



STATE OF TENNESSEE  
DEPARTMENT OF ENVIRONMENT AND CONSERVATION  
Division of Remediation, Oak Ridge Office  
761 Emory Valley Road  
Oak Ridge, Tennessee 37830

RECEIVED  
OCT 16 2023  
COUNTY MAYOR'S OFFICE

October 12, 2023

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

Dear Mr. Petrie

**Re: TDEC Comment Response Letter for Record of Decision for Groundwater in the K-31/K-33 Area at East Tennessee Technology Park, Oak Ridge, Tennessee (DOE/OR/01-2950&D1)**

The Tennessee Department of Environment and Conservation (TDEC), Division of Remediation-Oak Ridge Office (DoR-OR), received the U.S. Department of Energy (DOE) letter transmitting the above referenced document on July 20, 2023. The Federal Facilities Agreement (FFA) protocol for review of this document is 60 days. On September 15, 2023, in accordance with Section XXI.G.2 of the FFA, TDEC submitted notification for an additional 30-day extension to complete review and provide comments on this K31/33 Area, D1 Record of Decision (ROD). The revised due date for TDEC's D1 ROD comments is October 18, 2023.

These comments are intended to ensure that agreements making approval of this ROD possible, are reflected in this document, and to ensure clarity in the public record. There are three key areas TDEC has identified that need to be addressed:

1. Please specifically address the unique situation in this ROD where the tri-parties have selected Monitored Natural Attenuation (MNA) as the preferred remedy, even though all the lines of evidence for MNA were not initially met in the review of the Remedial Investigation/Feasibility Study (RI/FS) data set evaluated for this document. Please include a statement that this selection was made by the tri-parties intentionally, with the agreement that those existing data and additional newly collected data will be reevaluated in the post ROD document (Remedial Design Work Plan (RDWP) or Remedial Action Work Plan (RAWP) as appropriate), to complete the evaluation of the lines of evidence supporting MNA as a remedy at all well locations. The tri-parties will then continue to evaluate groundwater monitoring data in each future Five-Year Review, to observe trends in contaminant concentration. If the contaminant trend for any well is increasing, actions to supplement MNA will be required. It should be clear that this

agreement for post ROD review of the lines of evidence in this unique circumstance does not establish precedence for any other MNA remedy decision in the future.

2. For clarity in the public record specifically related to the applicable or relevant and appropriate requirements (ARARs) for this project, revisions to the numerical criteria table are requested/recommended. (See the specific comments below).
3. Land Use Controls (LUCs) that are directly applicable to this groundwater ROD and the selected remedy, should be clearly defined in this ROD. Where overlap or redundancy of LUC requirements may occur from multiple RODs addressing the same area on this site, the FFA/Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) record should clearly designate which LUC requirements are correlated with which ROD.

All these requested changes are expected to be easily incorporable into this ROD and should result in what the state expects will be an approvable document moving forward. TDEC looks forward to continuing working with the tri-parties to move groundwater remediation work, including this Final Groundwater Record of Decision for the K31/33 Area, forward at East Tennessee Technology Park (ETTP) in a timely and mutually satisfactory manner.

If you have questions or comments concerning the contents of this letter, please feel free to reach out to Heather Lutz at [heather.lutz@tn.gov](mailto:heather.lutz@tn.gov) or (865) 310-0474.

Sincerely

**Randy C Young**

Digitally signed by Randy C

Young

Date: 2023.10.12 15:06:54 -04'00'

Randy C. Young  
FFA Project Manager  
Division of Remediation – Oak Ridge Office

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## GENERAL COMMENTS

### **Comment 1**

For all areas where 'prohibition of groundwater use' is discussed, please expand the statement(s) to read "prohibits groundwater use, extraction, consumption, and exposure." This revised wording is consistent with the tri-party approved language in the final Covenant Deferral Requests (CDRs) for this area.

## SPECIFIC COMMENTS

### **Comment 1: Section 1.4 Description of Selected Remedy, first paragraph after bullet list, second sentence. page 1-7**

This paragraph states that "the selected remedy includes continuation of LUCs under the Zone 2 Soil ROD...." This statement implies that the LUCs within this ROD are dependent on the LUCs associated with the Zone 2 Soils remedy LUCs. They should not be tied together. LUCs should be correlated to the ROD they are supporting. As such, this paragraph needs to explicitly convey the LUCs associated with the selected groundwater remedy in this ROD. Do not imply that the LUCs for this remedy just flow down from the Zone 2 Soils ROD. Although the LUCs for both these RODs are similar in nature, administratively they are associated with remedies selected under two separate RODs. Please revise this section to state that "*The selected remedy includes LUCs that prohibit groundwater use, extraction, consumption, and exposure until groundwater RAOs are met*".

### **Comment 2: Section 1.4 Description of Selected Remedy, fourth paragraph, page 1-7**

After the sentence "The MPA Interim ROD (IROD) for Groundwater is currently under review by EPA and TDEC", please insert a sentence that provides the detail that the Main Plant Area (MPA) Interim ROD for groundwater is a step toward developing final Groundwater ROD(s) within the MPA of ETPP.

### **Comment 3: Section 1.4 Description of Selected Remedy, page 1-7**

At the first bullet describing components of the selected remedy, add language following the first sentence that is consistent to the set of expectations stated by the U.S. Environmental Protection Agency (EPA) and TDEC in letters from both parties dated April 6, 2023 approving the Proposed Plan for this remedial action, (*Proposed Plan for the Record of Decision for Groundwater in the K-31/K-33 Area at the East Tennessee Technology Park, Oak Ridge, Tennessee, DOE/OR/01-2922&D2, March 2023*). The contamination trends at the monitoring wells related to this decision will be evaluated again at the beginning of the remedial design phase for this remedy and then again under each five-year review of remedy performance. If or when additional data collected since the RI/FS and following this ROD for this project are evaluated to determine the downward contaminant trends and do not show a "clear and meaningful trend of decreasing

contaminant mass and/or concentration over time”, then the enhancement of the remedy by means of a treatability study of a localized in situ treatment process will be developed and evaluated to supplement the MNA remedy. The manifest concern at this time is in groundwater at BRW-030 (chromium) and UNW-083 (nickel). Both wells have produced recent groundwater exceedances above maximum contaminant levels (MCLs), as discussed in section 2.5 infra. However, additional data will be evaluated for all monitoring wells for all constituents of concern as outlined in the April 6, 2023, letter from EPA and TDEC.

***Comment 4: Section 1.6 Record of Decision Certification Checklist, first bullet, page 1-8***

This bullet states that the contaminants of concern (COCs) are included in Section 2.7 of the ROD. Section 2.7 generally focuses on risk based COCs but does not include a discussion of the COCs based on MCL exceedance. Please revise this bullet and any associated discussion that ties to in this section 2.7 and the listed COCs, to include a discussion of COCs based on exceedances of promulgated state and federal MCLs in Section 2.7.

***Comment 5: Section 2.2.1 Previous Investigation, first paragraph, page 2-6***

Please remove the last portion of the last sentence that reads “however, no groundwater related risks were identified for potential receptors associated with the intended reuse of the site as an industrial park.”

***Comment 6: Section 2.3 Highlights of Community Participation, bullets under the first paragraph, page 2-9***

There are more documents than just the two (2) identified here in the K-31/K-33 administrative record. Please include the 2007 RI/FS, the Remedial Site Evaluation (RSE), and the relevant historical records associated with this site prior to the K31/K33 RI/FS from July 2022.

***Comment 7: Section 2.5 Site Characteristics, first paragraph, page 2-14***

In the sentence “these exceedances are represented by results from unfiltered samples that surpass the MCL of 0.1 mg/L by an additional 0.06 mg/L (60 parts per trillion) or less”, please check conversion factors to confirm math (60 parts per trillion should be 60 parts per billion).

***Comment 8: Section 2.6.1 Current Land Use, top of page 2-17***

The *Offsite Groundwater Assessment Remedial Site Evaluation* was conducted at specific locations over a relatively short time period to determine if offsite residences were impacted from groundwater contamination associated with the Oak Ridge Reservation (ORR) at that time. As groundwater plumes generally are not yet fully delineated at the ETP, and there is limited understanding of contaminant flow and transport, these results should not be used to make broad statements regarding migration of contaminants from the ORR. Please remove the statement “that study did not identify any contamination issues or other impacts that could be



attributed to migration from the ORR in general or ETPP in particular," and revise the last sentence of this paragraph to state: *"The study did not identify any contamination issues or other impacts at these 15 wells and springs sampled during the fiscal year 2014-2016 time period."*

**Comment 9: Section 2.7.1.2 Exposure Assessment, fourth paragraph, page 2-20**

Please add information about the federal requirements to clean up groundwater in addition to the state rules. This section reads a lot like this work is only required because the state has its groundwater classification rules and that is misleading to the reader. Recommend adding the following text after the first two sentences: *"Similarly, the mission of the Superfund program is to protect human health and the environment consistent with the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) as implemented by the National Oil and Hazardous Substance Pollution Contingency Plan (NCP), in part by restoring contaminated groundwaters to beneficial use. Groundwater response actions under CERCLA are governed in part by CERCLA 121(d)(2)(A) that states "such remedial action shall require a level or standard of control with at least attains Maximum Contaminant Level Goals established under the Safe Drinking Water Act and water quality criteria established under section 304 or 303 of the Clean Water Act where such goals or criteria are relevant and appropriate under the circumstances of the release or potential release." (OSWER directive 9283.1-33). **And 40 CFR 300.430(a)(1)(iii) (D) and (F) states:***

*EPA generally shall consider the following expectations in developing appropriate remedial alternatives:*

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*(D) EPA expects to use institutional controls such as water use and deed restrictions to supplement engineering controls as appropriate for short- and long-term management to prevent or limit exposure to hazardous substances, pollutants, or contaminants. Institutional controls may be used during the conduct of the remedial investigation/feasibility study (RI/FS) and implementation of the remedial action and, where necessary, as a component of the completed remedy. The use of institutional controls shall not substitute for active response measures (e.g., treatment and/or containment of source material, restoration of ground waters to their beneficial uses) as the sole remedy unless such active measures are determined not to be practicable, based on the balancing of trade-offs among alternatives that is conducted during the selection of remedy.*

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*(F) EPA expects to return usable ground waters to their beneficial uses wherever practicable, within a timeframe that is reasonable given the particular circumstances of the site. When restoration of ground water to beneficial uses is not practicable, EPA expects to prevent further migration of the plume, prevent exposure to the contaminated ground water, and evaluate further risk reduction.*

**Comment 10: Section 2.8 Remedial Action Objectives, page 2-25**

The existing remedial action objective (RAO) bullets should also include:

- Prevent or minimize further migration of the contaminant plume.

**Comment 11: Table 2.5 Numeric criteria for K-31/K-33 Area groundwater, page 2-26**

TDEC recommends removing numerical criteria table from the RAO section of the ROD and including the numerical criteria table in Section 2.12.4 Expected Outcomes. See suggestions for that table format below in Comment #19.

**Comment 12: Section 2.12 Selected Remedy page 2-32**

Existing sentence: DOE, with concurrence from EPA and TDEC, has determined Alternative 2, MNA and LUCs, offers the best combination of protectiveness and cost effectiveness with minimal impacts to reuse of the site.

Please add: *"MNA was selected even though all the lines of evidence to support selection of MNA as a remedy were not met at all the wells. This selection was made, with the agreement that existing data and newly collected data regarding the MNA lines of evidence will be reevaluated for appropriateness in a post-ROD document such as the RDWP or RAWP as appropriate."*

**Comment 13: Section 2.12.2.1 MNA, first paragraph, page 2-34**

Insert the following sentence at the end of this paragraph to reflect the agreement at the Project Team level that MNA was the selected remedy given that these groundwater data sets would be reevaluated as part of the RAWP.

*"During development of the RAWP, concentration trends will be reevaluated to include post-RI/FS groundwater data. The purpose of conducting this evaluation is to confirm that MNA is the appropriate remedy per the lines of evidence/tiers as outlined in the EPA and ITRC guidance documents."*

**Comment 14: Section 2.12.2.1 MNA, after the 1st paragraph of the section and the bullets and revising the second paragraph, page 2-34**

Please include text relating to the requirements identified in the approval letters for the Proposed Plan provided by EPA and TDEC. In the second full paragraph on p. 2-34, please add language drafted in this paragraph:

A groundwater monitoring program based on EPA MNA guidance will be used to track remedy performance. MNA program design will commence with a tri-party data quality objectives effort that will focus on monitoring locations, the need for installing additional monitoring wells, the frequency of sampling, and the specific constituents to be analyzed and monitored. The data quality objectives will also address methods for evaluating monitoring data and may include if-then decision statements to guide the program if future monitoring results indicate the remedy is not performing as expected. The agreed-upon scope for the monitoring program will form the basis of the RAWP to be prepared following ROD completion. Such effort to design the MNA program shall also reflect the conditions/expectations set forth by TDEC and EPA related to a



re-evaluation of groundwater sampling data prior to the remedy design to determine a downward data trend as described in section 1.4 supra. The absence of such a trend would not be consistent to EPA MNA guidance and trigger the development explained above for a treatability study to augment MNA in some locations across the K-31/K-33 site (-e.g.- UNW-083 and BRW-030).

The ROD must reflect that the FFA parties agreed to select the MNA remedy across the whole site because of a rather unique situation without data establishing a declining concentration trends in all monitoring wells for all constituents of concern and not as a common practice. The delay to gather more data only postpones consistency with EPA MNA guidance, but the re-evaluation of data needs to occur before the RDWP. The total data set must show natural attenuation is occurring before implementing a remedy directed only at monitoring the process. While there can be discussions about multiple lines of evidence to establish MNA, the data trend at a couple of monitoring locations has not only not been seen going down but is also in some instances pretty level or moving upward. The consensus among the parties was not to ignore this point but to recognize that the problem was limited in terms of the degree of exceedances of the MCL, the episodic nature of the exceedances, and agreement that MNA was shown to be workable at 19 of 21 monitoring wells. If the data does not show improvement, then there should be an evaluation of an additional remedial measure. Any problem with the data trend later *would also trigger consideration of other remedial options.*

**Comment 15: Section 12.2.2 LUCs, 1st sentence, page 2-34**

Please add the following text to the end of the 1st sentence:

LUCs related to groundwater use and activities potentially resulting in exposures to contaminated groundwater (e.g., drilling or excavation) will be implemented in parallel with MNA action and will remain in place until groundwater is returned to beneficial use.

**Comment 16: Section 2.12.2.2 LUCs, page 2-34 and 2-35**

As specified in the ORR Land Use Control Assurance Plan (LUCAP), when a remedial action that includes LUCs is selected for an area, a Land Use Control Implementation Plan (LUCIP) must be developed. Once the LUCIP has been developed and approved, the LUCs can be rolled into the ETP Remedial Action Report (RAR) Comprehensive Monitoring Plan (CMP). The ETP RAR CMP is the document that compiles all the LUCs for the different decision documents for ETP but does not serve as the implementation plan. TDEC recommends that verbiage be added to this ROD that specifies what post-ROD document the LUCIP will be provided in, with respect to this ROD.

Recommend the following revisions to the text:

- Replace the last two sentences of the second paragraph that read "LUCs will be implemented in accordance with ... and prohibiting groundwater use:" with the following

sentence: "A LUCIP will be developed in accordance with the ORR LUCAP and will be included as an appendix to the RAWP. The LUCIP will specify how the DOE will implement, maintain, and monitor the LUC elements of this remedy. The following LUCs are included as part of the K-31/K-33 Area selected groundwater remedy."

- Follow these two sentences with a list of the LUCs associated with the K-31/K-33 selected groundwater remedy and include a description, their objectives, and the conditions of their use per the ORR LUCAP section 2.5.

**Comment 17: Table 2.8, LUCs for K-31/K-33 Area Selected Remedy, page 2-35**

The generic ETPP RAR CMP LUC table included in this ROD document as Table 2.8 is not suitable for documenting the specific LUCs associated with this K-31/K-33 selected groundwater remedy.

Please revise Table 2.8 to be specific to the LUCs associated with the K-31/K-33 selected groundwater remedy. (For example, remove the references to Waste Management Area and Zone 1 in Table 2.8, neither of which apply to the K-31/K-33 area).

Given the reliance on land use controls within the scope of this ROD and the importance of those controls to protect human health in the area, TDEC expects to work closely with DOE to develop land use control language which represents TDEC interests regarding long-term land use control commitments.

**Comment 18: Section 2.12.4 Expected Outcomes of Selected Remedy, page 2-38**

This section should clearly state the expected outcome (e.g., remediation levels) for the selected remedy. It is recommended a table that clearly presents the remediation levels for the COCs and the basis for these levels (example provided below) be included in this section. Revise the third bullet in Section 1.6 to reference this Section 2.12.4 instead of Section 2.8 of this ROD.

**Comment 19: Table of Numeric Criteria for K31/K33 Area Groundwater called out in D1 document as Table 2.5 and Table A.1**

Recommend revision of the Numeric Criteria Table so that it calls out specifically what the numerical criteria are for the site based on the defined ARARs, and what the selection basis was for the values selected. A general format example is shown below that has been used by TDEC in the past and is included for consideration. This alternate formatting could help make clearer the selection of the numerical criteria being targeted by this ROD and would potentially help address the excessive footnotes on the Table 2.5 / Table A.1 portions of this document.



**Numeric Criteria for K31/33 Area Groundwater (draft example)**

Chemical of Concern	TDEC 0400-40-03 General Water Quality Rule ug/L	TDEC DW MCLs 0400-45-01-.06 and 0400-45-01-.25 ug/L	SDWA EPA MCLs	EPA RSLs if no MCL available	Remediation goal	Selection basis
Gross alpha			15 pCi/L		15pCi/L	EPA- SDWA
antimony	6	6	6		6	EPA- SDWA & TDEC
arsenic	10	10	10		10	EPA – SDWA & TDEC
lead	5		.015 TT5action level		5	TDEC 0400-40-03
nickel	100	100			100	TDEC 0400-40-03 and 0400-45-01

Include footnotes as appropriate.

**Comment 20: Table A.2 ARARs, Chemical-Specific section, page A-6**

Please include Safe Water Drinking Act of 1974 (SDWA) federal limits (MCLs) in Table A.1. Though included in the text of Table A.2, those requirements should be consistent throughout the ARAR appendix section.

Chemical Specific ARARs include state and federal chemical specific ARARs:  
 These are included already:

- 0400-40-03-.03 General Use Groundwater – Applicable
- 0400-45-01-.06 and 0400-45-01-.25 - State MCLs – Relevant and Appropriate

Please add:

- SDWA – federal (EPA) MCLs- Relevant and Appropriate

**Comment 21: Table A.2 ARARs, Chemical-Specific section, page A-6**

Include the following constituents as to be considered (TBCs) in the chemical specific section of the ARAR table.

- Per- and Polyfluorinated Substances (PFAs)

***Comment 22: Section A2. Chemical-Specific Applicable or Relevant and Appropriate Requirements, 4th paragraph, last sentence, page A-10***

The sentence that reads: "Water Quality Criteria set out in TDEC 0400-40-03-.03(1)(j) reflect the MCLs (See Table A.1)," is not exactly correct. Please reword to consider: TDEC Rule 0400-40-03-.03 Water Quality Criteria and 0400-45-01-.06 and 0400-45-01-.25 TDEC's MCLs do have some differing values, where a criterion may be listed in one list and not in the other. For example, the applicable TDEC numerical criteria for lead is found in the 0400-40-03-.03 Rule, whereas the appropriate gross alpha criterion is in the 0400-45-01 Rules.