Department of Energy
Washington, DC 20585
October 19, 2023

Ms. Amy S. Fitzgerald
Vice Chair
Environmental Management Advisory Board
1000 Independence Ave., SW.
Washington, DC 20585

Dear Ms. Fitzgerald:

Thank you for your May 22, 2023, letter transmitting the Environmental Management Advisory Board (EMAB) Report titled, *Focused Review of the Research and Development Roadmap for Hanford Tank Waste Mission Acceleration.* The Office of Environmental Management (EM) welcomes EMAB's advice and recommendations on the EM Research and Development (R&D) program. I appreciate your dedicated work and quick response on this particular topic, which I requested on March 28, 2023.

As outlined in the enclosure, both EM headquarters and the Hanford Site have considered EMAB's recommendations and have started determining how to implement them to most effectively improve our R&D efforts to accelerate the Hanford tank waste mission. Some of your recommendations were already incorporated into the *Hanford Tank Waste Cleanup Research & Development, DOE National Laboratory Program Announcement Number: LAB 23-EM001* that EM issued on June 7, 2023.

Thank you again for your continued focus and drive to support the important work of the EM program. I look forward to further collaboration with EMAB in the future on initiatives to improve the EM R&D program in general and on the implementation of the R&D Roadmap, in particular.

If you have any questions, please contact me or Dr. Ming Zhu, Senior Advisor for Laboratory Policy, at (301) 903-9240 or Ming.Zhu@em.doe.gov.

Sincerely,

William I. White
Senior Advisor for Environmental Management

Enclosure

cc: Kristen Ellis, EM-4 (Acting)
Ming Zhu, EM LPO
Kelly Snyder, EM-4.32

Enclosure

EM Response to EMAB Recommendations

Recommendation 1: Implementation of grouting and offsite disposal of Hanford's supplemental LAW should be a high priority.

Response: Concur. The Office of Environmental Management (EM) will take into consideration the recommendations of the Federally Funded Research and Development Center (FFRDC) team and the National Academies on the National Defense Authorization Act (NDAA) Section 3125 study and look at multiple pathways for grouting and offsite disposal, to inform our discussions with the State of Washington, Congress, tribal nations, and stakeholders about the best option for treating the supplemental low-activity waste (LAW) at Hanford.

Recommendation 2: Maximize efforts to remove low-level waste from high-level waste to increase efficiency and reduce cost.

Response: Concur. EM issued two Federal Register Notices related to the High-Level Waste (HLW) Interpretation in December 2021: https://www.energy.gov/em/high-level-radioactive-waste-hlw-interpretation. At the Hanford Site, EM is conducting a Test Bed Initiative to demonstrate the feasibility of options for retrieval of 2,000 gallons of tank waste from Tank SY-101 and treatment of the low activity portion of the tank waste: https://www.hanford.gov/page.cfm/TestBedInitiative.

Recommendation 3: Continue to seek out-of-the-box disruptive technologies to advance clean up. Where possible, spent fuel recycling should be considered to support other energy and national security missions.

Response: Concur with the recommendation to continue to seek "high impact" technologies to advance clean up. The EM-1 approved charter directs this effort "to continually identify research and development (R&D) opportunities to provide cutting-edge technologies that can be used for improving efficiency, along with cost savings and schedule acceleration for the Hanford tank waste cleanup program." We will coordinate with other Departmental programs should any future spent fuel recycling initiatives develop.

Recommendation 4: Around the time that the B-102 leak was announced, there were some that suggested that DOE should look at the combination of tank-side pretreatment and grouting (for offsite disposal) to quickly respond to emergent leaking tanks. EMAB reviewers note that R&D around that concept could be worthwhile.

Response: Concur. EM will take this recommendation into consideration and look for R&D investment opportunities to evaluate the benefits of the combination of tank-side pretreatment and grouting.

Recommendation 5: Reviewers appreciate that the "Risk-based waste retrieval

sequencing" explains that DOE would "work with the regulators and stakeholders" to prioritize sequencing and closures to address the highest risk to the environment. These risk-based decisions that include stakeholder engagement should remain in the "High" priority category, if not in the "Top" priority category. It will be critical that DOE have meaningful stakeholder agreement, engagement and discussion that includes evaluation of risks and ROI information.

Response: Concur. Stakeholder engagement remains a guiding principle for EM in the implementation of the R&D Roadmap. EM is considering holding annual public workshops to provide status on Roadmap projects and solicit feedback from stakeholders. Information received will be taken into account in setting future R&D priorities.

Recommendation 6: WRT&C: Consider raising TC-3 up to the first High priority (second item in the table). The reason is because of the huge importance of working with regulators and stakeholders, which is the focus of this research area. Also, the cost is lower than WR&T-3b & 10a and WR&T-7b above it, so it should be possible to slip it in. Also, the regulator and stakeholder have potential carryover for work on other research areas.

Response: Concur. The recommended change in priority is incorporated into the *Hanford Tank Waste Cleanup Research & Development, DOE National Laboratory Program Announcement Number: LAB 23-EM001* that EM issued on June 7, 2023.

Recommendation 7: WI&D: Consider moving DL-3 ahead of IM-4 in the table. They are both Top priorities with similar schedule acceleration and ROI. However, it appears that DL-3 might have the added benefit of greater utility for ongoing Hanford Tank Waste management, and disposal efficiency throughout the EM network.

Response: Concur. The recommended change in priority is incorporated into the *Hanford Tank Waste Cleanup Research & Development, DOE National Laboratory Program Announcement Number: LAB 23-EM001* that EM issued on June 7, 2023.

Recommendation 8: SWT: Consider making SW-1 a Top rather than High priority. The reason is that it appears SW-1 could have considerable synergy with IM-13, and thus provide a multiplier effect between these research areas.

Response: Concur. The recommended change in priority is incorporated into the *Hanford Tank Waste Cleanup Research & Development, DOE National Laboratory Program Announcement Number: LAB 23-EM001* that EM issued on June 7, 2023.

Recommendation 9: ME: Consider making Hanford-1 a Top rather than High priority. The reason is that it provides significant synergy with the overall R&D Roadmap at a fairly low cost and with relatively quick results. It also has the potential to assist EM dialogue with regulators, stakeholders, and Congress about the R&D Roadmap as it proceeds.

Response: Concur. The recommended change in priority is incorporated into the *Hanford Tank Waste Cleanup Research & Development, DOE National Laboratory Program Announcement Number: LAB 23-EM001* that EM issued on June 7, 2023.

Recommendation 10: EMAB recommends the development of an implementation timetable for the R&D Roadmap.

Response: Concur. EM issued the *Hanford Tank Waste Cleanup Research & Development, DOE National Laboratory Program Announcement Number: LAB 23-EM001* on June 7, 2023.

Recommendation 11: The R&D Roadmap recognizes that the Hanford tank waste mission is not only technical, but political, budgetary, and regulatory in nature, as illustrated in the statement, "Alternate technical approaches may be beneficial without increasing the technical risk but may require significant regulatory negotiations stakeholder engagement and regulatory document changes in order for the technology to be implemented." A recurrent theme among reviewers is the need for ongoing community and stakeholder engagement that shares information, particularly about levels of risk and regulatory requirements. Such engagement should remain a high priority throughout the R&D Roadmap process. Stakeholders, broadly defined, include Congress, state and local governments, Tribal members, regulators, workers, unions, special-interest groups, and citizens, which have demonstrated over the last several decades their ability to directly impact the Hanford tank waste mission.

Response: Concur. Please see the response to Recommendation 5.

Recommendation 12: Several useful means of communication include public forums that the community can attend, in addition to regular meetings with local officials in the community and at DOE headquarters. Communicating challenges to local government officials is essential, as it allows local government officials to be transparent with constituents. EMAB views as critical that stakeholders be involved in such decisions rather than a "decide-and-inform" framework. If stakeholders are included in the decision-making process, it is more likely that they will accept the outcome because they had a chance to shape that outcome.

Response: Concur. Please see the response to Recommendation 5.

Recommendation 13: If alternate approaches are pursued, local governments should be included in ongoing discussions to build trust and build community buy-in. This type of engagement as early as possible will be key to ensuring smooth implementation. "Communicate successes and challenges across the Hanford Site Clean-Up program with a focus on building consensus with internal and key external stakeholders and regulators." The potential of new missions that could leverage and lessen or reuse waste for other applications should also be considered as a pathway to accelerate clean up and support other energy needs.

Response: Concur. Please see the response to Recommendation 5.

Recommendation 14: The R&D Roadmap demonstrates the vital importance of research to accelerate the Hanford tank waste mission in a more effective manner. EM should make this connection between mission success and R&D progress even more explicit so that the R&D Roadmap becomes an inherent and expected part of the Hanford tank waste funding request each year. It is important that R&D investments are followed through and supported with reinvestment if the technological measures are deemed critical to ensure success. Regulators, stakeholders, and Congress must come to understand that Hanford success is dependent on continued and predictable support for the R&D Roadmap research areas.

Response: Concur. Please see the response to Recommendation 5.

Recommendation 15: The R&D Roadmap has taken great strides to organize the tank waste technical challenges in an understandable manner. Yet the technical issues are still extremely complex, usually interrelated, and impossible to reduce to simple three bullet slides or soundbites. EMAB suggests that EM continue the steps taken with the railroad station analogy and explore further analogies and techniques to make the tank waste technical issues more readily understood by the broad range of stakeholders. EMAB believes investment in these communication enhancements will more than pay their way with better and faster understanding of the issues and decisions.

Response: Concur. EM will use lessons learned from recent efforts such as the FFRDC NDAA Section 3125 study of the supplemental LAW treatment to continually look for ways to improve communication of complex technical and risk information in the implementation of the R&D Roadmap.

Recommendation 16: There is an acknowledgement in the executive summary that the reinterpretation of the high-level waste definition has not been able to be implemented at Hanford. While the technical solutions proposed in the Roadmap assume that the HLW interpretation is not implemented, discussions surrounding the HLW interpretation could influence several of the priority areas for the R&D Roadmap. As the Energy Communities Alliance notes, "…there are several advantages to using the HLW interpretation at Hanford that can decrease costs and accelerate cleanup schedules. First, it requires no change in law. Second, Section 3116 and WIR are not fully risk-based because they unnecessarily require radioactive radionuclides to be removed. Additional treatment of waste that already meets existing legal, regulatory, and technical requirements for safe transportation and disposal offsite or onsite is unnecessarily expensive and inefficient, with no added benefit to safety or human health." It may make sense to do a more detailed analysis on the opportunities/process associated with implementing the HLW interpretation, especially at Hanford.

Response: Partially concur. The Department recognizes that we have a responsibility to evaluate treatment and disposal options that could accelerate current schedules, reduce project risks, add flexibility, and save limited resources — without sacrificing safety or

effectiveness. We have a responsibility to not only evaluate these options at the appropriate time, but to continue collaborating with regulators, states, stakeholders, and Tribal Nations on the ways these options can be deployed and how cleanup plans can be updated to reflect the best approaches available.