7 have elected the SAFSTOR (long-term storage) option and 18 have elected the DECON (active decommissioning) option. On February 24, 2023, the NRC staff terminated the license under 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," of the La Crosse Boiling Water Reactor outside of the independent spent fuel storage installation (ISFSI) boundary, reducing the number of decommissioning power reactor sites from 26 to 25. The NRC continued its review of the amendment requests for partial site release of the majority of the licenses for Zion Nuclear Power Station, Units 1 and 2. The licensee for Diablo Canyon Nuclear Power Plant, Units 1 and 2, which previously announced the intent to shut down by 2024 and 2025, respectively, has subsequently announced its intent to continue operation after the expiration of its current licenses. In addition, the licensee for Palisades Nuclear Plant has indicated interest in restarting. Both sites continue to prepare for decommissioning in parallel with their consideration of continuing operations or restarting. Palisades Nuclear Plant will continue to be in a decommissioning status unless the NRC authorizes restart. Finally, 19 of the 22 UMTRCA Title I legacy uranium recovery sites and 6 UMTRCA Title II sites are under a general license held by the U.S. Department of Energy (DOE).

---

1 Complex materials facilities are defined as those sites where the complexity of the decommissioning process will require more than minimal technical and administrative support.

2 "Title I" in this report refers to facilities under the Uranium Mill Tailings Radiation Control Act of 1978, as amended (UMTRCA), that were inactive, unregulated processing or disposal sites when the act was passed, while "Title II" refers to facilities that were licensed by the NRC or an Agreement State in 1978 or after UMTRCA was enacted.

3 Of the 22 Title I sites, 2 are former processing sites. General licenses under Title 10 of the *Code of Federal Regulations* (10 CFR) 40.27, "General license for custody and long-term care of residual radioactive material disposal sites," only apply to mill tailings disposal sites.

2 DECOMMISSIONING SITES

The NRC regulates the decontamination and decommissioning of power reactors, research and test reactors, materials facilities, uranium recovery facilities, and fuel cycle facilities. The purpose of the Decommissioning Program is to ensure that NRC-licensed sites, and sites under NRC authority, are decommissioned in a safe, timely, and effective manner so that they can be returned to beneficial use and to ensure that stakeholders are informed and involved in the decommissioning process, as appropriate. This report summarizes a broad spectrum of activities associated with the program's functions, with a focus on the more challenging sites where termination of the license was not a routine licensing action.

The NRC public website has status summaries for the facilities managed in the Decommissioning Program (https://www.nrc.gov/waste/decommissioning.html). These summaries, which are updated annually or when significant changes in status occur, describe the status of each site and identify the major technical and regulatory issues affecting the completion of decommissioning. For those licensees or responsible parties that have submitted a decommissioning plan (DP) or license termination plan (LTP), the schedules for completion of decommissioning are based on an assessment of the complexity of the DP or LTP review and staff availability. For those sites that have not submitted a DP or LTP, the schedules are based on other available site-specific information and on the anticipated decommissioning approach. Additional information on the processes for decommissioning reactors, materials facilities, and uranium recovery sites can be found on the NRC website at https://www.nrc.gov/waste/decommissioning/process.html.

Through the Agreement State program, 39 States have signed formal agreements with the NRC to assume regulatory responsibility over certain byproduct, source, and small quantities of special nuclear material, including the decommissioning of some complex materials sites and uranium recovery sites. Agreement States do not have regulatory authority over (1) nuclear reactors, which are licensed under either 10 CFR Part 50 or 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," (2) fuel cycle facilities, and (3) Federal materials facilities in the State. Section 7 of this report discusses the NRC's coordination with Agreement State decommissioning programs.

2.1 Nuclear Power Reactor Decommissioning

The NRC's power reactor decommissioning activities include project management, technical review of licensee submittals in support of decommissioning, core inspections, support for the development of rulemaking and guidance, public outreach efforts, international assistance and cooperation, and participation in industry conferences and workshops. In addition, the NRC staff reviews requests for license amendments, exemptions, and programmatic approvals (e.g., for quality assurance) to support the progressive stages of decommissioning. The Decommissioning Program staff regularly coordinates with other offices on issues regarding decommissioning power reactors, and with the Division of Fuel Management in the Office of Nuclear Material Safety and Safeguards (NMSS) about fuel movement campaigns and the ISFSIs at reactor sites undergoing decommissioning.

As of September 30, 2023, the 25 nuclear power and early demonstration reactors listed in table 2.1-a are undergoing decommissioning. Table 2.1-a gives an overview of the status of these nuclear power reactors. Plant status summaries for all decommissioning nuclear power reactors are available on the NRC website at https://www.nrc.gov/info-finder/decommissioning/power-reactor/index.html. Table 2.1-b lists the decommissioned power reactors that have ISFSIs remaining on site.

2.1.1 Summary of Fiscal Year 2023 Activities

The NRC staff performed the following activities for nuclear power reactor decommissioning in FY 2023:

- LaCrosseSolutions, LLC, successfully completed decommissioning activities at the La Crosse Boiling Water Reactor. The NRC staff terminated the 10 CFR Part 50 license outside of the ISFSI boundary and released the site for unrestricted public use.

- The NRC staff continued to review the licensee's final status survey reports for Zion. The NRC also completed both surface and subsurface confirmatory surveys as part of its review of the request for partial site release to ensure remediation efforts were acceptable.

- The licensee for Crystal River Nuclear Plant, Unit 3, submitted an LTP to the NRC in December 2022. The NRC staff accepted the LTP for a detailed review on July 25, 2023.

- The NRC staff continued to review the Fort Calhoun Station LTP. A consultation letter dated June 26, 2023, was sent to the U.S. Environmental Protection Agency (EPA) requesting comment within 90 days on the licensee's proposed derived concentration guideline levels because the levels for certain radionuclides at this site would exceed the soil concentration values given in the NRC and EPA memorandum of understanding.

- Three Mile Island Nuclear Station (TMI), Unit 2, transferred from a postdefueling monitored storage status to an active decommissioning status. The NRC staff reviewed and approved an exemption from the criticality monitoring requirements during decommissioning, as well as an exemption from certain reporting requirements of Appendix G, "Requirements for Transfers of Low-Level Radioactive Waste Intended for Disposal at Licensed Land Disposal Facilities and Manifests," to 10 CFR Part 20, "Standards for Protection Against Radiation," for TMI Unit 2. In addition, the NRC is

currently reviewing a license amendment request (LAR) for a historic and cultural resources review for TMI Unit 2. The NRC staff initiated consultation under section 106 of the National Historic Preservation Act of 1966 in relation to the LAR.

- The NRC completed the review of the DOE Naval Reactors Surface Ship Support Barge final status survey and unrestricted release request, implementing the interagency agreement between the NRC and DOE Naval Reactors for NRC technical support services for the decommissioning of a nuclear naval surface ship. This was a first-of-a-kind project where the NRC staff provided oversight consultation to the U.S. Navy.

- The NRC staff reviewed and approved an exemption for San Onofre Nuclear Generating Station from the regulations at 10 CFR 72.106(b) requiring that the minimum distance from the ISFSI to the ISFSI controlled area boundary be at least 100 meters.

- The NMSS staff has engaged with the Office of Nuclear Reactor Regulation regarding the potential for Palisades Nuclear Plant to pursue a restart of operations. This would be a first-of-a-kind request since Palisades has submitted the certifications of permanent shutdown and removal of fuel from the reactor vessel.

- The NRC continues to respond to stakeholder interest in the decommissioning process and potential effluent releases at Indian Point Energy Center and Pilgrim Nuclear Power Station. The NRC continued to support requests from each of the sites' decommissioning oversight boards. The staff developed a frequently asked question (FAQ) page specific to Indian Point effluent releases on the NRC's public website at https://www.nrc.gov/info-finder/reactors/ip3/faq.html. In addition, the staff made several updates to the broader decommissioning FAQ website located at https://www.nrc.gov/waste/decommissioning/faq.html.

2.1.2 Fiscal Year 2024 Areas of Focus

The NRC staff will continue its review of two LTPs and expect at least six additional submittals in the next 2 years. The NRC staff will continue to work toward the termination of licenses at sites where physical decommissioning is complete, such as Zion. It will also review unique and first-of-a-kind LTPs such as the Nuclear Ship Savannah and GE Hitachi Nuclear Energy (GEH) site decommissioning strategy. The NRC staff will also continue to ensure high-quality safety reviews of submittals and support stakeholder outreach activities consistent with the NRC's Strategic Goals 1 and 3.

Table 2.1-a Power and Early Demonstration Reactors Undergoing Decommissioning

Reactor		Location	Status	Date of Shutdown	Date PSDAR* Submitted	Date LTP Submitted	Date LTP Approved	Date of Decommissioning Completion**
1	Crystal River Unit 3	Crystal River, FL	DECON	2/13	6/19***	12/22*****	TBD	2026–2030
2	Dresden Unit 1	Morris, IL	SAFSTOR	10/78	6/98	TBD	TBD	2036
3	Duane Arnold	Palo, IA	SAFSTOR	8/20	4/20	TBD	TBD	2080
4	Fermi Unit 1	Newport, MI	SAFSTOR	9/72	4/98	2011****	TBD	2032
5	Fort Calhoun	Blair, NE	DECON	10/16	12/19***	8/21	TBD	2026
6	GEH-EVESR	Sunol, CA	DECON	2/67	9/22***	TBD	TBD	2030
7	GEH-VBWR	Sunol, CA	DECON	12/63	9/22***	TBD	TBD	2025
8	Indian Point Unit 1	Buchanan, NY	DECON	10/74	12/19***	TBD	TBD	2026
9	Indian Point Unit 2	Buchanan, NY	DECON	4/20	12/19	TBD	TBD	2033
10	Indian Point Unit 3	Buchanan, NY	DECON	4/21	12/19	TBD	TBD	2033
11	Kewaunee	Kewaunee, WI	DECON	5/13	5/13	TBD	TBD	2073
12	Millstone Unit 1	Waterford, CT	SAFSTOR	7/98	6/99	TBD	TBD	2056
13	Nuclear Ship Savannah	Baltimore, MD	DECON	11/70	12/08	TBD	TBD	2031
14	Oyster Creek	Forked River, NJ	DECON	9/18	6/18	TBD	TBD	2025
15	Palisades	Covert, MI	SAFSTOR	5/22	12/20	TBD	TBD	2041
16	Peach Bottom Unit 1	Delta, PA	SAFSTOR	10/74	6/98	TBD	TBD	2034
17	Pilgrim	Plymouth, MA	DECON	5/19	11/18	TBD	TBD	2027
18	San Onofre Unit 1	San Clemente, CA	DECON	11/92	12/98	TBD	TBD	2030
19	San Onofre Unit 2	San Clemente, CA	DECON	6/13	9/14	TBD	TBD	2031
20	San Onofre Unit 3	San Clemente, CA	DECON	6/13	9/14	TBD	TBD	2031
21	TMI Unit 1	Middletown, PA	SAFSTOR	9/19	4/19	TBD	TBD	2079
22	TMI Unit 2	Middletown, PA	DECON	3/79	12/19***	TBD	TBD	2037
23	Vermont Yankee	Vernon, VT	DECON	12/14	4/17***	TBD	TBD	2026–2030
24	Zion Unit 1	Zion, IL	DECON	2/97	3/08***	12/14	9/18	2024
25	Zion Unit 2	Zion, IL	DECON	9/96	3/08***	12/14	9/18	2024

*** Postshutdown decommissioning activities report (PSDAR) or DP equivalent. Before August 28, 1996, the effective date of the Decommissioning of Nuclear Power Reactors final rule (61 FR 39278; July 29, 1996), licensees submitted DPs (or equivalent).**

Reactor	Location	Status	Date of Shutdown	Date PSDAR* Submitted	Date LTP Submitted	Date LTP Approved	Date of Decommissioning Completion**

**** Anticipated year of completion of decommissioning. For decommissioning reactors with no ISFSI or an ISFSI licensed under the provisions for a specific license in 10 CFR Part 72, "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater than Class C Waste," completion of decommissioning will result in the termination of the 10 CFR Part 50 license. For reactors with an ISFSI licensed under the general license provisions of 10 CFR 72.210, "General license issued," completion of decommissioning will result in reducing the 10 CFR Part 50 license boundary to the footprint of the ISFSI.**

**** Revised PSDAR with a new decommissioning schedule.**

***** Licensing action put on hold at the licensee's request.**

****** The licensee resubmitted the LTP by letter dated June 9, 2023, in response to an NRC request for supplemental information in order to accept the LTP for review.**

Table 2.1-b Decommissioned Power Reactors that *h*ave ISFSIs

Reactor		Onsite Fuel Status	Cask Vendor	Model
1	Big Rock Point	10 CFR 50 ISFSI	Energy*Solutions*, Inc.	Fuel Solutions W74
2	Connecticut Yankee	10 CFR 50 ISFSI	NAC International, Inc.	NAC-MPC
3	Fort St. Vrain (DOE site)	10 CFR 72 ISFSI	Foster Wheeler Energy Applications, Inc.	Modular Vault Dry Store
4	Humboldt Bay	10 CFR 72 ISFSI	Holtec International	HI-STAR Version HB and MPC HB
5	La Crosse	10 CFR 50 ISFSI	NAC International, Inc.	NAC-MPC
6	Maine Yankee	10 CFR 50 ISFSI	NAC International, Inc.	NAC-UMS
7	Rancho Seco	10 CFR 72 ISFSI	Transnuclear, Inc.	NUHOMS-24P
8	Trojan	10 CFR 72 ISFSI	BNFL Transtor/Holtec International	HI-STORM 100
9	Yankee Rowe	10 CFR 50 ISFSI	NAC International, Inc.	NAC-MPC

2.2 Research and Test Reactor Decommissioning

The NRC research and test reactor decommissioning activities include project management, technical review of licensee submittals in support of decommissioning, inspections, support for the development of rulemaking and guidance, public outreach, and participation in industry conferences and workshops. In addition, the NRC staff routinely processes license amendments and exemptions to support the progressive stages of decommissioning. As of September 30, 2023, two research and test reactors were in decommissioning status: (1) the Aerotest Radiography and Research Reactor and (2) the General Electric Test Reactor (GETR). The staff is currently reviewing the Aerotest Radiography and Research Reactor DP. Table 2.2 lists the research and test reactors undergoing decommissioning. Plant status summaries for all decommissioning research and test reactors are available on the NRC website at https://www.nrc.gov/info-finder/decommissioning/research-test/index.html.

2.2.1 Summary of Fiscal Year 2023 Activities

NMSS continued to review the DP for the Aerotest Radiography and Research Reactor and monitored efforts by GEH as it prepares plans to transfer ownership of the Vallecitos Nuclear Center to a decommissioning contractor. The Vallecitos Nuclear Center comprises two decommissioned power reactors (Vallecitos Boiling Water Reactor and ESADA Vallecitos Experimental Superheat Reactor) and licenses for one decommissioned and one operating research and test reactor (GETR and Nuclear Test Reactor License, respectively).

2.2.2 Fiscal Year 2024 Areas of Focus

The NRC staff will work to complete the review of the Aerotest Radiography and Research Reactor DP, as well as the GEH license transfer upon submittal. The NRC staff will also review a DP for the GETR, which is anticipated to be submitted by GEH in early FY 2024.

Table 2.2 Research and Test Reactors Undergoing Decommissioning

	Reactor	Location	Date of Shutdown	Status	Date of Decommissioning Completion
1	Aerotest Radiography and Research Reactor	San Ramon, CA	10/10	Possession Only, DP submitted	TBD
2	GE Hitachi GETR	Sunol, CA	1/85	Possession Only	2030

2.3 Complex Materials Facility Decommissioning

Decommissioning activities associated with materials facilities include maintaining regulatory oversight of complex decommissioning sites; undertaking financial assurance reviews; examining issues and funding options to facilitate remediation of sites in non-Agreement States and sites in Agreement States that have exclusive Federal jurisdiction; interacting with the EPA, the DOE, and the U.S. Army Corps of Engineers (USACE); inspecting complex decommissioning sites; conducting public outreach; participating in international decommissioning activities; conducting program evaluations; and participating in industry conferences and workshops. In addition, the NRC staff routinely reviews decommissioning financial assurance submittals for operating materials and fuel cycle facilities and maintains a financial instrument security program. As of September 30, 2023, eight complex materials sites are undergoing decommissioning (see table 2.3).

Complex materials sites are defined as sites where the complexity of the decommissioning process will require more than minimal technical and administrative support. It is expected that the decommissioning work at these sites will take more than a year to complete. Examples of complex materials sites include sites with groundwater contamination, sites with significant soil contamination, sites whose owners are in bankruptcy, any site where a DP is required, all fuel cycle facilities undergoing decommissioning, and sites where there is significant stakeholder interest. Status summaries for the complex materials sites undergoing decommissioning are available on the NRC website at https://www.nrc.gov/info-finder/decommissioning/complex/index.html.

2.3.1 Summary of Fiscal Year 2023 Activities

The NRC staff performed the following activities related to complex materials facility decommissioning in FY 2023:

- The NRC staff continued to coordinate with the USACE Pittsburgh office concerning the cleanup of the Shallow Land Disposal Area (SLDA) site in Vandergrift, Pennsylvania, in support of the planned restart of remediation activities in 2025.

- The staff continued to provide information to support the EPA's decision-making process related to placement of the Fansteel site on the EPA's General Superfund section of the National Priorities List (NPL). On September 7, 2023, the EPA announced in a *Federal Register* (FR) notice (88 FR 61470) that Fansteel Metals would be added to the NPL, effective October 10, 2023. As of August 2023, the EPA has begun participating in monthly status meetings with the licensee, the NRC, and the Oklahoma Department of Environmental Quality to address questions and concerns about the near-term and long-term activities that can be conducted at the Fansteel site under the NPL process.

    - On April 5, 2022, based on NRC concerns, the University of Missouri retracted its previous DP and submitted a revised DP on May 25, 2023, which is currently under review by Region III staff.

Radium Activities

The Energy Policy Act of 2005 established the NRC's authority over activities associated with discrete sources of radium and associated contamination. These activities include (1) maintaining various levels of regulatory oversight at sites with identified discrete sources of

radium or associated contamination, (2) examining issues and funding options to facilitate remediation of sites in non-Agreement States, (3) interacting with the States, the EPA, the U.S. Department of Defense (DoD), and the National Park Service (NPS) at their respective sites, (4) inspecting service providers at the sites that are subject to exclusive Federal jurisdiction, (5) conducting public outreach, and (6) participating in industry conferences and workshops. NRC staff activities involve varying levels of oversight at both military and nonmilitary sites. More information on the staff's radium activities is available on the NRC website at https://www.nrc.gov/materials/radium.html.

Summary of Fiscal Year 2023 Military Radium Activities

The NRC and the DoD signed a memorandum of understanding (MOU) in April 2016 (Agencywide Documents Access and Management System Accession No. ML16092A294) that outlined the roles and responsibilities for the cleanup of radium and other unlicensed radioactive materials at military sites.

In FY 2023, the NRC staff continued monitoring activities of the following ongoing cleanups:

- U.S. Army: Dugway Proving Grounds in Dugway, Utah
- U.S. Air Force: Hill Air Force Base in Ogden, Utah, and the former Kelly (Lackland) Air Force Base in San Antonio, Texas
- U.S. Navy: China Lake Naval Air Weapons Station in China Lake, California; the former Long Beach Naval Shipyard in Long Beach, California; the former Mare Island Naval Shipyard in Vallejo, California; Naval Air Station North Island in Coronado, California; Naval Base San Diego in San Diego, California; and the former Naval Station Treasure Island in San Francisco, California

In FY 2023, the NRC staff did the following:

- reaffirmed its previous concurrence on a request for no further action in Areas 1 and 2 of the 1400-Series Housing at the former Naval Station Treasure Island
- continued reviews of the Navy's response to comments on a data gaps investigation and remedial action completion report for Installation Restoration Sites 1 and 2 at the former Long Beach Naval Shipyard and on a remedial investigation report for Unexploded Ordinance Site 3 at the former Mare Island Naval Shipyard

The NRC staff also held coordination calls with the DoD to discuss upcoming activities and schedules. These communications with the DoD enabled the NRC to confirm that (1) the MOU is being appropriately implemented and (2) the DoD's remedies will meet the NRC dose criterion of 0.25 millisievert per year (25 millirem per year) in 10 CFR 20.1402, "Radiological criteria for unrestricted use," for sites that will be released for unrestricted use or that are consistent with the requirements in 10 CFR 20.1403(b) for sites that will be released for restricted use.

Throughout FY 2023, the NRC staff continued implementing the "stay-informed" approach described in the MOU. The NRC staff continues its reliance on the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process and EPA oversight at the following sites:

- U.S. Army: Sharpe Depot in Lathrop, California

- U.S. Air Force: Elmendorf Air Force Base in Anchorage, Alaska, and the former McClellan Air Force Base in Sacramento, California

- U.S. Navy: the former Alameda Naval Air Station in Alameda, California; the former Brunswick Naval Air Station in Brunswick, Maine; Marine Corps Base Camp LeJeune in Jacksonville, North Carolina; the former Hunters Point Naval Shipyard site in San Francisco, California; and Naval Weapons Station Yorktown in Yorktown, Virginia

Throughout FY 2023, the NRC staff conducted periodic discussions with the military, the EPA, and the appropriate State governments about the status of, and issues associated with, site cleanup.

Also in FY 2023, the staff issued its decision rejecting a petition under 10 CFR 2.206, "Requests for action under this subpart," that requested that the NRC revoke Tetra Tech EC, Inc.'s NRC license due to record falsification at the Hunters Point Naval Shipyard. In December 2019, the NRC initially responded to Greenaction for Health and Environmental Justice regarding its petition, stating that it will hold the petition in abeyance until after the resolution of the U.S. Department of Justice's civil complaint against Tetra Tech EC, Inc. (ML19309F257). Given the ongoing duration of the civil proceedings, and in consultation with the U.S. Department of Justice, the NRC reevaluated holding the petition in abeyance until resolution of the proceedings. On June 26, 2023, the NRC informed the petitioner that the petition met a criterion for rejection: it raised issues that have already been the subject of NRC staff review and evaluation (ML19101A254). While much of the information contained in the petition and its supplements was new, such information was not considered significant in the context of the actions already taken by the NRC allegations, investigations, and enforcement staff.

Summary of Fiscal Year 2023 Nonmilitary Radium Activities

The NRC staff continued to focus its efforts on the remaining three sites, located in non-Agreement States, that had contamination from historical radium use that exceeded unrestricted use standards and require remediation[4,5]:

- Remediation activities at the former New Haven Clock Company began in August 2018 and are ongoing. Due to issues related to funding and the Coronavirus Disease 2019 (COVID-19) pandemic, site cleanup has been delayed. The site owner is exploring a sale of the property and intends to complete remediation before closing on the sale, which is now anticipated in calendar year 2024. The NRC staff will coordinate any closeout activities with the State of Connecticut's Department of Energy and Environmental Protection.

---

4 As described in SECY-16-0020, "Near-Term Actions to Address Non-Military Sites with Potential Radium Contamination," dated February 5, 2016 (ML17130A774), the NRC staff originally identified 29 historical sites in non-Agreement States for follow-up. As a site can have multiple property owners, these 29 historical sites have 47 unique site owners. Subsequently, as part of continuing coordination efforts with the States on naturally occurring and accelerator-produced radioactive material, the NRC identified 11 additional sites with potential radium contamination. Officials in the State of Michigan informed the NRC staff of nine additional sites. During preparations for the site visit to a former clock factory in Connecticut, the NRC staff identified two additional sites in Connecticut.

5 As described in previous annual decommissioning reports, two of the five sites requiring remediation have completed cleanup to meet the NRC's unrestricted-use dose criterion.

- The NRC staff approved the cleanup plan for New Opportunities of Waterbury, Inc. (NOW), in Waterbury, Connecticut, in April 2019 (ML19044A522) and met with the site owner and Federal, State, and local partners to discuss the status of remediation planning and funding. In addition, the staff has been in a monitoring role at the portion of the NOW site formerly under the EPA's Brownfields program. The State of Connecticut asked EPA Region I to perform an emergency removal action at this site due to structural concerns about portions of the site. In January 2020, the EPA Region I staff completed a preliminary assessment of the site and determined that an emergency removal action is not warranted. Also in 2020, the EPA began to assess the site for listing on the NPL and remedial actions under CERCLA; however, the assessment was delayed due to the COVID-19 pandemic. In FY 2022, the EPA began renegotiating site access agreements to restart the assessment and continues to work to gain site access. In April 2023, the NRC staff issued a revised letter forgoing licensing of the site (ML23066A190) as these activities continue.

- The NRC staff received a cleanup plan in November 2019 from the site owner of the former Seth Thomas Clock Company in Thomaston, Connecticut (ML19326B980). In January 2020, the staff requested additional information on the cleanup plan (ML20030A128). In April 2020, at the site owner's request due to the COVID-19 pandemic, the staff placed its review of the cleanup plan on hold. The site owner has engaged the State regarding potential funding sources to complete the remediation. In April 2023, the NRC staff issued a revised letter forgoing licensing (ML23066A191) as these activities continue.

Additionally, in FY 2023, the NRC staff and the NPS staff continued to coordinate efforts, in accordance with the NRC-NPS MOU (ML20239A731), for the ongoing environmental response actions at Great Kills Park in Staten Island, New York; Spring Creek Park in Queens, New York; and Dead Horse Bay in Brooklyn, New York, where the NPS previously identified radium contamination. The NRC staff held coordination calls with the NPS to determine upcoming activities and schedules at the programmatic and site-specific levels. The NRC staff also conducted an onsite observation at the three parks in March 2023.

The NRC staff continues to coordinate with Agreement State partners as they work to resolve nonmilitary radium issues within their jurisdictions. As of September 30, 2023, 35 of 39 Agreement States have completed their investigation activities, have dispositioned all the sites on their lists, and have no further plans for additional investigations. The remaining Agreement States continue to conduct prioritized reviews of the sites within their jurisdictions, focusing on the most risk-significant sites.

West Valley Demonstration Project

The New York State Energy Research and Development Authority (NYSERDA) and the U.S. Department of Energy—West Valley Demonstration Project (DOE-WVDP) employ a two-phase approach for decommissioning the West Valley Demonstration Project (WVDP). This approach is described as the preferred alternative in the environmental impact statement (EIS) for decommissioning and long-term stewardship of the WVDP and Western New York Nuclear Service Center near Buffalo, New York.

Phase 1 involves the decommissioning of most WVDP site facilities, including demolition of the Main Plant Process Building (MPPB) and vitrification facility, cleanup of contaminated soil, and use of site data to inform studies to reduce uncertainties associated with decommissioning the

remaining facilities (referred to as Phase 1 studies). Phase 1 of the decommissioning approach is being conducted in accordance with the NRC-approved DP. Phase 2 involves completion of the decommissioning process and long-term management decision-making for the site.

In FY 2023, the DOE-WVDP and NYSERDA continued to work toward the Phase 1 decommissioning goals, specifically by completing preparations for and commencing demolition of the above-grade portion of the MPPB and finishing the decontamination of the Product Purification Cell—South.

The DOE-WVDP has started development of a probabilistic performance assessment in support of additional decommissioning activities at the WVDP and is continuing work on the draft supplemental EIS for Phase 2 decommissioning. The NRC staff engaged in technical discussions with the DOE-WVDP about the probabilistic performance assessment throughout FY 2023. The supplemental EIS will include the State-licensed disposal area to facilitate a comprehensive evaluation of dose contributions from the entire site.

2.3.2 Fiscal Year 2024 Areas of Focus

During FY 2024, the NRC staff will focus on the following areas related to complex materials facility decommissioning:

- The NRC staff will continue to coordinate with the Oklahoma Department of Environmental Quality and will work with the EPA to address near-term stabilization and long-term cleanup of the Fansteel Metals Inc. site under CERCLA.

- The NRC staff will continue its review of the new work plans for the SLDA.

- The NRC staff will perform the technical review for the Cimarron DP, Revision 3, and develop the environmental assessment and the safety evaluation report (SER) to support a decision on the license amendment request by December 31, 2024.

- The NRC staff will continue implementing the MOU with the DoD for military radium by prioritizing its activities based on available resources. Factors for consideration in prioritizing annual monitoring activities include (1) involvement of other regulatory agencies, (2) use of engineered controls, land use controls, or both as remedies, (3) contamination in buildings for reuse, (4) amount or type of material and how transportable it is, and (5) previous monitoring activities.

- The NRC staff will continue its efforts on nonmilitary radium by working with site owners and state agencies on risk-informed approaches for site cleanup. Additionally, the staff will continue to implement the MOU with the NPS as remediation activities progress at Great Kills Park, Spring Creek Park, and Dead Horse Bay.

- The NRC staff plans to focus on continuing to ensure that the demolition of the MPPB at the WVDP is conducted in accordance with the methods and assumptions reviewed by the staff. The staff will also continue oversight of the remaining areas of the Product Purification Cell—South, which are still being prepared for demolition at the WVDP. MPPB demolition is expected to take more than 30 months to complete. The NRC staff will review and provide appropriate input on the draft supplemental EIS and probabilistic performance assessment.

Table 2.3 Complex Decommissioning Sites

	Name	Location	Date DP Submitted	Date DP Approved	Compliance Criteria	Date of Decommissioning Accomplished
1	Alameda Naval Air Station	Alameda, CA	N/A	N/A	MOU**	N/A
2	Cimarron (Kerr-McGee)	Cimarron, OK	4/95, revised 11/18, revised 10/22	8/99	Action-UNRES***	2039
3	Department of the Army, U.S. Armament Research, Development, and Engineering Center	Picatinny, NJ	11/13, revised 8/19	4/17	LTR-UNRES	TBD
4	Fansteel Metals Inc. (formerly FMRI)	Muskogee, OK	7/99, revised 5/03	12/03	LTR-UNRES*****	TBD
5	Hunters Point Naval Shipyard* (former Naval Shipyard)	San Francisco, CA	N/A	N/A	MOU**	N/A
6	McClellan* (former Air Force Base)	Sacramento, CA	N/A	N/A	MOU**	N/A
7	Shallow Land Disposal Area (BWX Technologies, Inc.)****	Vandergrift, PA	N/A	N/A	LTR-UNRES	TBD
8	WVDP	West Valley, NY	Phase 1 3/09	Phase 1 2/10	LTR-UNRES†	TBD

* The Hunters Point Shipyard and Alameda Naval Air Station sites are being remediated by the U.S. Navy, and the McClellan site is being remediated by the U.S. Air Force, under the CERCLA process and EPA oversight. It is assumed that some licensable material might be present at both sites; however, the NRC has not licensed these sites. Instead, the Commission has approved a "limited involvement approach to stay informed," and the NRC staff will rely on the ongoing CERCLA process and EPA oversight. More information is available on this approach in SECY-08-0077, "Options for U.S. Nuclear Regulatory Commission Involvement with the Navy's Remediation of the Hunters Point Naval Shipyard Site in California," dated May 30, 2008 (ML080800110).

** "Memorandum of Understanding Between the United States Nuclear Regulatory Commission and the United States Department of Defense for Coordination on CERCLA Response Actions at DoD Sites with Radioactive Materials," issued April 2016 (ML16092A294).

*** Under the provisions of 10 CFR 20.1401(b), any licensee or responsible party that submitted its DP before August 20, 1998, and received NRC approval of that DP before August 20, 1999, may use the site decommissioning management plan action plan criteria for site remediation.

**** The USACE's remediation approach for the SLDA site is to follow the CERCLA process and adhere to the MOU between the NRC and the USACE for coordination, remediation, and decommissioning of Formerly Utilized Sites Remedial Action Program sites with NRC-licensed facilities (66 FR 36606; July 12, 2001). A supplemental MOU between the USACE, the DOE, and the NRC, signed in June 2014, complements the existing MOU by incorporating the relevant requirements of 10 CFR Parts 70, 73, and 74 and stipulates the specific roles of each Federal entity throughout the remainder of the remediation process.

***** In a letter dated January 9, 2023 (ML23037A875), to Dr. Earthea Nance, Regional Administrator, EPA Region VI, Governor J. Kevin Stitt designated the Fansteel Metals/FMI site as the State of Oklahoma's highest priority facility under 42 U.S.C. § 9605(a)(8)(B) and 40 CFR 300.425(c)(2), which would result in EPA proposing the site as a candidate for listing on the NPL. EPA added the site to the NPL, effective October 10, 2023.

† The WVDP Phase I DP includes plans to release a large portion of the site for unrestricted use, while the remainder of the site may have a perpetual license or be released with restrictions, consistent with the 2002 Commission policy statement. The policy statement prescribed the NRC's License Termination Rule (LTR) (10 CFR part 20, subpart E) as the decommissioning criteria for the WVDP, reflecting the fact that the applicable goal for the entire NRC-licensed site is compliance with the requirements of the LTR.

Notes:

- The compliance criteria identified in this table reflect the information in the most recent NRC-approved DP or approach. The compliance criteria may change if the NRC approves the alternate compliance criteria requested by the licensee.
- "Action" refers to site decommissioning management plan action plan criteria; "LTR-UNRES" refers to License Termination Rule criteria for unrestricted use.

- Reasons for multiple DP submittals range from changes in the favored decommissioning approach, to the phased implementation of decommissioning, to poor-quality submittals.

2.4 Uranium Recovery Facility Decommissioning

In enacting UMTRCA, Congress had two general goals. The first was to provide a remedial action program to stabilize and control the residual radioactive material at various identified inactive mill sites (Title I). The second was to ensure the adequate regulation of uranium production activities and cleanup of mill tailings at mill sites that were active and licensed by the NRC or Agreement States (Title II). Additional information on UMTRCA can be found on the NRC website at https://www.nrc.gov/waste/mill-tailings.html.

The NRC's uranium recovery decommissioning activities include project management, technical review of licensee and DOE submittals in support of decommissioning or long-term care and maintenance, the development of rulemaking and guidance, public outreach efforts, international assistance and cooperation, and participation in industry conferences and workshops.

Table 2.4-a identifies the 22 Title I sites. All but three sites—in Moab, Utah; Riverton, Wyoming; and Monument Valley, Arizona—have an NRC general license under 10 CFR 40.27. The regulation at 10 CFR 40.27 governs the long-term care of Title I disposal sites under a general license held by the DOE. The Moab site does not have a general license because it is currently undergoing remediation and waste relocation. The Riverton and Monument Valley sites do not have an NRC general license because they are not mill tailings disposal sites.[6] For these sites, the NRC has a statutory oversight role until the groundwater remedy selected by the DOE is completed. The NRC performs a similar role at several other Title I processing sites where the tailings had been moved to another location. Additional information on the status of Title I sites can be found on the DOE website at https://www.energy.gov/lm/lm-sites.

Table 2.4-b identifies the NRC-licensed Title II sites that are no longer operating and are in decommissioning status. As of September 30, 2023, five such Title II uranium recovery facilities are undergoing decommissioning. The regulation at 10 CFR 40.28, "General license for custody and long-term care of uranium or thorium byproduct materials disposal sites," governs the long-term care of Title II uranium mill tailings disposal sites under a general license held by either the DOE or the State in which the site is located, after decommissioning is complete. Status summaries for the Title II sites undergoing decommissioning can be found on the NRC website at https://www.nrc.gov/info-finder/decommissioning/uranium/index.html.

Table 2.4-c identifies the Title II sites that have been transferred for long-term care to the DOE. As of September 30, 2023, six Title II uranium recovery facilities have been transferred to the DOE. Additional information on the status of Title II sites can be found on the DOE website at https://www.energy.gov/lm/lm-sites.

[6] Title I milling sites that do not have disposal cells are referred to as processing sites. Some of these sites are still undergoing remediation, however, especially to address ground water contamination.

2.4.1 Summary of Fiscal Year 2023 Activities

The NRC staff performed the following activities for UMTRCA Title I sites during FY 2023:

- The NRC staff continued to communicate with the DOE about its evaluation of the tailings impoundment cover at the Mexican Hat site in Utah and the reviews of the groundwater remedy evaluation for the Monument Valley site.

- The NRC staff worked with the DOE on the redesign of the cover system for the Crescent Junction disposal cell. Additionally, the NRC staff participated in preliminary activities related to the groundwater corrective action plan for the Moab site. Both efforts will continue into FY 2024.

- The NRC staff continued its reviews of the groundwater corrective action plans for the Gunnison and Rifle sites in Colorado and the Green River site in Utah.

The NRC staff continued to work with the Navajo Technical University (NTU) to share NRC courses in support of expanded science, technology, engineering, and mathematics offerings at the university consistent with the 10-year plan. The goal is to help the NTU create a new degree program. In addition to the work with the NTU, the staff continued participation in community outreach activities with the Navajo Nation.

The NRC staff conducted the following activities for UMTRCA Title II sites during FY 2023:

- The NRC staff continued inspection and review of licensee actions and proposals at the Homestake Mining Company of California (HMC) Grants Reclamation Project in Grants, New Mexico, pursuant to Confirmatory Order EA-16-114 issued in March 2017 and license SUA-1471. The HMC site is also an EPA Superfund site. The NRC staff is currently reviewing an LAR for the redesign of the top coverto change from a rock cover to an evapotranspiration cover. The NRC staff continues to work with HMC on groundwater cleanup activities at the site.

- The NRC staff continued to work on the transfer of the Western Nuclear Incorporated (WNI) site to the DOE for long-term care. The staff has completed its review of the DOE's preliminary final long-term surveillance plan (LTSP). The staff also completed its determination of the long-term care fee, and WNI subsequently paid the fee to the U.S. Treasury. The staff is reviewing the final LTSP received in August 2023, which will lead to the termination of WNI's license and site transfer to the DOE for long-term care under a general license.

- The NRC staff continued to work with Rio Algom toward completion of the characterization and subsequent remediation of byproduct surface contamination at its Ambrosia Lake West site, which is in the San Mateo Creek Basin in New Mexico. Throughout the San Mateo Creek basin, the EPA is pursuing a CERCLA removal action of surface contamination from historical uranium mines. The NRC staff continued to attend regular meetings with the EPA staff and larger meetings with Rio Algom, the EPA, and the State of New Mexico to address the overlapping regulatory authorities for commingled contamination from the Ambrosia Lake West site and historical uranium mines within the San Mateo Creek Basin.

- The NRC staff continued to work with the Wyoming Department of Environmental Quality to identify funding sources and develop a path forward for completing the decommissioning of the American Nuclear Corporation site in Fremont County, Wyoming.

- In September 2020, the NRC issued the SER for the LAR for the United Nuclear Corporation (UNC) Church Rock, New Mexico, site to construct a disposal cell for mine spoils atop the existing mill tailings cell. In October 2020, the NRC issued the draft EIS for public comment for the UNC Church Rock LAR. At the request of stakeholders, the comment period was extended several times, closing on November 1, 2021. During the extended comment period, the NRC staff engaged in innovative approaches to outreach with the Navajo Nation, which included, but were not limited to, virtual meetings with the public and specific Navajo communities, newspaper articles, and radio broadcasts in English and Diné. NRC senior managers also met with Navajo President Nez to discuss the draft EIS and additional ideas to effectively communicate with the Navajo Nation during the comment period. The license amendment was granted on February 15, 2023, including the record of decision and issuance of a revised SER and the final EIS (ML23023A118).

- The NRC staff continued to work on the transfer of the Durita site to the DOE for long-term care. The NRC staff completed its review of the DOE's revised draft LTSP in March 2023, which identified open items that will need to be resolved in the final LTSP. The staff also completed its determination of the long-term care fee and is working with the DOE to revise the schedule based on delays in the land transfer from the Bureau of Land Management.

- The NRC staff is in regular meetings with the DOE, the EPA, and the Colorado Department of Public Health and Environment pertaining to the Uravan site in Colorado. The Uravan site is in the Agreement State of Colorado and is also an EPA Superfund site. The staff anticipates that a completion review report (CRR) will be submitted to the NRC in FY 2024 or FY 2025 for review.

- In August 2023, the NRC approved the Texas Commission on Environmental Quality's final CRR for the Intercontinental Energy Corporation Lamprecht and Zamzow sites near Three Rivers, Texas (ML23192A767).

The NRC staff performed the following activities related to UMTRCA Title II sites that have been transferred to the DOE for long-term care:

- The NRC staff continues to discuss options with the DOE to resolve two technical concerns associated with the Bluewater site in Grants, New Mexico, that involve (1) several feet of subsidence on approximately 40 acres of the cover, causing ponding of several acre-feet of water on the tailings impoundment after heavy rains, and (2) contaminants in the groundwater plume from the site that have impacted a portion of a regional drinking water aquifer. The DOE is working cooperatively with the USACE on a solution to the impoundment subsidence and with the DOE national laboratories on finding long-term solutions for groundwater characterization and assessing the impacts of contaminated groundwater at and around the site. The Bluewater disposal cell repair project will be a multiyear review, construction, and tailings repair project. The DOE and the NRC have developed a plan and schedule for review of the disposal cell repair

project, including meeting and communication points, and the process for resolving NRC comments. The DOE continues to maintain a cooperative agreement with the New Mexico Environment Department (NMED) to sample groundwater wells outside of the long-term care boundary. The DOE and the NMED are negotiating locations for two new DOE wells to further investigate contamination in the San Andres-Glorieta Aquifer, a critical aquifer in the area.

- The DOE Applied Studies and Technology team and its contractor RSI EnTech, LLC, are studying the erosion currently found at the L-Bar disposal site in Seboyeta, New Mexico. L-Bar is one of several sites selected for a study on cover types, climate, site conditions, erosional features, and vulnerabilities to changes in conditions. Relationships between cover design and setting (e.g., slope, aspect, climate) with observed erosional features (e.g., rills, gullies, internal erosional pipes, depressions, zones of sediment collection) will be evaluated in test pits in cover systems. The field work for this investigation is nearly complete, and a report will be submitted in FY 2024. The DOE is undertaking this study under its responsibility as the long-term care custodian.

- Throughout FY 2023, the NRC staff continued interactions with the DOE about those sites that are generally licensed under 10 CFR 40.27 and 10 CFR 40.28. The staff has continued to hold quarterly telephone conference calls with the DOE to discuss overarching policy and technical issues associated with managing the generally licensed sites. The staff holds bimonthly meetings with the DOE for sites located in the Grants Mineral District. The staff also continued its participation in DOE meetings with the Navajo Nation and the Hopi Tribe pertaining to the sites on the Navajo Nation and Hopi Reservation. The staff has participated in DOE meetings with the Pueblo of Acoma pertaining to sites of interest near that reservation as well.

2.4.2 Fiscal Year 2024 Areas of Focus

The NRC staff will continue its activities associated with the Navajo Nation 10-year plan. Additionally, the staff will continue to review DOE reports and plans for the reclamation and management of sites on Indian land. The staff continues to review the groundwater corrective action plans for the Gunnison and Rifle sites in Colorado and the Green River site in Utah. The staff will continue to work with the DOE to resolve issues associated with the Bluewater site and the L-Bar site and will work with the State of Wyoming to explore and implement options for decommissioning the American Nuclear Corporation site. The staff will also work with the DOE Office of Legacy Management to complete reviews of the LTSPs for the WNI and Durita sites, including a review of the land transfer issues for both WNI and Durita. The NRC staff anticipates initiating its review of an application for alternate concentration limits for groundwater at the Sequoyah Fuels site in Gore, Oklahoma. Considerable efforts continue with the two EPA Superfund sites also regulated by the NRC, Homestake and UNC Churchrock, as well as the one Superfund site, Uravan, located in the Agreement State of Colorado.

Table 2.4-a Decommissioning Title I Uranium Recovery Sites

	Name	Location	Status
1	Ambrosia Lake	Grants, NM	Monitoring
2	Burrell	Blairsville, PA	Monitoring
3	Canonsburg	Canonsburg, PA	Monitoring
4	Durango	Durango, CO	Monitoring
5	Falls City	Falls City, TX	Monitoring
6	Grand Junction	Grand Junction, CO	Monitoring
7	Green River	Green River, UT	Monitoring
8	Gunnison	Gunnison, CO	Monitoring
9	Lakeview	Lakeview, OR	Monitoring
10	Lowman	Lowman, ID	Monitoring
11	Maybell	Maybell, CO	Monitoring
12	Mexican Hat	Mexican Hat, UT	Monitoring
13	Monument Valley	Monument Valley, AZ	Monitoring
14	Moab Mill	Moab, UT	Reclamation
15	Naturita	Naturita, CO	Monitoring
16	Rifle	Rifle, CO	Monitoring
17	Riverton	Riverton, WY	Monitoring
18	Salt Lake City	Salt Lake City, UT	Monitoring
19	Shiprock	Shiprock, NM	Active—groundwater remediation
20	Slick Rock	Slick Rock, CO	Monitoring
21	Spook	Converse County, WY	Monitoring
22	Tuba City	Tuba City, AZ	Active—groundwater remediation

Table 2.4-b Decommissioning Title II Uranium Recovery Sites

	Name	Location	Date DP/Revised Plan Approved	Projected Date of Decommissioning Completion
1	American Nuclear Corporation	Gas Hills, WY	10/88, revision 2006	TBD
2	Homestake Mining Company	Grants, NM	10/93	TBD
3	Rio Algom—Ambrosia Lake	Grants, NM	2003 (mill); 2004 (soil)	2030
4	Sequoyah Fuels Corporation	Gore, OK	2008	2028
5	United Nuclear Corporation	Church Rock, NM	3/91, revision 2018	TBD

Table 2.4-c Title II Uranium Recovery Sites—DOE Licensed Under 10 CFR 40.28

	Name	Location	Date Transferred to the DOE
1	Bluewater (Arco)	Grants, NM	1997
2	Edgemont	Edgemont, SD	1996
3	L-Bar	Seboyeta, NM	2005
4	Maybell West	Maybell, CO	2010
5	Sherwood	Wellpinit, WA	2001
6	Shirley Basin South	Shirley Basin, WY	2005

2.5 Fuel Cycle Facility Decommissioning

There is one fuel cycle facility undergoing partial decommissioning, the Nuclear Fuel Services (NFS) site in Erwin, Tennessee, in accordance with applicable provisions of 10 CFR 70.38, "Expiration and termination of licenses and decommissioning of sites and separate buildings or outdoor areas." The NRC's public website at https://www.nrc.gov/info-finder/decommissioning/fuel-cycle/index.html summarizes additional information about the NFS site and other fuel cycle facilities.

2.5.1 Summary of Fiscal Year 2023 Activities

During FY 2023, NFS continued to work toward releasing different areas within its site. Decommissioning activities outside the protected area include groundwater remediation of the North Site and the Industrial Park Facility. Decommissioning activities inside the protected area include those at Building 111 and miscellaneous decommissioning tasks to support fuel modernization, groundwater monitoring, and groundwater remediation.

2.5.2 Fiscal Year 2024 Areas of Focus

The NRC staff expects remediation work to continue at the NFS site; NRC inspections and oversight will continue as appropriate at the facility in FY 2024.

3 GUIDANCE AND RULEMAKING ACTIVITIES

3.1 Decommissioning Rulemaking

In November 2021, the Commission issued SRM-SECY-18-0055, “Staff Requirements—SECY-18-0055—Proposed Rule: Regulatory Improvements for Production and Utilization Facilities Transitioning to Decommissioning” (ML21307A046), directing the NRC staff to make some alterations and then proceed with the proposed rule. On March 3, 2022, the proposed rule, along with four draft regulatory guides (DGs), were published in the *Federal Register* for an extended public comment period ending August 30, 2022. The proposed rule would implement specific regulatory requirements for different aspects of the decommissioning process consistent with reduced radiological risk. These topics include emergency preparedness, decommissioning funding assurance, environmental considerations, spent fuel management planning, and record retention requirements.

The four DGs are as follows:

(1) DG-1346, Revision 1 (proposed new Regulatory Guide (RG) 1.235), “Emergency Planning for Decommissioning Nuclear Power Reactors” (ML21347A046)

(2) DG-1347, Revision 1 (proposed RG 1.184, Revision 2), “Decommissioning of Nuclear Power Reactors” (ML21347A080)

(3) DG-1348, Revision 1 (proposed RG 1.159, Revision 3), “Assuring the Availability of Funds for Decommissioning Production or Utilization Facilities” (ML21347A081)

(4) DG-1349, Revision 1 (proposed RG 1.185, Revision 2), “Standard Format and Content for Post-Shutdown Decommissioning Activities Report” (ML21347A138)

The NRC received 2,354 comment submissions, including 2,236 form letters and 118 unique comment submissions, on the proposed rule. The NRC staff is reviewing the comments and will use the feedback to develop a draft final rule for Commission review. The final rule is currently due to the Commission in January 2024.

3.2 Decommissioning Guidance

In FY 2023, the NRC staff continued development of interim staff guidance (ISG) related to surveys and dose modeling considerations for open surfaces in the subsurface, including open excavations, materials planned for reuse, and substructures. The staff will issue the ISG for public comment in FY 2024. A public meeting to discuss comments on the draft document in conjunction with a third subsurface workshop is planned for FY 2024. The NRC staff is also issuing a generic communication related to contamination control and survey considerations for discrete radioactive particles (DRPs) in early FY 2024. This work follows up on comments received in the development of NUREG-1757, “Consolidated Decommissioning Guidance,” Volume 2, Revision 2, “Characterization, Survey, and Determination of Radiological Criteria,” issued July 2022 (ML22194A859).

In addition, the NRC staff issued an operating experience information notice related to fire events at decommissioning nuclear power plants. The information notice is intended to inform licensees of fire events in radiologically controlled areas; posted radiologically contaminated

areas; instances of failure to control combustible material, perform adequate fire watches, or both; or implementation of other fire protection activities at decommissioning power reactor sites. The significance of these events is the potential for the release of radionuclides, in and outside of controlled areas of the site (outside of a restricted area but inside the site boundary) and potentially to publicly accessible areas, occupational radiation exposure, and the impact on industrial safety.

4 RESEARCH ACTIVITIES

The Office of Nuclear Regulatory Research (RES) and NMSS continue to coordinate activities focused on key decommissioning issues, including updating computer codes; development of user need requests (UNRs) and research assistance requests (RARs); implementation of the Radiation Protection Computer Code, Analysis, and Maintenance Program (RAMP); support for international activities related to decommissioning; study of the aging effects of engineered earthen covers; and development of guidance for cover construction and for surveys of subsurface residual contamination.

4.1 Computer Codes

In FY 2023, the NRC staff continued activities with DOE national laboratories and commercial contractors to develop or modify computer codes useful for decommissioning analyses, including upgrading several codes. This included the following activities:

- RESRAD Family of Computer Codes: The NRC continues to develop, maintain, and support the RESRAD family of computer codes through an interagency agreement with Argonne National Laboratory. The RESRAD family of computer codes is distributed through RAMP.

- MILDOS Computer Code: The NRC continues to develop, maintain, and support MILDOS version 4.21 through an interagency agreement with Argonne. The MILDOS computer code is distributed through RAMP.

- Visual Sample Plan (VSP) Computer Code: Pacific Northwest National Laboratory (PNNL) continues to maintain, develop, and support the VSP computer code through an interagency agreement with the NRC. VSP computer code development work in 2023 focused on tools to assist with the design of subsurface surveys (e.g., consideration of anisotropy in variogram fitting, as well as extending VSP to three dimensions), as well as tools for data analysis and visualization to demonstrate compliance with decommissioning release criteria. Other code improvements include modifications to facilitate data visualization and analysis tools for continuously collected data with global positioning system location information. The VSP computer code is distributed through RAMP.

- Decommissioning and Decontamination (DandD) Computer Code: Licensees use DandD to develop adequate or appropriate derived concentration guideline levels for cleanup and to demonstrate compliance with the dose criteria of 10 CFR Part 20, Subpart E, “Radiological Criteria for License Termination.” FY 2023 activities continued to focus on the distribution and maintenance of the code through RAMP.

- TableCalculator Tool: NMSS developed this user-friendly tool to facilitate a more comprehensive understanding of the calculations used to develop the low-level radioactive waste classification tables in 10 CFR 61.55, “Waste classification.” The tool allows users to trace the original calculations and observe the effects of changes in parameter values by running the original calculations with original or updated data. FY 2023 activities continued to focus on the distribution and maintenance of the tool through RAMP.

RAMP continues to provide the nuclear energy, radiation protection, and decommissioning community with access to radiation protection computer codes, including RESRAD, VSP, DandD, MILDOS, and TableCalculator, while ensuring the sustainability of code development. In FY 2023, the RES staff finished the tasks in UNR—NMSS-2021-003, “Decommissioning and Uranium Recovery Computer Code (RESRAD, VSP, DandD & MILDOS) Maintenance” (ML21083A118), and closed out this UNR in a memorandum dated November 29, 2022 (ML22326A084). The RES staff and NMSS staff developed a follow-on UNR, UNR—NMSS-2022-008, “RAMP Support for Decommissioning Computer Codes” (ML22326A084), for the continued support, maintenance, and distribution of RESRAD, VSP, DandD, MILDOS, and TableCalculator through RAMP.

RES and NMSS identified the need for VSP code improvements and developed RAR—NMSS-2023-004, “VSP Code Improvements” (ML23067A002), as a follow on to RAR—NMSS-2021-002 (ML21076A237). NMSS-2023-004 identifies VSP code improvement tasks to include enhancement of VSP subsurface radiological survey design, visualization, and analysis tools; continuously collected data visualization and analysis tools; and other VSP tools listed in table 4 of PNNL-33647, “Subsurface Radiological Survey Design and Geospatial Analysis Tool Recommendations,” issued November 2022 (ML22363A001). In July 2023, PNNL completed PNNL-32664, Revision 1, “Recommendations for VSP Enhancements for Continuously Collected Survey Data” (ML23263A415). The report provides recommendations for tools to be added to the VSP computer code to assist with data visualization and analysis for continuously collected data. The NRC staff plans to prioritize the suggested tools, which will be added to the computer code in FY 2024. PNNL also finalized PNNL-34211, Revision 1, “Overview of a Methodology for Calculating the A Priori Scan Minimum Detectable Concentration for Post-Processed Radiological Surveys,” issued June 2023 (ML23263A417). The PNNL report provides an approach for a priori calculation of scan minimum detectable concentrations for surveys conducted without surveyor vigilance (i.e., surveys conducted with data being continuously collected at a constant scan rate and without a surveyor listening for an audible increase in counts and pausing to count longer). VSP was also updated to extend the code to three dimensions and to consider anisotropy in variogram fitting. Additional, future work includes incorporation of tools in a beta version of the Spatial Analysis and Decision Assistance (SADA) code to optimize subsurface surface design and data analysis and other geospatial tools to support license termination when significant quantities of subsurface residual radioactivity are present.

RES and NMSS also developed and implemented RAR—NMSS-2023-005, “RESRAD-ONSITE User's Manual and Code Improvements” (ML23180A258), to update and improve the RESRAD ONSITE computer code. Specifically, RAR—NMSS-2023-005 includes tasks to fix code errors, make the code compatible with the Microsoft Windows 11 operating system; include the external dose coefficients from Federal Guidance Report 15, “External Exposure to Radionuclides in Air, Water and Soil,” issued August 2019; prepare an updated user’s manual and guide; and prepare a test and validation report for RESRAD-ONSITE version 8.0.

4.2 Discrete Radioactive Particles in Decommissioning

The RES staff worked with the NMSS staff to complete the tasks in RAR—NMSS-2022-004, “Dosimetry Analysis Support for Discrete Particles (Decommissioning)” (ML22077A016). This RAR contained three tasks with the following deliverables:

(1) DRP white paper with technical comments (ML22321A053)

(2) technical reports “Recommended Ulceration Dose Threshold for Discrete Radioactive Particles” (ML22321A073) and “Draft Dose Coefficients for Discrete Radioactive Particles” (ML22321A082)

(3) a technical presentation, “Dose Coefficients for Discrete Radioactive Particles (DRP)” (ML22305A584), to support a public workshop

The DRP dose coefficient report was developed using several other RAMP computer codes, including VARSKIN+, the Integrated Modules for Bioassay Analysis (IMBA), and the Phantom with Moving Arms and Legs (PiMAL) graphical user interface with the Monte Carlo N-Particle® (MCNP) computer code. This RAR was closed out in the memorandum dated December 1, 2022 (ML22327A150).

Additionally, the RES staff and the NMSS staff determined the need for additional DRP work and developed RAR—NMSS-2023-002, “Dosimetry Analysis Support for Discrete Particles (Decommissioning)” (ML23023A076), as a follow on to RAR—NMSS-2022-004. The RES staff and its contractor completed the final dose coefficient report, “Dose Coefficients for Discrete Radioactive Particles (DRP),” dated May 1, 2023 (ML23136A178), as a deliverable for RAR—NMSS-2023-002. This RAR is currently open and supports NMSS DRP licensing activities and potential guidance development for the ongoing work on DRPs.

4.3 Additional Research and Guidance Document Support

The RES staff continues to work on a research program to study the effects of changes in the properties of inservice engineered earthen covers over uranium mill tailings as these covers age. The covers have a design life of up to 1,000 years, consistent with 10 CFR Part 40, “Domestic Licensing of Source Material,” Appendix A, “Criteria Relating to the Operation of Uranium Mills and the Disposition of Tailings or Wastes Produced by the Extraction or Concentration of Source Material from Ores Processed Primarily for Their Source Material Content.” The purpose of this study is to evaluate the impact of aging on the hydraulic conductivity and gaseous diffusivity of radon barriers, how these properties and soil structure vary with the depth and thickness of the radon barrier, and how structure influences transmission of radon and seepage carrying groundwater contaminants. This research is a collaborative effort between the DOE Office of Legacy Management and the NRC. Radon-222 flux measurements were recorded and soil samples collected from four mill tailings sites: Falls City in Texas, Bluewater in New Mexico, Shirley Basin South in Wyoming, and Lakeview in Oregon. All were constructed about 20 years ago. The analysis determined hydraulic conductivity; soil water characteristic curves; soil texture and chemistry; root counts; and profiles of density, moisture, and lead-210. The final report, NUREG/CR-7288, “Evaluation of In-Service Radon Barriers over Uranium Mill Tailings Disposal Facilities,” was published in March 2022. A paper titled “Radon Fluxes at Four Uranium Mill Tailings Disposal Sites After About 20 Years of Service,” is in press at the *Journal of Environmental Radioactivity*.

The DOE Office of Legacy Management is planning to build evapotranspiration covers over some uranium mill tailings disposal sites, and this type of cover is a likely design for the closure of low-level radioactive waste sites. To prepare risk-informed, performance-based guidance on these cover designs, the NRC staff is developing guidance on evapotranspiration cover design, especially moisture and radon transport within the cover, and models that simulate those processes.

The RES staff also continued to provide direct assistance to NMSS efforts by participating in the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) Interagency Working Group. The working group has finished draft revisions to the MARSSIM guidance, and the document was issued for public comment in July 2021. Over 60 comments in 17 comment letters were received. The EPA's Science Advisory Board peer reviewed the draft document and finalized its comments in February 2022. The MARSSIM working group is currently addressing public and Science Advisory Board comments. The NRC manages an editorial and technical support contract to support the finalization of MARSSIM, Revision 2. The contract is being funded jointly by the NRC and the EPA under an interagency agreement. The working group plans to issue the document in 2024 after signature by all four agencies—EPA, DOE, NRC, and DoD.

4.4 Collaboration and Outreach

The RES staff supports international activities through participation in the management board of the Information System on Occupational Exposure through the North American Technical Center that oversees the Working Group on Radiological Aspects of Decommissioning Activities in Nuclear Power Plants. This working group's objective is to provide a forum for experts to develop a process to better share operational radiation protection data and experience for nuclear power plants in some stage of decommissioning, or in preparation for decommissioning.

The NRC hosted the sixth Domestic RAMP Users Group (RUG) Meeting (hybrid) October 24–27, 2022, and November 1–3, 2022. This RUG Meeting included a primer session on the EPA compliance codes (i.e., COMPLY and CAP88) used in decommissioning activities. Additionally, the NRC and the Ghanian Nuclear Regulatory Authority (NRA) co-hosted the sixth International RUG Meeting (hybrid) during the week of April 25–28, 2023. While this RUG Meeting did not feature the RAMP environmental or decommissioning codes, the NRA expressed interest in using the RESRAD or GENII computer codes for environmental assessments for gold mine activities in Ghana. RAMP will monitor these activities to see whether there are benefits for NRC use.

5 INTERNATIONAL ACTIVITIES

The NRC's international activities regarding decommissioning are wide ranging, encompassing treaty implementation, nuclear nonproliferation, export-import licensing for nuclear materials and equipment, international safeguards support and assistance, international safety cooperation and assistance, exchange of international regulatory/safety information, and cooperative safety research. International activities are integral to the NRC's public health and safety and common defense and security missions and directly support U.S. foreign policy objectives. The NRC staff actively engages in the review and development of International Atomic Energy Agency (IAEA) safety standards and guidance documents. The NRC also supports activities and projects at the Organisation for Economic Co-operation and Development's Nuclear Energy Agency (NEA), such as the Committee on Decommissioning and Legacy Management. In addition to multinational activities, the NRC participates in bilateral cooperative and assistance activities with its international regulatory counterparts. This includes participating in bilateral technical exchanges, hosting international assignees, participating in technical workshops, and assisting countries in building technical capacities and regulatory programs. In FY 2023, the Division of Decommissioning, Uranium Recovery, and Waste Programs (DUWP) hosted an assignee from the Korea Institute for Nuclear Safety (KINS) and hosted the annual bilateral cooperation decommissioning meeting with KINS at the San Onofre reactor decommissioning project.

The NRC is recognized in the international nuclear community as an experienced leader in the regulation and safety of decommissioning, spent fuel management and storage, radioactive waste management and disposal, site remediation, and environmental protection. Interaction with international organizations and governments allows the NRC to share insights about lessons learned and successful, safe, and effective decommissioning approaches. In addition, the NRC staff gains insight into approaches and methodologies, lessons learned, and new technologies used in the international community and considers these approaches as it continues to risk-inform the NRC Decommissioning Program and gain further insights into the decommissioning process.

Specific international activities in FY 2023 included (1) conducting reviews and updates of IAEA standards related to decommissioning and low-level waste during the Waste Safety Standards Committee 52nd and 53rd review cycles, (2) participating in the annual meetings of the NEA's Regulators Forum, Committee on Decommissioning and Legacy Management, and Radioactive Waste Committee, (3) participating in the development of safety publications about uranium production facilities, including their operation and decommissioning, (4) participating on the small facilities decommissioning project, Decommissioning of Medical, Industrial and Research Facilities, (5) continuing participation (as chair) in the IAEA Project on Completion of Decommissioning that will provide substantive information for the revision of WS-G-5.1, "Release of Sites from Regulatory Control on Termination of Practices," (6) developing draft International Commission on Radiological Protection recommendations related to radiological protection in surface and near-surface disposal of solid radioactive waste, and (7) conducting expert consultation to complete the final draft of Safety Report Series 50, "Decommissioning Strategies." Additionally, the NRC hosted several technical meetings with international regulatory counterparts and support organizations, supported international workshops hosted by other U.S. Federal agencies, and provided opportunities for staff from international regulatory agencies to observe inspections at facilities undergoing decommissioning.

The NRC staff also participated in many activities to support the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (Joint Convention). The Joint Convention establishes a peer review process among contracting parties

and is the only international legally binding instrument to address the safety of spent fuel and radioactive waste management. U.S. participation in the Joint Convention helps demonstrate the importance of having a high level of safety in spent fuel and radioactive waste management, including decommissioning activities. The peer review process culminates in a triennial review meeting of the contracting parties. For the current Joint Convention cycle, the NRC is currently updating the U.S. National Report in preparation for the review meeting scheduled for March 17–28, 2025. The NRC staff engaged with partner Federal agencies, including the DOE (lead agency for the Joint Convention), the U.S. Department of State, and the EPA, to conduct peer reviews of other contracting parties, answer questions about the U.S. spent fuel and radioactive waste management programs, and complete other activities in support of the 2025 review meeting.

In 2023, the NRC staff participated in the IAEA International Conference on Nuclear Decommissioning, *Addressing the Past and Ensuring the Future*, by providing three technical presentations: an invited presentation during the initial technical plenary session on the NRC reactor decommissioning program, and two presentations on the NRC's research and guidance initiatives. Additionally, the NRC staff chaired the session on competence development. The staff also served on the program committee for the May 2023 international conference and is participating on the program committee for the upcoming November 2023 IAEA Conference on Radioactive Waste, Decommissioning and Environmental Remediation, *Ensuring Safety and Enabling Sustainability*.

The NRC staff also chairs the NEA Working Party on Technical, Environmental and Safety Aspects of Decommissioning and Legacy Management (WPTES). The WPTES is a second-level body under the Committee on Decommissioning of Nuclear Installations and Legacy Management focused on (1) risk assessment, (2) sampling, characterization, and data evaluation, (3) innovative decontamination and decommissioning technologies, and (4) materials management. The NRC staff also chaired and participated in a WPTES-sponsored international workshop, *Innovative Techniques and Technologies to Support Characterization and Decommissioning of Complex and Legacy Sites*, held in Paris, France, November 29–December 1, 2022. Topics included innovative site and radiological characterization, as well as decommissioning techniques and technologies. The workshop also provided information on the application of existing technologies to new problems, including lessons learned, best practices, and overcoming challenges associated with the use of existing technologies. Over 140 individuals from various fields of expertise involved in the decommissioning of complex and legacy sites, including implementers, government/regulatory agencies, academia, and researchers, participated in the workshop. Workshop proceedings will be published in 2023. The NRC staff is also an active participant in the NEA Working Party on Management and Organization. The staff is contributing to the development of a new document, "Supply Chain and Commercial Report," and is supporting the "Taxonomy Report" sponsored by the IAEA/NEA/European Union to standardize decommissioning terminology.

6 PROGRAM INTEGRATION AND IMPROVEMENT

Given the scope of the decommissioning functional area, the Decommissioning Program has undertaken many initiatives to improve its efficiency and effectiveness.

6.1 Power Reactor Decommissioning Program Improvements

The NRC staff continued to risk-inform its licensing and oversight activities while documenting and sharing key lessons learned. Examples include sharing lessons learned from the Humboldt Bay and General Atomics license termination activities during the annual decommissioning counterparts meeting and communicating operating experience and inspection observations related to effluent release, fire protection, and Occupational Safety and Health Administration-related activities.

In response to a U.S. Government Accountability Office recommendation, the staff is implementing a formal communication with licensees after NMSS financial analysts complete their review of licensee annual decommissioning trust fund reports.

In May 2023, DUWP sponsored a reactor decommissioning lessons learned workshop and public meeting with the Nuclear Energy Institute members and nonmembers engaged in active decommissioning to share recent lessons learned. The staff plans to hold future lessons-learned workshops with industry to promote information sharing.

6.2 Materials and Uranium Recovery Decommissioning Program Improvements

The NRC staff has continued to implement an enhanced, comprehensive Decommissioning Program, which allows the staff to compile, in a centralized location, information on the decommissioning status of complex sites and uranium recovery sites in the United States.

The NRC staff continued to risk-inform Inspection Manual Chapter (IMC) 2602, “Decommissioning Fuel Cycle, Uranium Recovery, and Materials Inspection Program.” Region IV is leading the IMC 2602 working group to include Agreement State, NRC Headquarters, and regional representatives on further risk-informing the inspections of fuel cycle and materials sites undergoing decommissioning. The NRC issued IMC 2602 in December 2022 (ML22010A141). The NRC staff also issued the revised IMC 2801, “Uranium Recovery and 11e.(2) Byproduct Material Facility Inspection Program,” and associated inspection procedures for operating uranium recovery facilities in October 2021 (ML21202A302). Further NRC staff updates to IMC 2801, as related to risk-informed procedures, continued in FY 2023, but their completion was deferred based upon resource availability and work prioritization. The staff estimates completion of the IMC 2801 update in FY 2024.

6.3 Evaluation of Materials and Waste Business Lines

During FY 2023, the NRC staff continued to implement several recommendations from the evaluation of the Materials and Waste Business Lines to improve the effectiveness of licensing and oversight. Examples of these improvements include adjustments to the uranium recovery inspection program through the extension of inspection intervals, revisions to inspection procedures for decommissioning power reactors, continued implementation of the updated

process for completing financial surety reviews for uranium recovery licenses, and streamlining review processes for new uranium recovery application reviews. For example, the staff used risk insights from existing NRC guidance and first-hand experience to focus uranium recovery facility inspection activities on risk-significant activities such as spill response, radiological emergencies, yellowcake dryer operations and accidents, and ground water contamination. These revisions also enhance the oversight program by adding more performance-based concepts to the inspection guidance and providing more direction to inspectors on where to focus their time.

7 AGREEMENT STATE ACTIVITIES

In addition to the NRC-regulated sites undergoing decommissioning, many complex materials sites are being decommissioned under the regulatory oversight of Agreement States. Thirty-nine States have signed formal agreements with the NRC and assumed regulatory responsibility over certain byproduct, source, or small quantities of special nuclear material, or a combination of these, including the decommissioning of some complex materials sites.

In September 2021, the NRC staff held a virtual workshop on the development and review of CRRs and procedure SA-900, "Termination of Uranium Milling Licenses in Agreement States." The NRC participated in open discussion with the States of Colorado, Utah, Washington, Wyoming, and Texas and the DOE Office of Legacy Management on the processes for the review of CRRs and uranium recovery site license termination. In addition, the staff discussed revisions to SA-900. Throughout FY 2023, the NRC staff maintained communication with these States about CRRs and SA-900 and held a second workshop in October 2022.

In April 2023, based on comments received from Agreement State and NRC staff, the revision to SA-900 was finalized (ML23019A059) and distributed to Agreement State and NRC staff for use (ML23115A433).

The NRC staff worked with the Agreement States to revise the information in this annual decommissioning report about complex materials decommissioning sites that are under the regulatory purview of the Agreement States. Rather than giving detailed site summaries, table 7-a lists decommissioning sites and a site contact in each Agreement State so that current, up-to-date information about a site can be obtained from the Agreement State.

The NRC staff also worked with the Agreement States to revise the information in this annual decommissioning report about uranium recovery decommissioning sites that are under the regulatory purview of the Agreement States. As for the complex materials decommissioning sites, this report includes a list of the sites and a site contact in each Agreement State (table 7-b). Site summaries using available public information can found on the NRC website at https://www.nrc.gov/info-finder/decommissioning/uranium/index.html.

Table 7-a Agreement State Complex Decommissioning Sites

State	Site Name	Contact	Contact Information
Alabama	Greenfield Environmental Multistate Trust, LLC	Undria McCullum	Undria.McCallum@adph.state.al.us
Alabama	Kennametal, Inc	Undria McCallum	Undria.McCallum@adph.state.al.us
Alabama	OSP, LLC	Undria McCallum	Undria.McCallum@adph.state.al.us
California	Eberline Services	Thomas Moore	Thomas.Moore@cdph.ca.gov
Illinois	Weston Solutions (formerly Kerr-McGee)	Kelly Horn	Kelly.Horn@illinois.gov
Kansas	Beta Chem	Jason Meinholdt	Jason.Meinholdt@ks.gov

State	Site Name	Contact	Contact Information
Kansas	Raytheon Aircraft Corporation	Jason Meinholdt	Jason.Meinholdt@ks.gov
Kentucky	Clariant	Allyson Stout	Allyson.Stout@ky.gov
Kentucky	Transport Logistics International	Allyson Stout	Allyson.Stout@ky.gov
Massachusetts	Norton/St. Gobain	Jack Priest	Jack.Priest@mass.gov
Massachusetts	Starmet Corp. (formerly Nuclear Metals)	Jack Priest	Jack.Priest@mass.gov
Massachusetts	Texas Instruments	Jack Priest	Jack.Priest@mass.gov
Massachusetts	Wyman-Gordon Co.	Jack Priest	Jack.Priest@mass.gov
New Jersey	Shieldalloy Metallurgical Corp.	James McCullough	James.McCullough@dep.nj.gov
New Mexico	Thermo Eberline, LLC	Michael Ortiz	Michael.Ortiz1@state.nm.us
Ohio	Advanced Medical Systems, Inc.	Michael Rubadue	Michael.Rubadue@odh.ohio.gov
Ohio	Ineos USA (formerly BP Chemical	Michael Rubadue	Michael.Rubadue@odh.ohio.gov
Oklahoma	Haliburton—Osage Road	Michael Reid	Michael.Reid@deq.ok.gov
Oregon	PCC Structurals, Inc.	Todd Carpenter	Todd.S.Carpenter@dhsoha.state.or.us
Oregon	TDY Industries d/b/a Wah Chang	Todd Carpenter	Todd.S.Carpenter@dhsoha.state.or.us
Pennsylvania	Curtiss-Wright	Bryan Werner	BRWerner@pa.gov
Pennsylvania	Keystone Metals Reduction	Bryan Werner	BRWerner@pa.gov
Pennsylvania	Global Tungsten & Powders Corp.	Bryan Werner	BRWerner@pa.gov
Pennsylvania	Remacor	Bryan Werner	BRWerner@pa.gov
Pennsylvania	Superbolt (formerly Superior Steel)	Bryan Werner	BRWerner@pa.gov
Pennsylvania	Safety Light Corp.	Bryan Werner	BRWerner@pa.gov
Pennsylvania	Westinghouse Electric Corp.	Bryan Werner	BRWerner@pa.gov
Pennsylvania	Whittaker Corp.	Bryan Werner	BRWerner@pa.gov
Pennsylvania	Shallow Land Disposal Area*	Bryan Werner	BRWerner@pa.gov
South Carolina	Starmet CMI	Stacey French	FrenchSL@dhec.sc.gov
Texas	Solvay USA Inc	Hans Wagner	Hans.Wagner@tceq.texas.gov
Texas	Kensington Title Service, Site Owner (formerly U.S. Radiopharmaceuticals,	Hans Wagner	Hans.Wagner@tceq.texas.gov

State	Site Name	Contact	Contact Information
	formerly Trace Life Sciences)		
Texas	Thomas Maloney	Hans Wagner	Hans.Wagner@tceq.texas.gov
Texas	Pearland-Manvel Landfill	Hans Wagner	Hans.Wagner@tceq.texas.gov
Texas	Ascent Performance Materials (formerly Solutia)	Hans Wagner	Hans.Wagner@tceq.texas.gov

* The State of Pennsylvania has issued a license for the SLDA site. This license is separate from the NRC-held license SNM-2001 for the site.

Table 7-b Agreement State Uranium Recovery Sites

State	Site Name	Contact	Contact Information
Colorado	Cotter Uranium Mill—Colorado Legacy Land (licensee)	Shiya Wang	Shiya.Wang@state.co.us
Colorado	Hecla Mining Company—Durita	Shiya Wang	Shiya.Wang@state.co.us
Colorado	Umetco Uravan	Shiya Wang	Shiya.Wang@state.co.us
Texas	Intercontinental Energy Corporation	Hans Wagner	Hans.Wagner@tceq.texas.gov
Utah	Former Lisbon Valley Uranium Mill	Phil Goble	PGoble@utah.gov
Washington	Dawn Mining Company	Bryony Stasny	Bryony.Stasny@doh.wa.gov
Wyoming	Anandarko Bear Creek	Brandi O'Brien	Brandi.OBrien@wyo.gov
Wyoming	UMETCO Gas Hills	Brandi O'Brien	Brandi.OBrien@wyo.gov
Wyoming	Orano/Areva Lucky Mc	Brandi O'Brien	Brandi.OBrien@wyo.gov
Wyoming	ExxonMobil Highland	Brandi O'Brien	Brandi.OBrien@wyo.gov
Wyoming	Western Nuclear Inc	Brandi O'Brien	Brandi.OBrien@wyo.gov

8 FISCAL YEAR 2024 PLANNED PROGRAMMATIC ACTIVITIES

The power reactor decommissioning program evaluation resulted in a set of recommendations, including the recommendation to review all guidance and policy documents within the program to identify guidance documents in need of updating, as well as other potential improvements. Subsequently, NMSS management reviewed the tasks identified in this program evaluation to promote programmatic enhancement and set task priorities. Throughout FY 2024, the NRC staff will continue to work on these programmatic enhancements and evaluate their applicability to the materials decommissioning program. The staff will also continue its multiyear effort to update decommissioning guidance documents, including the consolidated decommissioning guidance in NUREG-1757, Volume 1, Revision 2, “Decommissioning Process for Materials Licenses,” issued September 2006 (ML063000243), and the ISG on residual material in subsurface soil.