

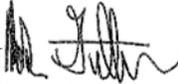


Department of Energy

Washington, DC 20585

March 15, 2021

MEMORANDUM FOR JOHN A. MULLIS II
MANAGER
OAK RIDGE OFFICE OF ENVIRONMENTAL MANAGEMENT

FROM: MARK GILBERTSON 
ASSOCIATE PRINCIPAL DEPUTY ASSISTANT
SECRETARY FOR REGULATORY AND POLICY AFFAIRS

SUBJECT: Issuance of the Preliminary Disposal Authorization Statement for the
Proposed Environmental Management Disposal Facility, Oak Ridge

The issuance of a disposal authorization statement (DAS), which serves as authorization for the design, construction, operation, and closure of a radioactive low level waste disposal facility, is a requirement under Department of Energy (DOE) Order (O) 435.1, *Radioactive Waste Management* and DOE Manual 435.1-1, *Radioactive Waste Management Manual*. The DOE Technical Standard *Disposal Authorization Statement and Tank Closure Documentation* (DOE-STD-5002-2017) provides consolidated guidance for implementation of DOE O 435.1, including a consistent approach for Federal and contractor personnel responsible for developing and/or reviewing documents that support the issuance of a DAS. This Standard states that prior to final design and construction of the disposal facility, a preliminary DAS (PDAS) should be approved.

Between June and September 2018, the Low Level Waste Disposal Facility Federal Review Group (LFRG) performed a review of the following Environmental Management Disposal Facility (EMDF) technical basis documents: performance assessment (PA), composite analysis (CA), change control process procedure (CCP), and quality assurance (QA) modeling documentation. The review identified 45 key and secondary issues to be resolved to the extent possible prior to issuance of a PDAS as documented in *Low Level Waste Disposal Facility Federal Review Group (LFRG) Review Report for the Preliminary Disposal Authorization Statement Documentation for the Proposed Environmental Management Disposal Facility at the Oak Ridge Reservation* dated May 4, 2020. Between October 2018 and April 2020, the LFRG Review Team (LRT) led by Mr. Doug Hildebrand and Oak Ridge personnel worked to resolve the identified issues. On May 15, 2020, Oak Ridge Office of Environmental Management (OREM) submitted revised technical basis documents (including PA, CA, CCP, and PA/CA QA modeling documentation) addressing the LRT's identified issues. The revised documents also incorporated EMDF's updated preliminary design. Oak Ridge also submitted closure documentation for 44 of the 45 issues to the LFRG. Forty-four (44) issues have subsequently been validated closed by the Oak Ridge LFRG member and the LFRG Co-Chairs. One secondary issue (EMDF-S05-PA06-02) remains open and will be addressed and closed with the LFRG prior to Oak Ridge request for an operating DAS (ODAS).

The attached serves as the EMDF approved PDAS. This PDAS serves as the DOE Federal authorization for the design and construction of a low-level waste disposal facility and is hereby issued authorizing the OREM to continue design and commence construction of the EMDF with eight conditions required to be performed by OREM prior to requesting an ODAS.

The LFRG appreciates the responsiveness exhibited during the entire review by Mr. Brian Henry, the OREM site LFRG member, and supporting contractors toward resolution of questions, comments, and issues raised during the LFRG review supporting issuance of this PDAS. The LFRG looks forward to continuing our working relationship with OREM.

If you have any questions, please contact either of the LFRG Co-Chairs, Mrs. Sherri Ross, Office of Regulatory Compliance at (301) 903-2192, or Dr. Justin Marble, Office of Waste Disposal at (301) 903-7210.

Attachment

cc: Brian Henry, OREM
James Daffron, OREM
Rod Rimando, EM-3
Leonard Spearman, EM 1
Mary Kruger, EM-4.3
Aaron White, EM-4.31
Sherri Ross, EM-4.31
Ingrid Milton, EM-4.31
Justin Marble, EM-4.22
Douglas Tonkay, EM-4.22
Mark Senderling, EM-4.2
Rhonda Ford, EM-4.31

Preliminary Disposal Authorization Statement for the Oak Ridge Environmental Management Disposal Facility Oak Ridge, Tennessee

Revision No. 0
Effective Date: TBD

Background

The proposed Environmental Management Disposal Facility (EMDF) site is located on the 33,542-acre Oak Ridge Reservation (ORR) within the city limits of Oak Ridge, Tennessee, approximately 12.5 miles west-northwest of Knoxville, Tennessee. The location is within the Bear Creek Valley (BCV) which is a historical waste management area that contains several closed disposal facilities, contaminant source areas, groundwater contaminant plumes, and the currently operating Environmental Management Waste Management Facility (EMWMF). The authorized disposal capacity of EMWMF is 2.3 million cubic yards (MCY). The scope of the Oak Ridge Office of Environmental Management (OREM) cleanup effort has expanded since EMWMF began operations in 2002. Approximately 1.6 MCY of additional waste will be expected to be generated and will require onsite disposal capabilities after EMWMF has reached its maximum capacity, which is projected to occur in the mid-to-late 2020s.

A new facility is recommended to ensure sufficient future low-level radioactive waste (LLW) onsite disposal capacity for environmental cleanup activities on the ORR. LLW disposed at EMDF will originate primarily from facility decontamination and decommissioning or environmental remediation projects at Y-12 and Oak Ridge National Laboratory. The waste will include facility demolition debris (including structural steel and concrete), contaminated equipment and soil, and other soil-like wastes. EMDF will accept both containerized LLW and bulk (not containerized) waste for disposal. Some in situ waste stabilization (grouting) may occur. The design capacity developed for the EMDF is 2.2 MCY. EMDF operations will include waste receipt and placement, water management, and environmental monitoring of facility performance.

The EMDF is a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) land disposal facility required to be authorized by the Department of Energy (DOE), the U.S. Environmental Protection Agency, and the Tennessee Department of Environment and Conservation under the requirements of the Federal Facility Agreement (FFA). Development of the EMDF design activities and technical bases documents are being conducted in parallel to support required approvals of the EMDF for onsite LLW disposal by DOE, pursuant to DOE Order (O) 435.1, *Radioactive Waste Management*, and DOE Manual (M) 435.1-1, *Radioactive Waste Management Manual* and under the FFA.

In 2018, the FFA parties issued a Proposed Plan for the disposal of future ORR CERCLA waste in an EMDF landfill for public comment. The conceptual design for the BCV site contained in the EMDF Remedial Investigation/Feasibility Study served as the basis for the draft EMDF Proposed Plan and the technical analysis in the 2018 performance assessment (PA). DOE's

Office of Environmental Management (EM) issued Critical Decision (CD)-1 approval for EMDF on August 23, 2018. On December 31, 2020, the landfill water radiological discharge limits for EMWMF and EMDF were resolved and will be incorporated into CERCLA documentation and operating requirements, as appropriate. A record of decision for the EMDF has not yet been approved by the FFA parties.

The issuance of a Disposal Authorization Statement (DAS), which serves as the DOE Federal authorization for the design, construction, operation, monitoring, and closure of a low-level waste disposal facility, is a requirement under the DOE O 435.1. The DOE Technical Standard *Disposal Authorization Statement and Tank Closure Documentation* (DOE-STD-5002-2017) provides consolidated guidance for implementation of DOE O 435.1, including a consistent approach for Federal and contractor personnel responsible for developing and/or reviewing documents that support the issuance of a DAS. This Technical Standard states that prior to final design and construction of the disposal facility, a preliminary DAS (PDAS) should be approved.

Between June and September 2018, the Low-Level Waste Disposal Facility Federal Review Group (LFRG) performed a review of the following EMDF technical basis documents: PA, composite analysis (CA), change control process procedure (CCP), and quality assurance (QA) modeling documentation. The review identified 45 key and secondary issues recommended to be resolved to the extent possible prior to issuance of a PDAS as documented in *Low Level Waste Disposal Facility Federal Review Group Review Report for the Preliminary Disposal Authorization Statement Documentation for the Proposed Environmental Management Disposal Facility at the Oak Ridge Reservation* dated May 4, 2020. Between October 2018 and April 2020, the LFRG Review Team (LRT) led by Mr. Doug Hildebrand and Oak Ridge personnel worked to resolve the identified issues. On May 15, 2020, OREM submitted revised technical basis documents (including PA, CA, CCP, and PA/CA QA modeling documentation) addressing the LRT's identified issues. The revised documents also incorporated EMDF's updated preliminary design. Oak Ridge also submitted closure documentation for 44 of the 45 issues to LFRG. Forty-four (44) issues have subsequently been validated to be closed by the Oak Ridge LFRG member and the LFRG Co-Chairs. One secondary issue (EMDF-S05-PA06-02) remains open and will be addressed and closed with the LFRG prior to Oak Ridge request for an operating DAS (ODAS).

This PDAS is issued based on LFRG's recommendation that the facility's current technical basis documents consisting of a PA, CA, PA/CA QA modeling, and CCP meet the DOE O 435.1 requirements for a PDAS.

Preliminary Disposal Authorization Statement

In fulfillment of the requirements of DOE O 435.1, this 2021 PDAS (Revision 0) serves as the DOE Federal authorization for the design and construction of a LLW disposal facility and is hereby issued authorizing the OREM to continue design and commence construction of the EMDF. Design and construction of the facility under the PDAS requirements shall ensure reasonable expectations that the facility will meet the performance objectives outlined in Chapter IV of DOE M 435.1-1.

The design and construction of the facility is subject to all applicable rules and orders now or hereafter in effect and to the conditions specified below. Also, this authorization is applicable to any subsequent revisions and additions to the PA, CA, and other technical basis documents provided the revisions and additions are in accordance with the *Disposal Authorization Statement and Tank Closure Documentation* Technical Standard (DOE-STD- 5002-2017) of May 2017. Applicable permits and reports that comprise the Radioactive Waste Management Basis (RWMB) shall be approved and continue to be maintained current according to the applicable DOE Directives.

DOE must conduct its low-level, mixed low-level, and CERCLA radioactive waste disposal program in accordance with the requirements contained in the following documents including any subsequently approved revisions which shall be included in EMDF RWMB:

1. *Performance Assessment for the Environmental Management Disposal facility at the Y-12 National Security Complex, Oak Ridge, Tennessee* (UCOR-5094/R2), April 23, 2020
2. *Composite Analysis for the Environmental Management Waste Management Facility and the Environmental Management Disposal Facility, Oak Ridge, Tennessee* (UCOR-5095/R2), April 16,2020
3. *EMDF DESIGN DOE ORDER 435.1 CHANGED CONDITION*, PROC-EMDF-0001, Revision 1, 2/11/19

Facility Construction and Design

The design features of disposal units in the EMDF shall conform to the conceptual model used in the PA. Significant changes in the disposal technology, disposal unit, or waste form shall be evaluated in accordance with the change control procedure identified in the PDAS section of this document. If required, changes shall be submitted to the LFRG for review/approval.

Radionuclide Limits, Waste Form, and Packaging

Disposal within the EMDF is not yet authorized. Waste Acceptance Criteria (WAC) shall be developed for EMDF to specify radionuclide disposal limits, waste form restrictions, and descriptions of acceptable waste packages. The WAC shall be based on the facility PA and any special analyses (SA). If a SA is required and results in more restrictive limits than those derived under the original PA analyses, the WAC shall be changed to incorporate the more restrictive limits. Waste acceptance procedures shall be developed describing requirements for waste characterization, waste certification, and record keeping as well as the process for authorizing deviations from the requirements.

Closure

A preliminary Closure Plan must be developed consistent with the closure concept analyzed in the PA or any SA. This plan shall be revised as necessary to incorporate any changes identified during final design and construction activities.

PA/CA Monitoring

A PA/CA monitoring plan(s) shall be developed based on the conceptual model analyzed in the PA/CA. PA/CA monitoring plans shall include monitoring frequencies and protocols for all the data collection required to assess the continued performance of the disposal facility. The plans shall also require monitoring results be compared to forecasted system behavior, and for the development of any corrective actions deemed necessary.

PA and CA Maintenance

PA and CA maintenance plan(s) shall be developed to include the conduct of research, field studies and monitoring needed to address uncertainties or gaps in existing data as well as to ensure the PA and CA is maintained to evaluate changes that could affect the performance, design, and operating bases for the facility in accordance with DOE M 435.1-1.

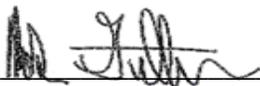
Conditions

Eight (8) facility design and construction conditions were identified by the LFRG that require resolution prior to issuance of an ODAS. Seven of the eight conditions have been identified because the facility has not been fully designed at the time of this review, facility operating requirements had not been developed at the time of this review, status of regulatory (CERCLA) issues and approvals, and the design parameters should be re-evaluated by the site and LFRG when design and construction is complete and before operation. One condition is from the one remaining open secondary issue from the 2018 LFRG review. The conditions are as follows:

1. OREM shall continue design and start construction of the EMDF in accordance with the assumptions and evaluations in the PA and CA documents specified in the PDAS. This authorization does not impact, deviate, or substitute in any way other requirements such as FFA CERCLA approvals or DOE Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*.
2. Changes to or deviations from the design identified in the PA and CA documents must be evaluated in accordance with the change control process identified in the PDAS. Changes that could significantly affect the PA assumptions or results shall be submitted to the LFRG for review, and if required, approval in accordance with the requirements in DOE-STD-5002-2017.
3. OREM shall incorporate the PDAS into the EMDF RWMB.
4. The site LFRG member must verify that the PA assumptions reflect the as built facility, including final design, construction changes and corrective actions, and that the facility continues to comply with the requirements of DOE M 435.1-1.
5. The LFRG site member must ensure any changes to the water discharge limits resulting from resolution of the FFA dispute are appropriately evaluated, as necessary for the PA

or other technical basis documents, and implemented in EMDF requirements and procedures.

6. The site LFRG member must certify completion of the secondary issue EMDF-S05-PA06-02 and submit the closure documentation to the LFRG Co-Chairs.
7. OREM shall submit Annual Summary Reports to provide the status of design, construction, CERCLA activities, regulatory issues, change control evaluations, and technical basis document development in accordance with the *Disposal Authorization Statement and Tank Closure Documentation* (DOE-STD-5002-2017).
8. OREM must complete conditions 1-7 above and submit additional technical bases documentation consisting of a PA/CA Maintenance Plan, Monitoring Plan, Closure Plan, WAC, an operating change control process procedure, water management requirements and procedures, and EMDF RWMB when requesting an ODAS. OREM shall not dispose of any radioactive waste at the EMDF without an Office of Environmental Management issued ODAS.



Mark Gilbertson
Associate Principal Deputy Assistant
Secretary for Regulatory and Policy Affairs
Office of Environmental Management

3-15-21

Date

Brad Stephenson

Subject: Oak Ridge PDAS for EMDF
Attachments: SIGNED ATTACHMENT - Preliminary Disposal Authorization Statement (DAS) for the OR EMDF.pdf;
SIGNED EMMEMO - From EM-4-Gilbertson to OREM-Mullis - OR EMDF PDAS_15MAR21.pdf

From: Mullis, Jay <Jay.Mullis@orem.doe.gov>
Sent: Tuesday, March 16, 2021 11:55 AM
To: Greg Young <Greg.Young@tn.gov>
Cc: David Salyers <David.Salyers@tn.gov>
Subject: [EXTERNAL] Oak Ridge PDAS for EMDF

***** This is an EXTERNAL email. Please exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email - STS-Security. *****

Greg:

Hope you're doing well. As per our discussion a few weeks ago, attached is the signed Preliminary Disposal Authorization Statement (PDAS) for the proposed CERCLA onsite disposal facility. This internal approval provides us with the authority to proceed with landfill design and construction activities. However, since this facility will be constructed under CERCLA authority, substantive design and construction activities are not planned until TDEC and EPA have signed a CERCLA Record of Decision. I know the EIT and project staff are working through a collection of related matters (waste acceptance criteria, water discharge limits) to facilitate ROD signature. Based on what I am hearing from the DOE and UCOR personnel involved with the EIT, OREM expects to submit the draft ROD sometime in April for formal review by TDEC and EPA. Since I also know that providing the PDAS was a commitment in the DRA, I will work with my folks to see what type of formal transmittal may be necessary but wanted to go ahead and get you a copy of the document as quickly as possible.

I really appreciate the effort Pat Flood and Steve Stout are putting into this project. It certainly feels like they're enabling forward progress which I appreciate!

Sincerely,
Jay

Jay Mullis
Manager
Oak Ridge Office of Environmental Management
United States Department of Energy
865-241-3706 (o)
865-201-3952 (c)

