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Department of Ecology
NWP - Richland

March 1, 2020

Washington State Department of Ecology
Attn: Ms. Daina McFadden
3100 Port of Benton Blvd
Richland WA 99354

Dear Ms. McFadden:

I am writing in response to the public comment period for proposed modifications to the Hanford Dangerous Waste Permit to allow operations of WTP Low Activity Waste Vitrification and Effluent Management Facilities. The modification describes the planned operations, provides clarification between the baseline and DFLAW configurations, and adds details intended to ensure the operating permit is compliant with all dangerous waste regulations. A number of documents were provided for a public review period between February 10, 2020 to March 26, 2020.

1. I noticed the System Logic Description for the Low-Activity Waste Facility – LAW Stack Discharge (SDJ) System (SDJ) [24590-LAW-PER-J-19-001, Rev 0] does not include monitoring for ammonia. However, ammonia is present in the waste and ammonia is also added to the waste off-gas stream in the NO_x destruction equipment. There is always excess ammonia in the discharge from selective catalytic reduction, and an upset could make this a large concentration. Ammonia is a highly hazardous chemical. Why was an ammonia monitor omitted?
2. The System Logic Description for the Low-Activity Waste Facility – LAW Stack Discharge (SDJ) System (SDJ) [24590-LAW-PER-J-19-001, Rev 0] states that information on radionuclides is provided for process description purposes. But there is no information on radionuclides provided at all. Is there a monitor for tritium? For carbon-14? Alpha? Beta/Gamma? What monitoring and logic are performed for the dose-sensitive isotopes?
3. The System Logic Description for the Low-Activity Waste Facility – LAW Stack Discharge (SDJ) System (SDJ) [24590-LAW-PER-J-19-001, Rev 0] omits monitoring for the EMF stack. The EMF processes ammonia bearing waste. Is there a justification for not having a system logic or monitoring for EMF? DFLAW cannot operate without the EMF.
4. In the Response to Comments, Ecology committed to taking the necessary steps to ensure the permittees do not generate orphan waste. However, in order to feed DFLAW, the tank side cesium removal system will generate orphan, Cs-137 loaded ion exchange columns. Ecology should not approve this permit modification until there is a fully funded pathway for loaded ion-exchange column disposal. These decisions are inextricably linked and the ion exchange columns should not be ignored just because they

are not part of this particular permit modification. Hanford has one dangerous waste permit, and the parts must work together.

5. In the response to comments Ecology committed to sustained work to ensure the items in the LAW Design and Operability Report are appropriately managed and brought to closure. In a related action, Congress, in the GAO-IG Act of January 2019, required DOE to provide data on unresolved GAO and IG recommendations and their status as part of the FY 2020 Budget Request. Recommendations were required to be identified by specific name/subject.

DOE did not, however, provide the complete data in the FY2020 Congressional Budget Request, preferring to list only the report names, not the issues. See Volume 2, page 273 of the DOE Budget Justification¹. However, GAO provides a web page with individual open recommendations. Some of the unresolved recommendations apply to DFLAW at WTP. In particular, GAO lists unresolved recommendations² as:

Environmental Liabilities: DOE Would Benefit from Incorporating Risk-Informed Decision-Making into Its Cleanup Policy. Open Recommendations are:

“The Secretary of Energy should direct DOE's Office of Environmental Management to revise EM's 2017 cleanup policy to establish how the EM program and DOE sites should apply the essential elements of a risk-informed decision-making framework into their current decision-making requirements and guidance. (Recommendation 1)”

“The Secretary of Energy should direct DOE's Office of Environmental Management, in the development of a program management plan, to incorporate essential elements of risk-informed decision-making. (Recommendation 2)”

Hanford Waste Treatment Plant: DOE Needs to Take Further Actions to Address Weaknesses in Its Quality Assurance Program. Open Recommendations are:

“The Secretary of Energy should direct ORP to require the WTP contractor to determine the full extent to which [quality assurance] problems exist in all WTP structures, systems, and components.”

“The Secretary of Energy should direct ORP to use its authorities to stop work in areas where quality assurance problems are recurring until ORP's Quality Assurance Division can verify that the problems are corrected and will not recur.”

Of note is that GAO included the full extent of condition for all LAW facilities, not just

¹ See <https://www.energy.gov/sites/prod/files/2019/04/f61/doe-fy2020-budget-volume-2.pdf>.

² See <https://www.gao.gov/reports-testimonies/recommendations-database?priority=all&topic=all&agency=Department%20of%20Energy&subagency=all>

the 13 systems that were reviewed in the LAW Design and Operability Report. There are 13 more LAW systems that were not reviewed in the LAW D&O report that require review before startup. Closure actions from the existing LAW D&O Report have also not been verified as effective.

I would appreciate if Ecology would verify that GAO's WTP related recommendations including quality assurance and risk-based decision making process are fully resolved to GAO's satisfaction (not just the satisfaction of the DOE FPD). This should be done before allowing operations to begin for DFLAW. DOE should evaluate, before startup, the risks incurred by adding the EMF, by not processing HLW, by piling up cesium loaded ion exchange columns, and by making potential new bottlenecks out of the ETF brine and EMF bottoms.

I would appreciate if Ecology will also verify that WTP related recommendations of the DOE OIG are resolved, and corrective actions completed, before allowing operations for DFLAW. The DOE OIG's detailed open recommendations for DOE have been hidden from the public, but were required to be listed by law.

6. Drawings 24590-LAW-M6-ASX-00001002-001 and 24590-LAW-M6-ASX-00002002-001 have notes that say the ASX Sample System Sprinkler Manifold will not be used and has been abandoned in place. Why?
7. Drawings 24590-LAW-M6-ASX-00001002-001 and 24590-LAW-M6-ASX-00002002-001 have notes that say that "Bechtel lines" will be free draining unless otherwise noted. Are there non-Bechtel lines that are not free draining? Could those lines accumulate liquids/solids/doses?
8. The IQRPE report contains about 9 references to a drawing that is at Revision A (e.g., floor slab design). All letter revisions should be made final revisions, at least Rev 0, and checked to see if the update changes the IQPRE results, before the facility is allowed to operate.
9. The Statement of Basis states that the Direct Feed LAW configuration, will allow mixed waste to be transferred directly from the Low-Activity Waste Pretreatment System (LAWPS) to the LAW Facility, bypassing the PT Facility. Ecology should therefore ensure that the LAWPS processes are safe. For example, Letter 19-ECD-0079 (October 31, 2019 Supplemental LAWPS Design Information) contains additional information for the LAWPS process. The attachment to this letter says that in the first phase of LAWPS the tank side cesium removal unit processes waste at a nominal flow of 5 gallons per minute, but to do this, actually circulates waste around and around through hose-in-hose transfer lines in and out of a DST at a rate of about 56.8 gpm (see page 3258 of the file, H-14-111242). This is a continuous stream of high level waste going in and out of a DST in hose in hose lines. The above ground hose in hose lines may not have been designed for the constant use and wear. Ecology should check to see if an adequate risk evaluation was performed. Every time DOE plays with the waste or adds new steps, new exposures occur for the operators, and potential new leak paths are established. It does not make

sense to excuse these items because they are “not part of the current permit modification.” Systems Engineering and quality assurance principles require that the integrated interfaces of the designs and the parts of the permit, be evaluated for unintended risks.

10. Lastly, DOE has established a flowsheet with a known risk that ETF won't be able to process effluent fast enough, and a known risk that the EMF bottoms could be too corrosive to be processed in the LAW melters. DOE had opportunity to upgrade ETF but failed to do so. DOE had opportunity to make a pilot plant for EMF but failed to do so. Ecology should under no circumstances, allow DOE to operate WTP DFLAW and call it operational, if it requires accumulation of orphan liquid effluents in drums. That is not a successful flow sheet. Ecology should under no circumstances allow DOE to transfer the risk of these liquids into the City of Richland for treatment in the Perma-Fix Plant, which is much closer to the water table than the 200 Areas. Due to “fast track design-build” the WTP has been built as a full-scale R&D project, so that the mistakes made are at full scale and enormous cost. Taxpayers should not have the added burden of importing the consequent hazardous waste products and risks into town.

Thank you for considering these comments.