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STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DOE OVERSIGHT DIVISION
761 EMORY VALLEY ROAD
OAK RIDGE, TENNESSEE 37830-7072

August 26, 2013

Mr. John Michael Japp
Federal Facility Agreement Manager
Department of Energy
Oak Ridge Operations Office
P.O. Box 2001
Oak Ridge, Tennessee 37831-8540

Dear Mr. Japp

TDEC Comment Letter
Strategic Plan for Mercury Remediation at the Y-12 National Security Complex Oak Ridge, Tennessee (DOE/OR/01-2605&D1)

The Tennessee Department of Environment and Conservation (TDEC) has reviewed the above referenced document pursuant to the Federal Facility Agreement for the Oak Ridge Reservation. Further, subsequent to receiving this document, DOE-EM hosted a Mercury Workshop on Tuesday August 13, 2013 for discussion and exchange of information between DOE, EPA and TDEC and on Friday August 23, 2003, DOE-EM hosted a teleconference for the CH2MHill design team and DOE-EM to further discuss the Outfall (OF) 200 treatment plant designs. We appreciate DOE hosting this workshop and teleconference and pulling together subject matter experts for these important topics. Several clarifications from the workshop and teleconference are also included in these general comments to the mercury strategy;

General Comments:

1. TDEC agrees with conclusions from the Mercury Workshop and the OF 200 conference call that the Strategic Plan for Mercury Remediation at the Y-12 National Security Complex Oak Ridge, Tennessee (Mercury Strategy) needs to be a comprehensive strategy to address mercury at and originating from the Y-12 National Security Complex. This comprehensive approach would include Y-12, downstream of Y-12, and Bear Creek. At the Mercury Workshop we were also pleased that DOE embraces an adaptive management approach to addressing mercury pollution with the goal of reducing mercury concentrations in fish and look forward to the adaptive management approach being included in Mercury Strategy. The adaptive management approach prior to the final Records of Decision for East Fork Poplar Creek will allow identifying actions that may

help reduce concentrations of mercury in fish, implementing selected actions, and evaluating results. For example, we were encouraged with discussion that the OF 200 treatment plant discharge would be located approximately 1200 feet downstream to bypass some of the most mercury contaminated sediment and there was discussion of ways to prevent additional mercury mobilization from these sediments under an adaptive approach. We also recognize that when utilizing an adaptive management approach conditions may change through time leading to a need to update the Mercury Strategy when agreed by DOE, EPA, and TDEC. We also recognize and support recent and/or ongoing studies of Lower East Fork Poplar Creek through the City of Oak Ridge and Upper East Fork Poplar Creek through Y-12 to better understand these areas and suggest the Mercury Strategy include an ongoing emphasis to better understand the system so we can jointly make better decisions related to mercury pollution and cleanup.

2. During a teleconference on August 23, DOE requested TDEC clarify its support for the OF 200 treatment plant. TDEC supports establishing adequate treatment of water collected in the storm sewer that drains the West End Mercury Area at OF 200. That being said, TDEC still has concerns whether the proposed treatment plant is adequate. TDEC is evaluating this proposed treatment plant from two different perspectives. The first perspective is the effect of the proposed treatment on existing water quality and compliance with the Tennessee Water Quality Control Act and regulations promulgated thereunder. The second perspective is whether the proposed treatment plant (1) will serve as a backstop to prevent flushing mercury downstream during decommissioning and demolition (D&D) of mercury contaminated facilities and related cleanup and (2) has sufficient treatment capacity to maintain ongoing treatment demands and to meter in collected mercury polluted storm water during D&D and cleanup activities. This is further specified below:

    a. TDEC still has questions as to the justification for the selected technology. Discussion during the August 23rd teleconference helped. However, there are still concerns and TDEC recommends that DOE establish a flow proportional pilot project that mimics storm flows and evaluates both wet and dry seasons (e.g. plan for 12 months) to validate the selected design.

    b. The proposed approach is only a portion of the recommended design and our impression is that what was included and left out was more a function of funding and not technically driven. For example, discussion at the Mercury Workshop on storm water tanks focused on cost instead of whether storm water tanks are needed or not. There was a discussion as to limitations to redirecting clean storm water due to constraints at Y-12. The discussion should include why items were included or removed and which items would need upgrading if the plant were scaled up to treat larger flows or if additional treatment is needed to consistently achieve needed effluent concentrations.

c. The OF 200 treatment plant is proposed to be scaleable both related to flow and concentration. With the proposed design estimated to treat 55% of water volume and remove 52% of the mercury load from a heavy rainfall year (e.g. 2003) it does not appear adequate for either a backstop during D&D and cleanup or to meter in storm water collected by enhanced best management practices during D&D and cleanup. The strategy needs a comprehensive plan of well-defined phases as to when and how decisions will be made to scale the treatment plant to either treat larger flow or to add polishing to reduce effluent concentrations.

d. The treatment plant should be based on a flow basis that includes a portion of the storm water and a DOE take away from the August 23rd conference call was to reevaluate the treatment plant to treat a portion of the storm water. At the Mercury Workshop data indicating a first flush that would capture a significant portion of the dissolved and suspended load was discussed and under an adaptive management approach, we suggest evaluating capturing and treating this first flush and then evaluating results. Then if additional capacity is needed to provide the backstop during D&D and cleanup modifications could be made during pre-D&D activities.

3. The goal of the strategy for mercury remediation should be that East Fork Poplar Creek meet the water quality standard for mercury at Station 17, which is 51 parts per trillion (ppt) to comply with State law and rules. It is the State's expectation that the *Record of Decision for Phase I Interim Source Control Actions in the Upper East Fork Poplar Creek Characterization Area, Oak Ridge, Tennessee* be updated to reflect this new goal. This goal is applicable to the proposed treatment facility at Outfall 200 and to other remediation activities at Y-12. We recognize that a phased, staged, or adaptive management approach may be necessary to meet the goal at Station 17. However, at both the Mercury Workshop and during the OF 200 teleconference, TDEC specified that the Strategic Plan for Mercury Remediation at the Y-12 National Security Complex Oak Ridge, Tennessee (Mercury Strategy) should include a more comprehensive plan that specifies steps for the goal to ultimately be met.

4. In addition to onsite remediation issues within the Y-12 plant, the strategy should address mercury contamination in Lower East Fork Poplar Creek. Efforts to eliminate mercury loading from headwaters should be correlated to actions proposed for the entire watershed. Emphasis should remain on defining sources of mercury load and factors affecting bioaccumulation, to include further field and laboratory studies culminating in a quantitative watershed model. The ultimate goal of the strategy should be the reduction of mercury in fish tissue in Lower East Fork Poplar Creek to levels below 0.3 mg/kg.

5. Given sampling results show elevated levels of mercury in fish tissue from Bear Creek; the strategy should be expanded to address mercury in Bear Creek Valley in regard to both the existing landfill and future cells.

6. As part of the general strategy, the Outfall 200 project must be designed to treat storm water, not just base flow to accomplish the stated goal in the Strategic Plan of removing mercury from contact water generated during future demolition activities. It is understood that storm water will vary depending on the event, but the plan should address – even in a phased approach- capture and treatment of quantities of stormwater in light of the collected data showing the high levels of mercury flux during storm events. It would also address the mercury in storm flows under current conditions, which data collected have shown contain significant concentrations of mercury.

7. The general strategy should also include a more detailed discussion of stormwater management and the role this will play in reducing mercury discharges to the environment.

8. The strategy should include an adaptive management approach to address the potential for interim actions at Y-12 and elsewhere prior to Final Records of Decision that might yield decreased concentrations of mercury in fish tissue.

9. Because buildings to be demolished have standing groundwater in their basements, the strategy should include the capture and treatment/disposal of these concentrated sources of mercury, including free-phase mercury and/or groundwater encountered in excavations and stormwater captured during demolition. TDEC agrees with EPA's comment that these pollutants should be handled as Principal Threat Wastes.

10. The document should present the CERCLA strategy and milestone schedule to achieve the objective for the Outfall 200 project. A focused feasibility study/proposed plan and accompanying interim record of decision should be submitted for regulatory review, comment and approval, prior to design of the treatment facility.

11. The Mercury Strategy references that an enormous quantity of waste debris and soil will be generated with the demolition and disposition of approximately 1.8 million square feet of facilities contaminated with radioisotopes and mercury and accompanying soils. A potentially large portion of this debris and soils will be subject to land disposal restrictions for mercury. This strategy assumes the majority of the low-level waste (LLW) and mixed (LLW and hazardous) waste resulting from future demolition and remediation activities will be placed at the on-site CERCLA facility, the Environmental Management Waste Management Facility (EMWMF), or a successor onsite CERCLA landfill (EMDF) jointly referred to as EMWMF in the strategy. Non-hazardous, non-radioactive waste generated during future demolition and remediation activities are slated

to be disposed of at ORR Industrial Landfills (ORR Landfills), which the strategy assumes to have sufficient capacity throughout the Y-12 cleanup efforts. At this time, mercury treatment of debris is regulatory limited to either micro or macroencapsulation. The strategy referenced a pursuit of alternative mercury treatment technologies and subsequent land disposal restrictions for mercury contaminated matrices. This would take demonstration and approval by EPA RCRA. The strategy references land disposal restriction concentrations of mercury at either TCLP < 0.2 mg/L or TCLP <0.025 mg/L depending on the type of treatment. (Please see Mercury Strategy Table 2 and Figure 9). Recreation use water quality criteria for mercury is 51 ppt. Fish in Bear Creek downstream of EMWMF already contain mercury at concentrations above the fish advisory level. This problem achieving recreational use criteria is without West End Mercury Area waste being disposed at the EMWMF facilities. The Mercury Strategy should recognize that waste disposal has to be performed in a manner that will not cause additional degradation of Bear Creek.

Specific comments include, but may not be limited to:

1. Section 1 – Introduction:
   Revise the "Key factors and goals" which guided the development of this strategy to include complying with TN water quality standards.

2. Section 2.3 Regulatory Framework: It is recognized that the cleanup goal from the Phase I ROD is 200 ppt at Station 17, but the ultimate goal will be set at 51 ppt to match TN's published WQC.

3. Section 2.3.3 – Clean Water Act: - Agree that wording accurately describes the NPDES appeal, but it still should be stated that blending a legacy pollutant with process/cooling waters must be permitted.

4. Section 3 – Path Forward – Strategic Planning: "This facility [MTF] will provide effective relief regarding mercury loading" – It has yet to be determined if this facility will be able to achieve the goals stated here.

5. Section 3.1 – Strategies to Control Mercury Release – Water Management: – Water management must include 1) diversion of clean stormwater around remediation projects to the max, 2) dealing with contaminated stormwater from rainfall onto structures/areas during remediation, and 3) handling contaminated groundwater encountered during removal actions.

6. Section 3.1 – "Capture and Treat" – Disagree with label as an "interim action", implying a short-term nature. It is a certainty that the OF200 MTF must be operated and maintained long-term (and expanded to capture storm event loadings). DOE must be "capture-and-treat" concentrated pollutants in water nearest the source removal actions, i.e., stormwater and contaminated groundwater. The installation of manhole traps should be expanded to multiple other locations prior to startup of demolition.

7. Section 3.3 – Endstates – An omitted endstate is that WQ will comply with TN WQC.

8. Section 3.4.2 – Outfall 200 Mercury Treatment Facility – "based on a design criteria of...obtaining a mercury concentration in the effluent of at most 200ppt". The goal of the strategy for mercury remediation should be that East Fork Poplar Creek meet the water quality standard for mercury at Station 17, which is 51 parts per trillion (ppt) to comply with State law and rules.

9. Section 3.4.3.3. Building Demolition – "Building demolition includes activities such as:" – this ignores the fact that contaminated stormwater will be generated during demolition [similar challenges arose at ETTP and Bldg. K-33 with Hex Chrome issues]. These are huge impervious structures generating tremendous amounts of contaminated stormwater exposed to mercury. DOE's strategy must recognize that controls for "capture-and-treat" contaminated stormwater are necessary for these demolition activities.

10. Section 3.5 – TDEC's position is that free-phase mercury found in creek sediments should be considered Principal Threat Waste exactly the same as free-phase mercury found in utility trenches or beneath WEMA buildings.

11. Section 3.6 – Regulatory Strategy –"Planning and sequencing of ...projects was completed based on a regulatory strategy that is unchanged in this strategy (DOE 2008b) – The goal of the strategy for mercury remediation should be that East Fork Poplar Creek meet the water quality standard for mercury at Station 17, which is 51 parts per trillion (ppt) to comply with State law and rules.

12. Section 3.7 – Risks and Opportunities – "a final evaluation of efforts that may be needed to influence fish tissue mercury concentrations cannot be made until after source removal is complete." – Disagree, evaluation of fish tissue levels can be an ongoing process to monitor effectiveness of current and future practices and possibly influence future methodologies of remediation.

13. Section 5 CONCLUSIONS – "...actions that have advanced remediation efforts" says WEMA storm cleanout "has resulted in a significant decrease" – Factually Not True – DOE reported at the Feb project team meeting that FY 2013 OF200 loadings have returned "to levels observed prior to pre-storm drain cleanout project" - 6.8 grams/day, as compared to 6.2 g/d in 2011. Point is, a huge pollution problem remains - and is worsened between OF200 and Station 17 by sediment contribution.

Questions or comments concerning the contents of this letter should be directed to Curt Myers at the above address or by phone at (865) 481-0995.

Sincerely

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