UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

July 22, 2021

VIA ELECTRONIC MAIL

Mr. Roger B. Petrie
Federal Facility Agreement Manager
Oak Ridge Office for Environmental Management
Department of Energy
Post Office Box 2001
Oak Ridge, Tennessee 37831

Dear Mr. Petrie:

The U.S. Environmental Protection Agency has reviewed the revised *Focused Feasibility Study for Water Management for the Disposal of CERCLA Waste on the Oak Ridge Reservation, Oak Ridge, Tennessee* (DOE/OR/01-2664&D3) submitted by the Department of Energy Oak Ridge Reservation (DOE) on June 23, 2021.

The Focused Feasibility Study (FFS) should capture and convey the objectives, processes, and results of the activities outlined in the EPA Administrator's decision of December 31, 2020, and include the accompanying ARARs tables (with modification to recognize recently agreed upon revisions to the EMDF ARARs table). It is to be developed in parallel with the Environmental Management Disposal Facility (EMDF) Record of Decision (ROD) as work is completed for fish tissue analysis and in the development of preliminary remediation goals (PRGs) for effluent limitations of discharged radionuclides.

Comments of a general nature are provided consistent with the EPA Administrator's decision as a start to document revision. Specifics will be shared as the project team works through the FFS in parallel with EMDF ROD development. Revisions to this FFS consistent with that decision will create a transparent Administrative Record for the manner and means of wastewater management and discharge limits for the currently operating Environmental Management Waste Management Facility (EMWMF) and the proposed EMDF consistent with the EMDF Proposed Plan.

In sequencing the work, the EPA expects to work with DOE to complete the revision of the FFS consistent with the EPA Administrator's decision, approve the document, and transfer the radionuclide wastewater discharge data to the ROD. The approved FFS will then be placed in the Administrative Record and the public informed of the work conducted to derive the radiological discharge limits. The EMDF ROD will then continue to move forward in process toward completion.

The revised and approved FFS will provide ARAR-compliant risk-based limits to radionuclide discharge in the protection of human health and the environment over the operational life of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) radioactive and hazardous waste landfills. Because that risk may change over the decades of landfill operation, the FFS serves as a living document subject to revision in protecting human health and the environment.

If you have any questions or concerns regarding this matter or require additional information, then please contact me at (404) 562-8550, or electronically at froede.carl@epa.gov.

Sincerely,

CARL FROEDE

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Date: 2021.07.22 09:27:04 -04'00'

Carl R. Froede Jr.
Senior Remedial Project Manager
Restoration & DOE Coordination Section
Restoration & Site Evaluation Branch
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Enclosure

cc: B.T. Henry, DOE
D. Mayton, DOE
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ORSSAB

EPA Comments on the Focused Feasibility Study for Water Management for the Disposal of CERCLA Waste on the Oak Ridge Reservation, Oak Ridge, Tennessee (DOE/OR/01-2664&D3)

1. The Focused Feasibility Study for Water Management (FFS) was originally issued in revised form on February 8, 2016. With minor revision it was subsequently reissued on June 23, 2021. However, the document remains outdated regarding the proposed selection of Site 7c for the building and operation of the EMDF and it does not provide a clear understanding of current wastewater issues/conditions for that location along Bear Creek (in a "recreational land-use zone"). Realizing a complete rewrite of the document is burdensome and likely unnecessary, the EPA will require the FFS to be updated to include text that identifies Site 7c as the location of the EMDF and clarifies any changes made in wastewater treatment and management made since 2016. The revised FFS should also identify the annual Preliminary Construction Completion Reports as sources for further information. An appendix with specific details should be added and referenced to provide the public with an understanding of the selection of Site 7c, its land use designation, and the proposed infrastructure associated with wastewater management and treatment. It must also include all of the information to be collected by direction of the EPA Administrator's letter and include the ARARs defined as part of that decision (see attached). All of this work will be part of the project team coordinated FFS review and update to the document.

2. As stated in comment #1, an introductory section or appendix to update the FFS regarding changes made since 2016 is needed. At the time the D2 FFS was prepared, the draft RI/FS proposed Site 5 as the landfill location. Since Site 7c has replaced Site 5 as the proposed location, text prominently displayed at the beginning of the FFS (or perhaps by another means) should explain this change. Examples of information that warrants updates include:

    a. The EMDF will not be co-located with the EMWMF, therefore, the wastewater management system described in the the 2016 FFS will need to be updated in the post-ROD Remedial Design (RD) document for Site 7c. Additionally, the FFS states: "The proposed EMDF will utilize the existing EMWMF water storage and transfer system, along with additional water storage tanks, to the extent practicable." Storage and other aspects of water management will need to be described in the RD specific to Site 7c. The FFS should be consistent with the proposed/ intended design.
    b. There is a need to update the timeline, as it is not longer accurate to report that the RI/FS is "currently being prepared for the proposed EMDF…"
    c. Several figures will need to be updated for accuracy including figures 2, 4, 9 and 11 to show the current proposed location of the EMDF at Site 7c.

3. This D3 FFS (D3-FFS) document presents an incorrect understanding of the original intent of the EPA Administrator's decision. According to the D3-FFS text:

    This D3 revision to the FFS addresses the direction given in the EPA's Dispute Resolution Decision Letter. The primary revisions are found in Appendix K, Revised Discharge Limits for Landfill Wastewater; Sect. 3.2; Appendix M, EPA Administrator's Dispute Resolution Letter; and Appendix D, Applicable or Relevant and Appropriate Requirements. This D3 revision is not intended to be a comprehensive update. Additional minor revisions were made throughout the document, only to the extent required to accommodate the EPA's Dispute Resolution Decision Letter. The preliminary remediation goals and preliminary discharge requirements contained in this FFS were developed solely for the purpose of evaluating landfill wastewater discharge

> alternatives. Final discharge limits will be developed by the EMWMF and EMDF project (RODs) and/or applicable post-ROD documents (p. ix).

According to the EPA Administrator's decision (dated December 31, 2020):

> In accordance with Section XXVI.J of the FFA, the DOE is directed to incorporate this resolution and final determination into and to revise the FFS as necessary to conform with this decision. It is my expectation that fish tissue studies and development of PRGs for effluent limitations for radionuclides will occur in parallel with Region 4's review of the draft ROD to continue progress on the remedial actions for establishing additional landfill capacity at ORR (p. 15).

EPA comment: In this and several other locations within the EPA Administrator's dispute resolution decision it is clear that the intent of the revised FFS is to capture all of the activities associated with the development of PRGs (preliminary remediation goals) for effluent limitations in the discharge of radionuclides, including fish tissue studies and development of site specific fish consumption parameters. Therefore, it is premature for the DOE to issue this document without it containing all of the information necessary to meet the objectives stated in the EPA Administrator's decision. All of the tasks necessary to meet the EPA Administrator's decision will need to be incorporated within this FFS reflective of the steps the Dispute Resolution Agreement Team used to meet the Administrator's objectives of assessing the current baseline risk of radionuclides in fish tissue (if any) and developing water quality based effluent limits for radionculides. This work will occur through ongoing project team meetings conducted to address that decision.

4. This D3 document contains inaccuracies regarding wastewater management information/activities for the proposed Environmental Management Disposal Facility (EMDF). For example, the text states:

> Proposed EMDF. The selection and approval of a landfill wastewater management alternative will be included in the proposed plan. The record of decision will document acceptance of the recommendation. Implementation of landfill wastewater management will continue as part of the normal CERCLA process for the proposed EMDF, from design to initiation of operations (p. x).

The EMDF Proposed Plan (PP) was **approved** by the three Federal Facility Agrement (FFA) parties on September 5, 2018. At the time of approval the PP indicated:

> The Administrative Record for the management and discharge of this wastewater is not yet complete, and the evaluation of alternatives to address wastewater management in a D2 Focused Feasibility Study is currently under dispute between the Agencies. The ROD will describe CERCLA and NCP-compliant discharge requirements for wastewaters from the EMDF (p. 13).

EPA comment: The text in the D3 FFS citation does not accurately reflect what is conveyed in the approved EMDF PP. Therefore, the D3 FFS must be revised to accurately reflect the chronology of officially issued/approved documents, and provide necessary information to complete the Administrative Record. The public was not afforded the opportunity to review the Administrative Record regarding wastewater management since it was in dispute when the EMDF PP was issued. The EPA recommends additional public involvement opportunities regarding supporting analysis and information related to establishment of PRGs (both instream AWQC equivalents and effluent limits).

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5. The D3-FFS does not address the EPA Administrator's decision to collect data to be used to calculate radionuclide contamination in fish in the development of Preliminary Remedial Goals (PRGs) for effluent limitations for radionuclides. Rather, DOE uses this FFS as a screening tool:

> Because this FFS focuses on the management of landfill wastewater generated from EMWMF and the proposed EMDF, the range of alternatives is focused on water management actions. Therefore, the range of technology types and process options applicable to this study is limited to those pertinent to the management of landfill wastewater from EMWMF and the proposed EMDF. *The primary problem addressed in this study is ensuring that the landfill wastewater discharge meets the screening level discharge limits* (p. 23, Italics added).

EPA comment: This FFS must be revised to include all of the objectives conveyed by the EPA Administrator's decision. This document is not a screening tool but rather will provide actual radiological data collected from fish in Bear Creek. All of the work currently being conducted by the Dispute Resolution Agreement Project Team must be documented in this FFS. This document will then serve as the repository where the public can review the steps taken to address the EPA Administrator's decision and the resulting PRGs for water quality based effluent limitations for radionuclides.

6. The D3-FFS is improperly identified as a screening tool:

> Radionuclides and uranium metal—AWQC are not available for radionuclides and uranium metal, so risk-based screening level discharge limits are calculated using the EPA Radionuclide Preliminary Remediation Goal calculator under a recreational scenario for a recreational fisher for the purpose of this evaluation. Radiological discharge limits for both the EMWMF and EMDF will be finalized and included in the respective RODs.
>
> *Details on development of these screening level radiological discharge limits are in Appendix K* (p. 33, Italics added)

EPA comment: The FFS must be revised consistent with the EPA Administrator's decision. This document must contain all of the work and results outlined in his letter of December 31, 2020, specifically the method and inputs used to develop water quality based effluent discharge limits for radionuclides. Once the fish tissue data for radionuclides are available and the fish consumption rate is estimated, the preliminary effluent limits for radionuclides can be developed. These results will then be conveyed in the EMDF ROD and amemended to the EMWMF ROD for comprehensive radionuclide wastewater management.

7. Appendix K. This appendix is not consistent with the direction conveyed in the EPA Administrator's decision. DOE offers a "screening alternative":

> In accordance with the EPA's Administrator's Dispute Resolution Decision (Appendix M), "the individual with the potential for reasonable maximum exposure to radionuclides in effluent from ORR landfills would be a recreational fisherman who fishes at a location downstream from the discharge." These screening level radiological discharge limits were developed based on that scenario to evaluate and screen alternatives for landfill wastewater management (p. K-7).

EPA comment: The completion of all of the activities outlined in the EPA Administrator's decision will provide the data necessary to establish water quality based effluent limits for radiological discharges. It is premature to finalize the FFS and specifically Appendix K without completing the Administrator-

directed activities, including fish tissue data and estimate of site specific fish consumption rates. Appendix K should be rewritten to include the radiological fish data collected and analyzed under the Administrator's decision.

8. Appendix K. Section K.3 SCREENING LEVEL RADIOLOGICAL DISCHARGE LIMITS (p. K-14). This entire section should be rewritten to address the results of the EPA Administrator's decision. It was premature to issue this FFS as a screening tool when the Administrator clearly called for the collection and analysis of actual fish tissue in establishing radiological discharge limits.

9. Appendix K – REVISED DISCHARGE LIMITS FOR LANDFILL WASTEWATER. The DOE has removed the CERCLA Table K.12 from the D3 document (the table provides the integrated exposure pathway risk-based discharge limits (total DL) calculated for the recreational exposure scenario). No reason is provided for this deletion. It must be added back to Appendix K and text added that clearly conveys that this table provides the most conservative and protective levels (based on CERCLA risk) of radionuclides released to surface water at either the EMWMF or the proposed EMDF at the time the original D2 document was issued. Moving to the present, the EPA Administrator's decision based on site specific fish consumption rates for the recreational use scenario will be developed and used instead of the standard CWA guidance default. The DOE may propose discharge limits based on site specific fish consumption rates, and the FFS should include supporting information on which site specific fish consumption rates are developed. This D3 FFS does not provide support for an annual fish consumption rate of 6 oz per year, and as such, cannot be agreed to by the EPA. Further, neither the CWA, which is a relevant and appropriate requirement, nor the Administrator's decision, allows for the use of a dilution or attenuation factor in developing water quality based effluent limits. The decision specifically states that the compliance with instream water quality criteria is to be achieved at "the point of discharge." Please remove use of dilution for the development of proposed discharge limits.

    a. Instream AWQC equivalents for radionuclides derived consistent with the CWA ARARs including the TDEC Recreation use classification and narrative water quality criteria for fish consumption should be achieved throughout the stream, not limited to BCK 3.3-4.5.
    b. These instream AWQC equivalent concentrations for radionuclides may in turn form the basis of proposed effluent limits that must be met at the point of discharge as required by the CWA NPDES regulation. The proposed effluent limits ("screening level discharge limits") do not comply with identified CWA ARARs for meeting effluent limits at the end of the pipe and attainment of AWQC equivalents throughout the stream.
    c. Revise to omit use of a "dilution factor." TDEC water quality standards do not allow the use of a "mixing zone" for radionuclides that are bioaccumulative carcinogens [TDEC 0400-40-03-.05(2) ("Mixing zones shall not apply to the discharge of bioaccumulative pollutants to waters of the state where the risk-based factors in Rule 0400-40-03-.03(4)(l) are exceeded for the pollutant group.").]
    d. The assimilative capacity of the receiving body at the point of discharge may be used in developing water quality based effluent limits. The discharge point for EMDF (7c) wastewater has not been described. However, if the discharge is into Bear Creek or other perennial water body, the assimilative capacity of the receiving body at the point of discharge can be considered in development effluent limits. This will be further developed in project team discussions.
    e. The fish ingestion exposure frequency of 1 meal/year is not supported. This factor should be updated based on the results of the fish community survey and literature values. Discussion and resolution is anticipated at the project team.

10. Appendix K. The D3-FFS states:

> For the purpose of developing screening level radiological discharge limits, the recreational fisher is located at the stream stretch BCK 3.3–4.5, the closest location to the EMWMF and proposed EMDF where public access is considered more likely. This stretch is located close to where Bear Creek Road intersects with State Route 95. The screening level radiological discharge limits represent the concentrations that can be discharged at the EMWMF V-weir to result in no greater than the water concentrations at this point of exposure. A dilution factor of 64 was used based on the median flow comparison between EMWMF V-Weir discharges and Bear Creek flow at BCK 4.5. Table K.11 provides the screening level risk-based discharge limits based on the concentration that can be discharged at the EMWMF V-Weir that will meet the concentration limits at BCK 3.3–4.5 (K-20).

EPA comment: This scenario is predecisional and not based in any data collected as part of the EPA Administrator's decision (i.e. fish tissue data, and site specific fish consumption rate). DOE has hypothesized these conditions and generated Table K.11. (Screening level risk-based discharge limits). Implementation of the EPA Administrator's decision will provide the data that DOE presupposes in this table. Therefore, the creation of Table K.11 is premature as it must use the data collected under the EPA Administrator's decision. This is another reason that this document must run parallel to EMDF ROD development. It should be noted that water quality based effluent limits should be set such that all water in Bear Creek meet the desired water quality (designated to be recreational), not limited to the sections of the creek that may be desirable for fishing. Further, neither the CWA nor the decision includes the use of dilution or "mixing zones" in developing water quality based effluent limits. (See comment #9)

11. Appendix D. APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS.
    On January 19, 2021, the EPA Administrator provided by letter to DOE the list of applicable or relevant and appropriate list of requirements to be included in the revise FFS. The table includes both the ARARs relevant and appropriate to radionuclides that were the subject of the dispute decided by Administrator Wheeler as well as the additional ARARs applicable to Clean Water Act pollutants that were identified in the Regional Administrator's decision and not disputed.
    This second set of ARARs was referenced in footnote 24 of page 8 of the Administrator's decision. They are included in this letter as an attachment and must be added to the revised FFS consistent with the EPA Administrator's decision (Note modification of these ARARs to recently agreed upon revisions to the EMDF ARARs table is acceptable).

12. "Key COCs" and **all** of the appendices in the FFS will need to be updated in coordiantion with project team review.

13. Bear Creek stream flow rates, wastewater volume estimates, and Appendix B are based on 2016 assumptions and should be updated following project team discussion.

14. It is unclear whether DOE intends to build and operate an active wastewater treatment system at the EMDF, or only do so "if required." Please clarify as part of updating the FFS.

15. Table 6, discharge limits. The discharge limits for radionuclides in Table 6 must be revised to reflect the water quality based effluent limits currently under development by the FFA parties (i.e. "Dispute Resolution Agreement Team") and consistent with the CWA, which is a relevant and appropriate requirement. Further discussion will occur at the project team level and if necessary the Emerging Issues Team (EIT) to resolve this issue.

16. Alternative 2 (preferred alternative), treatment system at the proposed EMDF: given the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) preference for treatment and the "as low as (is) reasonably achievable" (ALARA) principles, it is not clear why treatment would be bypassed when available treatment would provide superior environmental protection and radionuclides levels as low as reasonably achievable. Treatment of all mercury-bearing wastewater in the available onsite system would support the goal of restoring of Bear Creek to compliance levels for mercury in fish tissue.

18. Appendix K: Mercury management and compliance with the antidegradation requirements should be updated through project team discussion

19. Appendix K: risk assessment inputs. Please confirm risk assessment inputs, particularly wading days/yr and exposure duration, with EPA risk assessment staff as part of project team review discussion.

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ENCLOSURE

EPA Administrator ARARs Tables - Additional ARARs for Inclusion in Revised D2 FFS for Management of Waste Water from ORR On-site Landfills - 01/19/2021

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Table - Additional ARARs for Inclusion in Revised D2 FFS for Management of Waste Water from ORR On-site Landfills 1/19/2021

Action/Media	Requirements	Prerequisite	Citation
Chemical-specific ARARs			
Prevention of pollution through application of treatment	In order to permit the reasonable and necessary uses of the Waters of the State, existing pollution should be corrected as rapidly as practicable, and future pollution prevented through the best available technology economically achievable or that greater level of technology necessary to meet water quality standards; i.e., modeling and stream survey assessments, treatment plants or other control measures.[1]	Point source discharge of pollutants as defined in 40 CFR 122.2 into surface water – **Applicable** Point source discharge of radionuclides into surface water – **Relevant and appropriate**	TDEC 0400-40-03-.02(4) *General considerations*
	Technology-based treatment requirements cannot be satisfied through the use of "non-treatment" techniques such as flow augmentation and in-stream mechanical aerators.		40 CFR 125.3(f)
Application of most stringent criteria	Since all Waters of the State are classified for more than one use, the most stringent criteria will be applicable. In cases where criteria for protection of more than one use apply at different stream flows (e.g., aquatic life versus recreation), the most protective will also be applicable.		TDEC 0400-40-03-.02(5) *General considerations*
Compliance with narrative water quality criteria	Interpretation and application of narrative criteria shall be based on available scientific literature and EPA guidance and regulations.	Point source discharge of pollutants as defined in 40 CFR 122.2 into surface water – **Applicable** Point source discharge of radionuclides into surface water – **Relevant and appropriate**	TDEC 0400-40-03-.02(10) *General considerations*
Application of stream flow for water quality criteria	Water quality criteria shall generally be applied on the basis of stream flows equal to or exceeding the 7-day minimum, 10-year recurrence interval. Criteria that are based on measurements of ambient aquatic community health shall	Discharge of pollutants as defined in 40 CFR 122.2 into surface water Classified as *Fish and Aquatic Life* – **Applicable**	TDEC 0400-40-03-.05(4) *Interpretation of criteria*

[1] Treatment may be necessary to meet TN water quality standards. Consistent with the Administrator's Decision dated December 31,2020, TBEL requirements are not considered relevant and appropriate to discharges of radionuclides at this Site.

Table - Additional ARARs for Inclusion in Revised D2 FFS for Management of Waste Water from ORR On-site Landfills 1/19/2021

Action/Media	Requirements	Prerequisite	Citation
	support the designated use, independent of a specified minimum flow duration and recurrence. All other criteria shall be applied on the basis of stream flows equal to or exceeding the 30-day minimum 5-year recurrence interval.	Discharge of radionuclides into surface water Classified as *Fish and Aquatic Life* – **Relevant and appropriate**	
	The frequency, magnitude and duration of deviations from normal water conditions shall be considered in interpreting the water quality criteria. When interpreting pathogen data, samples collected during or immediately after significant rain events may be treated as outliers unless caused by point source dischargers.	*Point source discharge of pollutants as defined in 40 CFR 122.2 into surface water* – ***Applicable*** *Point source discharge of radionuclides into surface water* – ***Relevant and appropriate***	TDEC 0400-40-03-.05(5) *Interpretation of criteria*
Application of water quality criteria	The criteria and standards provide that all discharges of sewage, industrial waste, and other waste shall receive the degree of treatment or effluent reduction necessary to comply with water quality standards, or state or federal laws and regulations pursuant thereto, and where appropriate will comply with the "Standards of Performance" as required by the Tennessee Water Quality Control Act, (T.C.A., §§69-3-101, et seq.). (See FN 1.)	Point source discharge of pollutants as defined in 40 CFR 122.2 into surface water – **Applicable** Point source discharge of radionuclides into surface water – **Relevant and appropriate**	TDEC 0400-40-03-.05(6) *Interpretation of criteria*
	Where naturally formed conditions or background water quality conditions are substantial impediments to attainment of the water quality standards, these conditions shall be taken into consideration in **establishing any effluent l**imitations or restriction on discharge to such waters. For purposes of water quality assessment, exceedances of water quality standards caused by natural conditions will not be considered the condition of pollution.	Point source discharge of pollutants as defined in 40 CFR 122.2 into surface water – **Applicable** Point source discharge of radionuclides into surface water – **Relevant and appropriate**	TDEC 0400-40-03-.05(7) *Interpretation of criteria*
Use of Reporting Limits	In instances where permit limits established through implementation of these criteria are below analytical capabilities, compliance with those limits will be determined using the following reporting limits, unless in specific cases other reporting limits are demonstrated to be the best	Point source discharge of pollutants as defined in 40 CFR 122.2 into surface water – **Applicable**	TDEC 0400-40-03-.05(8)

Table - Additional ARARs for Inclusion in Revised D2 FFS for Management of Waste Water from ORR On-site Landfills 1/19/2021

Action/Media	Requirements	Prerequisite	Citation
	achievable because of the particular nature of the wastewater being analyzed.	Point source discharge of radionuclides into surface water – **Relevant and appropriate**	
Target Risk Level for Recreation AWQC	The 10^{-5} risk level is used for all carcinogenic pollutants.	Derivation of AWQC for pollutants in surface water classified for *Recreation* use – **Applicable** Derivation of AWQC Equivalents for radionuclides in surface water classified for *Recreation* use – **Relevant and Appropriate**	TDEC 0400-40-03.-03(4)(j) Footnote c
Establishing effluent limits using a calculated numeric water quality criterion	Permitting authority must establish effluent limits using a calculated numeric water quality criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and will fully protect the designated use. Such criterion may be derived using an explicit State policy or regulation interpreting its narrative water quality criterion, supplemented with other relevant information which may include EPA's Water Quality Standards Handbook, October 1983, risk assessment data, exposure data … and current EPA criteria documents. NOTE: *DOE is not required to obtain a permit for any part of a remedial action conducted entirely onsite, per CERCLA §121(e). Use of the terms "permit" and "permittee" reflect regulatory language; in this remedial action, "permit" can generally be taken to mean the Record of Decision, and "permittee" to mean DOE.*	Determination of effluent limits where a State has not established a water quality criterion for a specific pollutant – **Applicable** Determination of effluent limits where a State has not established a water quality criterion for radionuclides – **Relevant and Appropriate**	40 CFR 122.44(d)(vi)(A)

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Table - Additional ARARs for Inclusion in Revised D2 FFS for Management of Waste Water from ORR On-site Landfills 1/19/2021

Action/Media	Requirements	Prerequisite	Citation
Action-specific ARARs			
Operation and maintenance of treatment and control systems	Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the condition of this permit. This provision requires the operation of backup or auxiliary facilities or similar systems, which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit. NOTE: *DOE is not required to obtain a permit for any part of a remedial action conducted entirely onsite, per CERCLA §121(e). Use of the terms "permit" and "permittee" reflect regulatory language; in this remedial action, "permit" can generally be taken to mean the Record of Decision, and "permittee" to mean DOE.*	Point source discharge of pollutants as defined in 40 CFR 122.2 into surface water where treatment is used– **Applicable** Point source discharge of radionuclides into surface water where treatment is used – **Relevant and Appropriate**	TDEC 0400-40-05-.07(2)(c)
Monitoring of effluent	Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.	Point source discharge of pollutants as defined in 40 CFR 122.2 into surface water – **Applicable** Point source discharge of radionuclides into surface water – **Relevant and Appropriate**	TDEC 0400-40-05-.07(2)(h)
	Permittee shall take all reasonable steps to minimize any adverse impact to the waters of Tennessee resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge. NOTE: *DOE is not required to obtain a permit for any part of a remedial action conducted entirely onsite, per CERCLA §121(e). Use of the terms "permit" and "permittee" reflect regulatory language; in this remedial action, "permit" can*		TDEC 0400-40-05-.07(2)(q)

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Action/Media	Requirements	Prerequisite	Citation
	generally be taken to mean the Record of Decision, and "permittee" to mean DOE.		
Minimum monitoring requirements	In addition to § 122.48, the following monitoring requirements: (1) To assure compliance with permit limitations, requirements to monitor: (i) The mass (or other measurement specified in the permit) for each pollutant limited in the permit; (ii) The volume of effluent discharged from each outfall; (iii) Other measurements as appropriate including pollutants in internal waste streams under § 122.45(i); pollutants in intake water for net limitations under § 122.45(f); frequency, rate of discharge, etc., for non-continuous discharges under § 122.45(e); pollutants subject to notification requirements under§ 122.42(a); and pollutants in sewage sludge or other monitoring as specified in 40 CFR part 503; or as determined to be necessary on a case-by-case basis pursuant to section 405(d)(4) of the CWA. NOTE: *DOE is not required to obtain a permit for any part of a remedial action conducted entirely onsite, per CERCLA §121(e). Use of the terms "permit" and "permittee" reflect regulatory language; in this remedial action, "permit" can generally be taken to mean the Record of Decision, and "permittee" to mean DOE.*	Point source discharge of pollutants as defined in 40 CFR 122.2 into surface water – **Applicable** Point source discharge of radionuclides into surface water – **Relevant and appropriate**	40 CFR § 122.44(i) *Monitoring requirements*
Waiver for monitoring certain pollutants under existing permit	The Director may authorize a discharger subject to technology-based effluent limitations guidelines and standards in an NPDES permit to forego sampling of a pollutant found at 40 CFR Subchapter N of this chapter if the discharger has demonstrated through sampling and other technical factors that the pollutant is not present in the discharge or is present only at background levels from intake water and without any increase in the pollutant due to activities of the discharger.	Discharge of pollutants subject to TBELs in existing NPDES Permit – **Applicable**	40 CFR § 122.44(a)(2)(i) *Monitoring waivers for certain guideline-listed pollutants*

Action/Media	Requirements	Prerequisite	Citation
	NOTE: *DOE is not required to obtain a permit for any part of a remedial action conducted entirely onsite, per CERCLA §121(e). Use of the terms "permit" and "permittee" reflect regulatory language; in this remedial action, "permit" can generally be taken to mean the Record of Decision, and "permittee" to mean DOE.*		
Monitoring parameter waiver demonstration	Any request for this waiver must be submitted when applying for a reissued permit or modification of a reissued permit. The request must demonstrate through sampling or other technical information, including information generated during an earlier permit term that the pollutant is not present in the discharge or is present only at background levels from intake water and without any increase in the pollutant due to activities of the discharger. NOTE: *DOE is not required to obtain a permit for any part of a remedial action conducted entirely onsite, per CERCLA §121(e). Use of the terms "permit" and "permittee" reflect regulatory language; in this remedial action, "permit" can generally be taken to mean the Record of Decision, and "permittee" to mean DOE.*	Discharge of pollutants subject to TBELs in existing NPDES Permit – **Applicable**	40 CFR § 122.44(a)(2)(iii)
	Any grant of the monitoring waiver must be included in the permit as an express permit condition and the reasons supporting the grant must be documented in the permit's fact sheet or statement of basis. NOTE: *DOE is not required to obtain a permit for any part of a remedial action conducted entirely onsite, per CERCLA §121(e). Use of the terms "permit" and "permittee" reflect regulatory language; in this remedial action, "permit" can generally be taken to mean the Record of Decision, and "permittee" to mean DOE.*	Discharge of pollutants subject to TBELs in existing NPDES Permit – **Applicable**	40 CFR § 122.44(a)(2)(iv)

Table - Additional ARARs for Inclusion in Revised D2 FFS for Management of Waste Water from ORR On-site Landfills 1/19/2021

Action/Media	Requirements	Prerequisite	Citation
Development of effluent limitations	For new sources, technology-based effluent limitations shall require the greatest degree of effluent reduction achievable through application of the best available demonstrated control technology, which shall be new source performance standards, if available.	Discharges of pollutants as defined in 40 CFR 122.2 from "*new sources*" – **Applicable**	TDEC 0400-40-05-.08(1)(b)
	Toxic effluent limitations shall be based on consideration of the toxicity of the pollutant, its persistence, its degradability, the usual or potential presence of the affected organisms in any waters, the importance of the affective organisms and the nature and extent of the effect of the toxic pollutant on such organisms.	Discharge of toxic pollutants as defined in 40 CFR 122.2 into surface water – **Applicable** Point source discharge of radionuclides into surface water – **Relevant and Appropriate**	TDEC 0400-40-05-.08(1)(d)
	All effluent limitations or standards shall meet or exceed any minimum standards promulgated by the Administrator and currently effective under the Federal Water Pollution Control Act, P.L. 92-500 as amended or any subsequent applicable acts.		TDEC 0400-40-05-.08(1)(f)
	All pollutants shall receive treatment or corrective action to insure compliance with effluent limitations established by the US EPA pursuant to Section 301 and 302 and standards of performance for new sources pursuant to Section 306, effluent limitations and prohibitions and pretreatment standards pursuant to Section 307 of the Federal Water Pollution Control Act, P.L. 92-500 as amended; also to insure compliance with any approved water quality standard.		TDEC 0400-40-05-.08(1)(g)

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Table - Additional ARARs for Inclusion in Revised D2 FFS for Management of Waste Water from ORR On-site Landfills 1/19/2021

Action/Media	Requirements	Prerequisite	Citation
Compliance Point for Discharge	All permit effluent limitations, standards, and prohibitions shall be established for each outfall or discharge point of the permitted facility, except as otherwise provided for BMPs where limitations on effluent or internal waste streams are infeasible NOTE: *DOE is not required to obtain a permit for any part of a remedial action conducted entirely onsite, per CERCLA §121(e). Use of the term "permit" reflects regulatory language; in this remedial action, "permit" can generally be taken to mean the Record of Decision.*	Point source discharge of pollutants as defined in 40 CFR 122.2 into surface water – **Applicable** Point source discharge of radionuclides into surface water – **Relevant and Appropriate**	TDEC 0400-40-05-.08(1)(k)
	All permit effluent limitations, standards, and prohibitions shall be expressed as maximum daily and monthly average, unless impracticable. NOTE: *DOE is not required to obtain a permit for any part of a remedial action conducted entirely onsite, per CERCLA §121(e). Use of the term "permit" reflects regulatory language; in this remedial action, "permit" can generally be taken to mean the Record of Decision.*	Continuous discharge of pollutants as defined in 40 CFR 122.2 into surface water – **Applicable** Continuous discharge of radionuclides into surface water – **Relevant and Appropriate**	TDEC 0400-40-05-.08(1)(m)
Effluent Limitations for metals	All permit effluent limitations, standards, or prohibitions for a metal shall be expressed as "total recoverable metal" unless a promulgated effluent guideline specifies otherwise. NOTE: *DOE is not required to obtain a permit for any part of a remedial action conducted entirely onsite, per CERCLA §121(e). Use of the term "permit" reflects regulatory language; in this remedial action, "permit" can generally be taken to mean the Record of Decision.*	Point source discharge of pollutants as defined in 40 CFR 122.2 into surface water – **Applicable** Point source discharge of radionuclides that are also metals into surface water – **Relevant and Appropriate**	TDEC 0400-40-05-.08(1)(p)
Measurement of effluent standards	Any discharge which is not a minor discharge or activity that contains a toxic pollutant for which an effluent standard has been established shall be monitored: • Flow (in million gallons per day); and	Point source discharge of pollutants as defined in 40 CFR 122.2 into surface water – **Applicable**	TDEC 0400-40-05-.08(1)(s)

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Table - Additional ARARs for Inclusion in Revised D2 FFS for Management of Waste Water from ORR On-site Landfills 1/19/2021

Action/Media	Requirements	Prerequisite	Citation
	• Pollutants which are subject to reduction or elimination under the terms and conditions of the permit NOTE: *DOE is not required to obtain a permit for any part of a remedial action conducted entirely onsite, per CERCLA §121(e). Use of the term "permit" reflects regulatory language; in this remedial action, "permit" can generally be taken to mean the Record of Decision. "Pollutant" in this requirement shall include all radionuclides for which an effluent limitation is established under this remedial action.*	Point source discharge of radionuclides into surface water – **Relevant and Appropriate**	
Discharge of wastewater from RCRA hazardous waste landfills	Except as provided in 40 CFR § 125.30 through § 125.32, any existing point source subject to this subpart must achieve the Effluent Limitations listed in the regulation for each regulated parameter[2] which represent the application of *best practicable control technology* (BPT).	Discharge of wastewater[3] from landfills subject to 40 CFR Part 264, from an "*existing* "source – **Applicable**	40 CFR § 445.11 *Effluent limitations attainable by the application of BPT.*
	Except as provided in 40 CFR § 125.30 through § 125.32, any existing point source subject to this subpart must achieve the following effluent limitations which represent the application of *best available technology economically* (BAT): Limitations for ammonia (as N), a-terpineol, aniline, benzoic acid, naphthalene, p-cresol, phenol, pyridine, arsenic, chromium		40 CFR § 445.13 *Effluent limitations representing the degree of effluent reduction attainable by the application of BAT.*

[2] Radionuclides are not on the list of *regulated parameters*.

[3] "*Landfill wastewater* means all wastewater associated with, or produced by, landfilling activities except for sanitary wastewater, non-contaminated storm water, contaminated ground water, and wastewater from recovery pumping wells. Landfill wastewater includes, but is not limited to, leachate, gas collection condensate, drained free liquids, laboratory derived wastewater, contaminated storm water and contact wash water from washing truck, equipment, and railcar exteriors and surface areas which have come in direct contact with solid waste at the landfill facility." 40 CFR 445. 2(f). "*Contaminated storm water* means storm water which comes in direct contact with landfill wastes, the waste handling and treatment areas, or landfill wastewater as defined in paragraph (f) of this section. Some specific areas of a landfill that may produce contaminated storm water include (but are not limited to): the open face of an active landfill with exposed waste (no cover added); the areas around wastewater treatment operations; trucks, equipment or machinery that has been in direct contact with the waste; and waste dumping areas." 40 CFR 445.2(b).

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Table - Additional ARARs for Inclusion in Revised D2 FFS for Management of Waste Water from ORR On-site Landfills 1/19/2021

Action/Media	Requirements	Prerequisite	Citation
	and zinc are the same as the corresponding limitations specified in §445.11.		
	Any new source subject to this subpart must achieve the following performance standards: Standards are the same as those specified in § 445.11.	Discharge of wastewater[1] from landfills subject to 40 CFR Part 264, from a *"new"* source – **Applicable**	40 CFR § 445.14 *New source performance standards*
Protection of the general population from releases of radioactivity from land disposal facility	Concentrations of radioactive material which may be released to the general environment in groundwater, surface water, air, soil, plants, or animals must not result in an annual dose exceeding an equivalent of 25 millirems to the whole body, 75 millirems to the thyroid, and 25 millirems to any other organ of any member of the public.[4]	The siting, design, operation, closure, and control after closure of radioactive waste land disposal facilities **– Relevant and appropriate**	10 CFR 61.41
Protection of individuals during land disposal facility operations	Operations involving releases of radioactivity in effluents from the land disposal facility shall be governed by the 25/75/25 millirem per year dose limits in 10 CFR 61.41. (See FN4.)	The operation of radioactive waste land disposal facilities **– Relevant and appropriate**	10 CFR 61.43

[4] NOTE: Under these regulations, concentrations of radioactive material that may be released to the general environment in groundwater, surface water, air, soil, plants or animals must not result in an annual dose exceeding an equivalent of 25 millirems to the whole body, 75 millirems to the thyroid, and 25 millirems to any other organ of any member of the public with flexibility on apportionment of that dose among exposure pathways.

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