Department of
Environment &
Conservation

Oak Ridge Site Specific Advisory Board

Fiscal Year 2018 Topics

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August 19, 2017

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TDEC Division of Remediation, Oak Ridge office recommends the following program areas where stakeholder comments and recommendations would be most beneficial:

- **Future disposal for the Environmental Management generated waste;**
- **Processing and disposition of Transuranic (TRU) waste;**
- **Assessment of Groundwater; and**
- **Mercury Remediation**

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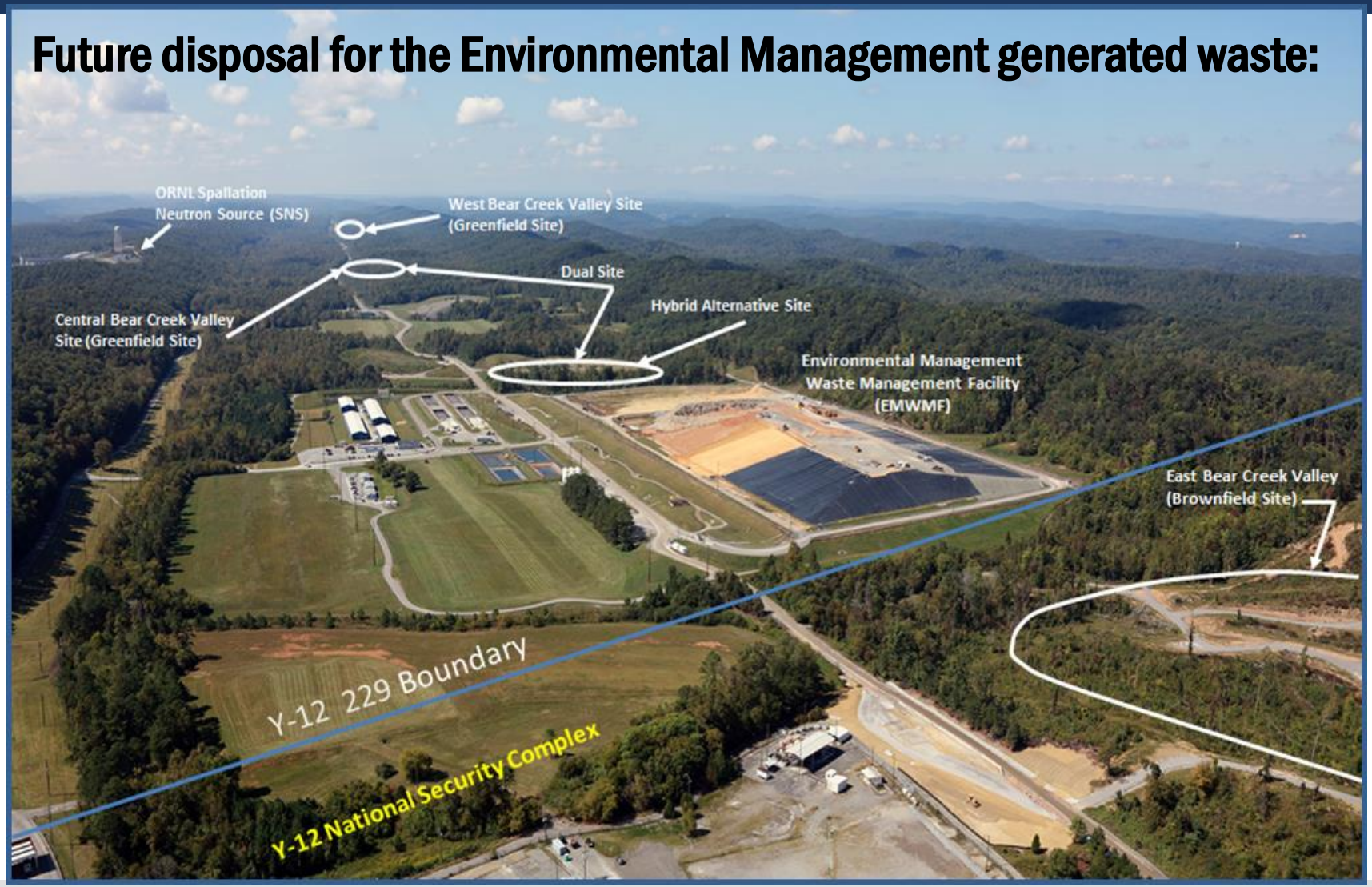
Future disposal for the Environmental Management generated waste:



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Future disposal for the Environmental Management generated waste:

TDEC continues to work with DOE and EPA to authorize a waste disposal facility for future Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) generated waste.

Section 121 of CERCLA mandates that remedial action must:

1. Protect human health and the environment;
2. Comply with applicable or relevant and appropriate requirements (ARARs) unless a waiver is justified;
3. Be cost-effective;
4. Utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable;
5. Satisfy the preference for treatment as a principal element, or provide an explanation in the ROD why the preference was not met.

EPA: Guide to Selecting Superfund Remedial Actions, April 1990

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Future disposal for the Environmental Management generated waste:

The remedy selection process begins with the identification of a preferred alternative from among those evaluated in detail in the FS by the lead agency.

The preferred alternative is presented to the public in a Proposed Plan that is issued for comment along with the RI/FS.

Upon receipt of public comments on the Proposed Plan, the lead agency consults with the support agency to determine if the preferred alternative remains the most appropriate remedial action for the site or operable unit.

The final remedy is selected and documented in a Record of Decision.

EPA: Guide to Selecting Superfund Remedial Actions, April 1990

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Future disposal for the Environmental Management generated waste:

The identification of a preferred alternative and final selection of a remedy is derived from consideration of nine evaluation criteria in three major steps.

The first step - is to identify those alternatives that provide adequate protection of human health and the environment and comply with ARARs – **Threshold Criteria:**

1. ***Overall protection of human health and the environment*** addresses whether or not a remedy provides adequate protection and describes how risks posed through each exposure pathway (assuming reasonable maximum exposure) are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.
2. ***Compliance with applicable or relevant and appropriate requirements*** (ARARs) addresses whether a remedy will meet all of the applicable or relevant and appropriate requirements of other Federal and State environmental laws or whether a waiver is justified.

EPA: Guide to Selecting Superfund Remedial Actions, April 1990

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Future disposal for the Environmental Management generated waste:

The second step – involves the balancing of trade-offs among protective and ARAR-compliant alternatives with respect to the five primary balancing criteria. In this step, alternatives are compared with each other and are ultimately balanced to identify the preferred alternative and to select the final remedy – **Balancing Criteria:**

3. ***Long-term effectiveness and permanence.***
4. ***Reduction of toxicity, mobility, or volume, through treatment.***
5. ***Short-term effectiveness.***
6. ***Implementability.***
7. ***Cost.***

EPA: Guide to Selecting Superfund Remedial Actions, April 1990

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Future disposal for the Environmental Management generated waste:

The identification of a preferred alternative and final selection of a remedy, **Balancing Criteria**:

3. **Long-term effectiveness and permanence** is a major theme of CERCLA Section 121, and, therefore, **is one of the most important criteria used during remedy selection** to determine the maximum extent to which permanence and treatment are practicable.

This factor will often be decisive where alternatives vary significantly in the types of residuals that will remain onsite and/or their respective long-term management controls.

4. **Reduction of toxicity, mobility, or volume, through treatment –** remedies that use treatment to address materials comprising the principal threats posed by a site are preferred over those that do not.

EPA: Guide to Selecting Superfund Remedial Actions, April 1990

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Future disposal for the Environmental Management generated waste:

The identification of a preferred alternative and final selection of a remedy, **Balancing Criteria:**

5. **Short-term effectiveness** can weigh significantly against an option and can, in fact, result in an alternative being rejected as unprotective if adverse impacts cannot be adequately mitigated.

6. **Implementability** is particularly important for evaluating remedies at sites with highly heterogeneous wastes or media that make the performance of certain technologies highly uncertain.

7. **Cost** may play a significant role in selecting between options that appear comparable with respect to the other criteria, particularly, long-term effectiveness and permanence, or when choosing among treatment options that provide similar performance.

EPA: Guide to Selecting Superfund Remedial Actions, April 1990

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Future disposal for the Environmental Management generated waste:

The third step – these criteria may not be considered fully until after the formal public comment period on the Proposed Plan and RI/FS report is complete, although EPA works with the State and community throughout the project– **Modifying Criteria:**

8. ***State acceptance*** – addresses support agency's comments. Where the Federal agency is a lead agency, EPA's acceptance of the selected remedy should be addressed under this criterion. State views on compliance with State ARARs are especially important.
9. ***Community acceptance*** – refers to the public's general response to the alternatives described in the Proposed Plan and the RI/FS report.

EPA: Guide to Selecting Superfund Remedial Actions, April 1990

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Future disposal for the Environmental Management generated waste:

Where are we?

"The DOE Oak Ridge Office of Environmental Management program initiated a **formal dispute related to the failure** of DOE, the Environmental Protection Agency (EPA), and TDEC **to move forward and issue a Proposed Plan** (PP) for this project."

"Among others, the TDEC comment letter dated April 21, 2017, contained the following statement: ***The D5 RI/FS report does not include the site-specific characterization, waste characterization, and modeling necessary to assess risks of the waste disposal alternatives evaluated. Such information would normally be evaluated during the FS as required by [CERCLA].***"

"**The purpose of the RI and FS as stated in the National Contingency Plan** (NCP) (1, 2), assessing site conditions and evaluating alternatives to the extent necessary to select a remedy, **have been achieved or exceeded.**"

(DOE response to TDEC comments for the RI/FS, DOE/OR/01-2535&D5, July 18, 2017)

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Future disposal for the Environmental Management generated waste:

The formal dispute:

The dispute was elevated to the Senior Executive Committee (SEC) level: EPA Regional Administrator, TDEC Commissioner, and DOE OREM Manager

The SEC met and decided to focus the dispute to 3 issues:

1. **Modeling Required to support the landfill**
2. **ARAR's necessary to support the Proposed Plan (PP)**
3. **Site specific characterization required to support the PP**

While the efforts to reach agreements on these issues continue, the SEC agreed to extend the formal dispute period until August 31, 2017.

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Future disposal for the Environmental Management generated waste:

As required by CERCLA, DOE's RI/FS must demonstrate that the proposed EMDF will meet the threshold criteria of protecting human health and the environment and comply with—or justify site-specific waivers of—federal and state ARARs.

The expedited characterization of CBCV Site 7c; would provide modeling input values producing a CERCLA Proposed Plan for public review and comment in Fiscal Year (FY)

Input from SSAB on extent of:

- site characterization,
- risk modeling, and
- the waste acceptance criteria

would increase public awareness and assist in recommended path forward.

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Processing and Disposition of Transuranic (TRU) waste :

ORR's transuranic (TRU) waste inventory is being processed onsite at the Transuranic Waste Processing Facility (TWPC). (DOE photo)

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Processing and Disposition of Transuranic (TRU) waste:

- Though currently stable and safely stored, TRU Sludge stored in Melton Valley Storage Tanks represents one of the highest levels of risk to the public and the environment.
- The current target date just to complete the mock-up testing (pilot study) for the sludge processing is May 31, 2022, with the actual processing of the sludge even further out beyond 2022.
- DOE and TDEC are engaged in discussions to potentially accelerate this project. However, the successful design and construction of the sludge treatment facility requires a steady fiscal environment.
- Retrievably stored transuranic waste in Trench 13 needs to be excavated, processed, and disposed.

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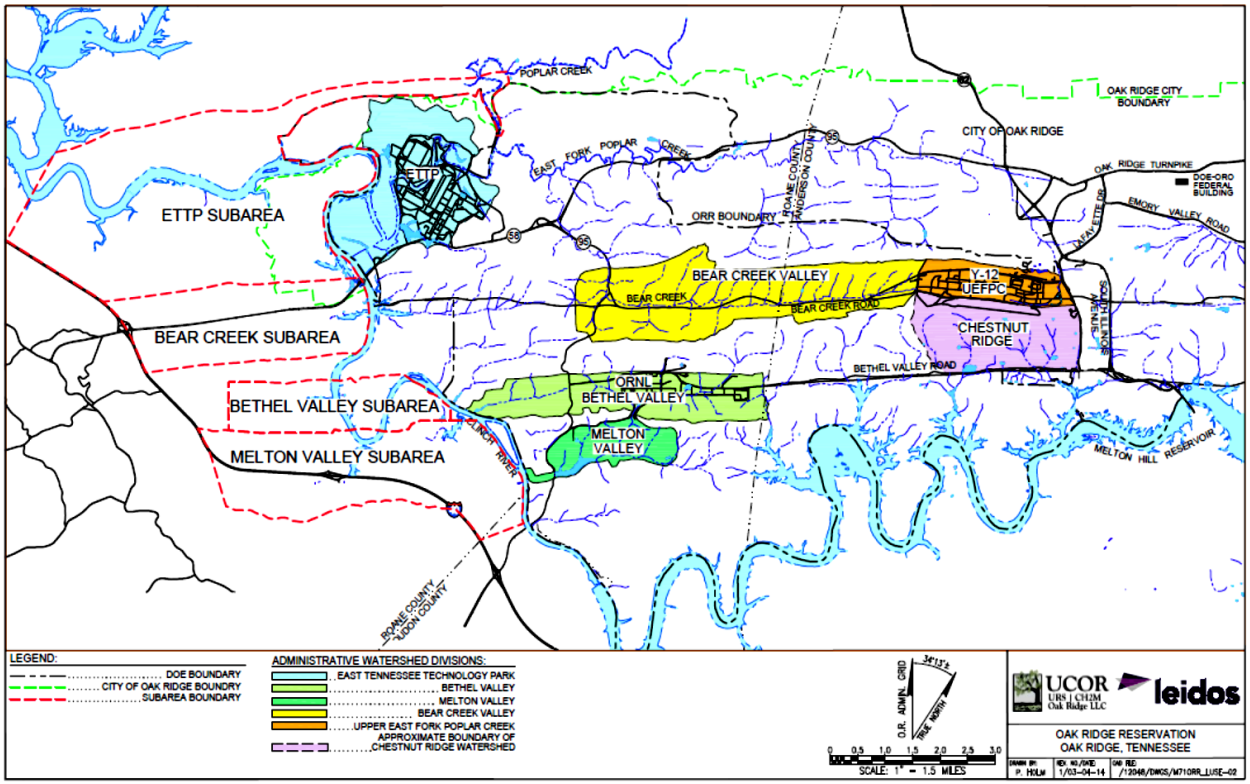
Assessment of Groundwater :

An ORR Groundwater Strategy document was developed in 2014 by the DOE, EPA and TDEC.



Oak Ridge Reservation Groundwater Strategy map showing four subareas of groundwater study (Map courtesy of DOE)

The objectives of the ORR groundwater strategy were:

- to assess potential threats to off-site public health and the environment due to groundwater contamination from sources on the ORR, and
- to aid in selection of remedial actions.

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Assessment of Groundwater :

Phase I of the Remedial Site Evaluation for offsite groundwater study was completed with sampling performed by both DOE and TDEC.

Implementation of the Phase II depends on the findings of the Remedial Site Evaluation Report to be issued by DOE by October 31, 2017.

TDEC continues its focus on additional offsite groundwater sampling and is in the process of obtaining background data which was identified as a weakness to understanding the groundwater quality downstream from the ORR.

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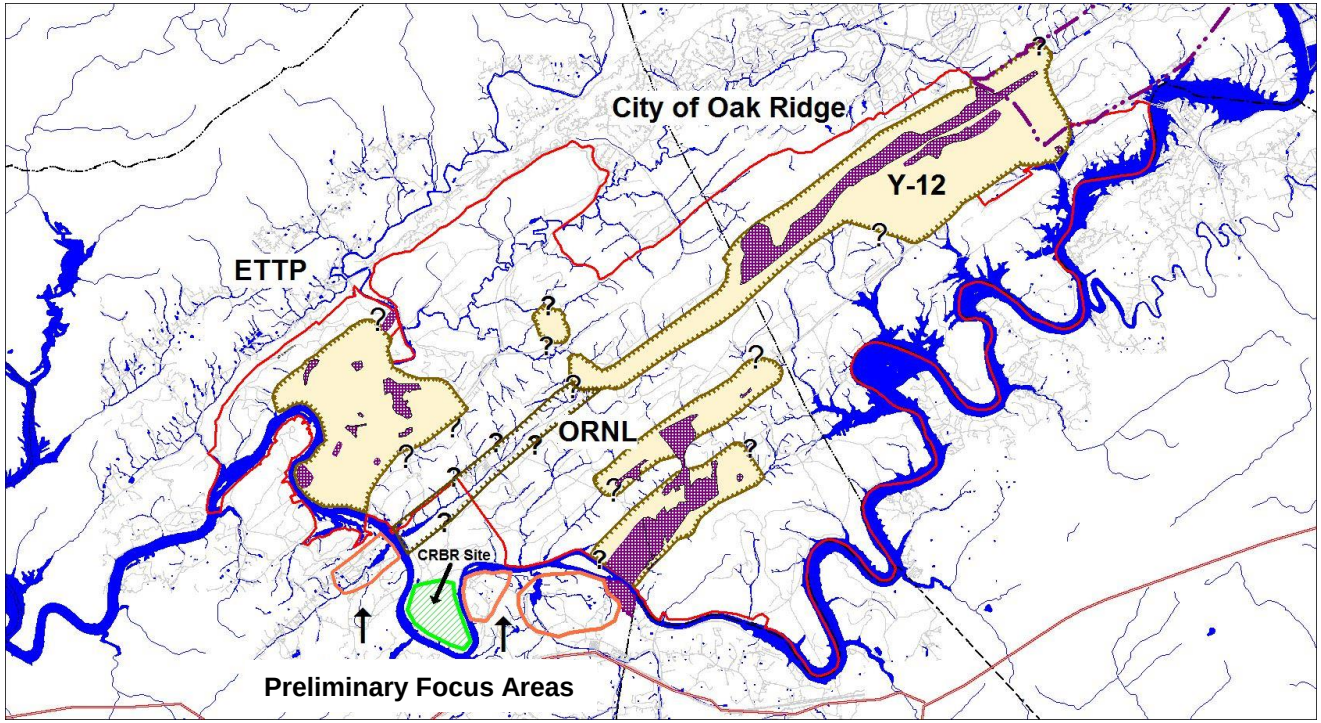
Assessment of Groundwater :



TDEC supports DOE's continued development of a regional groundwater model.

TDEC also sees a need for investigation of the extent of the groundwater plumes, and more aggressive implementation of groundwater remedies following successful treatability studies.

Known and suspected contaminated groundwater areas
Purple areas from DOE 2004 RER and from Dick Ketelle (UT-B,UCOR)
Clinch River Breeder Reactor site - TVA has drilled monitoring wells for an aquifer test

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Assessment of Groundwater :

TDEC continues to work with DOE and EPA to achieve a balanced approach to the remediation of the Oak Ridge Reservation.

Continued input from the SSAB on the ORR groundwater strategy and these projects will:

- maintain public awareness concerning
- the need to better understand and evaluate
- the nature and extent of ORR groundwater contamination.

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Mercury Remediation:

- Releases of mercury from the Y -12 National Security Complex continue to exceed State of Tennessee and EPA water quality criteria.
- TDEC and EPA approved Amendment to the Record of Decision for Phase I Interim Source Control Actions in the Upper East Fork Poplar Creek Characterization Area.
- This modification includes the construction and operation of a new water treatment facility at Outfall 200 to further reduce mercury discharges from the Y-12 National Security Complex to UEFPC surface water.

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Mercury Remediation:

- The Outfall 200 water treatment plant needs to be operating prior to the commencement of the Decontamination and Decommissioning (D&D) of Beta 4, Alpha 5, and Alpha 4 in order to capture as much mercury discharge from those sites as possible.

- Because mercury is a principal threat waste, plans and decisions on how the West End Mercury Area D&D is conducted is extremely important.

- Input from SSAB on this project and strategies for mercury waste management would increase public awareness of the nature of the mercury problem and the path forward for mercury remediation.

Recoup of Challenges & Issues

Consistent annual funding required for the continuous and effective cleanup of the DOE Oak Ridge Reservation

- Future disposal for the Environmental Management generated waste – compliant/cost effective; volume reduction; offsite vs. onsite
- Processing and Disposition of Transuranic (TRU) waste – the highest levels of risk to the public and the environment
- Groundwater – need of more aggressive implementation of groundwater remedies and better understanding of complicated hydrogeology
- Mercury Remediation – prevention of releases during D&D activities, recovery/treatment/disposal

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Questions?

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