STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
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October 5, 2021 21-NWP-153

Brian T. Vance, Manager
Richland Operations Office
United States Department of Energy
PO Box 550, MSIN: H5-30
Richland, Washington 99352

Scott Sax, President and Project Manager
Central Plateau Cleanup Company LLC
PO Box 1464, MSIN: A7-01
Richland, Washington 99352

Re: Project Activities to Support Operational Readiness of the Integrated Disposal Facility and *Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, Revision 8C, for the Treatment, Storage and Disposal of Dangerous Waste* (Site-wide Permit) Part III, Operating Unit Group 11, Integrated Disposal Facility (IDF Permit), WA7890008967, Permit Conditions and Requirements

References: See page 4

Dear Brian T. Vance and Scott Sax:

The Department of Ecology(Ecology) staff have been working diligently with the United States Department of Energy and Central Plateau Cleanup Company (Permittees) to process a permit modification request (PMR) to bring the IDF to operational status in support of the Direct Feed Low-Activity Waste (DFLAW) start-up schedule. There are requirements listed in Washington Administrative Code (WAC) 173-303, *Dangerous Waste Regulations*, for this process, and Ecology must follow the procedures listed in WAC 173-303-830, "Permit changes," to accomplish approval of this modification.

The IDF Permit is presently a construction permit supporting the pre-active life of the facility; completion of Permit Modification 8C.2020.1D, is necessary for the IDF Permit to transition to an active life permit to begin operations and maintenance at the facility. The Permittees must continue to abide by the currently approved permit requirements and conditions while this transition to an active life operating facility occurs.

Work Being Performed on the Leachate Collection System (LCT) at the IDF:

In parallel to the permitting work that is taking place for the IDF to go operational, the Permittees are performing the following LCT activities at the IDF:

- Reconfiguration of piping added between the storage units.
- Replacement of floating covers to dome covers.
- Replacement of the primary liner and drainage net.

Ecology has been notified through meetings and communications that the LCT primary liner is being replaced under the Part I Permit Condition of the Site-wide Permit, I.E.7, Proper Operation and Maintenance (Reference 1). Because the IDF Permit is not yet an active life operations and maintenance permit, Site-wide Permit Part I Standard Condition I.E.7 does not apply to work presently being performed at the facility.

Existing IDF permit conditions apply to all of the work listed above, and Ecology requires that work being performed at the IDF will follow requirements in accordance with the IDF permit conditions currently in place. (Note: A listing of these permit conditions from the current IDF permit relating to design and construction of the tank systems is included as an enclosure to this letter).

On April 19, 2021, Ecology received informal communication from Randy Havenor, Re: *"Leachate Liner Test Results"* (Reference 2). This communication informed Ecology of LCT primary liners inspections (visual inspection for degradation; destructive examination for material and weld tensile strengths; and tightness test for system leakage). The visual inspection revealed the occurrence of numerous holes ("100s of holes"). The destructive examination resulted in the tensile tests not fully passing on either tank. The tightness test was not performed as the need for substantial repair or replacement was obvious to the inspector without that portion of the test being performed. The professional opinion of the liner inspector recommended replacing the liners as opposed to attempting repairs.

The email also stated that the inspector observed the secondary liner where practical and found no concerns in either tank. The email communicated to Ecology that the inspector concluded the secondary liner was in great shape, and no inspection of the secondary liner was performed.
The email stated that the Permittees were:

- Gathering information (e.g., cost data, material and crew availability) to replace the primary liner in both tanks.
- Conducting the testing necessary to confirm the new liners will meet operational requirements.
- Engaging with the liner vendors to explore lessons learned within the liner industry and locally to find if a better performing (i.e., more protective) liner material is available that meets or exceeds IDF's specifications.
- May end up replacing with the liners with same like-and-kind (i.e., identical) material; but, evaluating opportunities is critical to long term success of IDF.

Ecology is concerned that to date we have not received information on the liner replacement as suggested above. Additional areas of concern include:

- Was there any indication that there were problems with the liners prior to the inspection (e.g., what caused the degradation of the liner, was there liquid in the secondary containment, did systems indicate the leak)?
- Documentation from any inspections of the secondary liner that might have been conducted after the secondary liners were reexposed, e.g., after the primary liner and drainage net were removed.

Required Submittals to Ecology:

LCT system design assessment and Independent, Qualified, Registered, Professional Engineer (IQRPE) certification (Permit Conditions III.11.C.2.a and III.11.C.2.b): Ecology expects that the information listed above and further detail will be contained in the design assessment in accordance with the required assessment described in WAC 173-303-640(3(a). Because the work being performed on the LCT is already underway at the IDF, Ecology requires that the design assessment to include the new dome covers and IQRPE certification be submitted to us within sixty (60) days of receipt of this letter.

Leachate tank installation inspection (Permit Condition III.11.D.1.c): A leachate tank installation inspection, prepared by an independent, qualified installation inspector or a professional IQRPE, must also be submitted to Ecology ninety (90) days prior to the IDF operation. As indicated in the permit condition, Ecology expects that the Permittees will notify us of all discrepancies identified during the inspection(s), and that the discrepancies will be remedied before operation of the LCTs.

Additional information in support of PMR C3-IDF-2021-01: This PMR adds the LCTs into the IDF permit as Miscellaneous Unit DWMUs and has been submitted to Ecology. Ecology awaits information to make the PMR complete and has continued with technical review. For information not already included in the October 1, 2021 submittal, we expect that any changes to chapters within the modification which change during completion of work or finalization of reporting to Ecology (such as any drawing updates or updates to Chapter 4) will be submitted to us for review of the modification.

The Permittees must submit information to Ecology in support of the permit requirements and conditions as stated in the enclosure. Ecology looks forward to working with you to answer questions that we have, receive more information on the replacement of the primary liner, and in resolving these issues in support of permitting the IDF.

If there are any questions, please contact Suzanne Dahl, Tank Waste Disposal Section Manager, at suzanne.dahl@ecy.wa.gov or (509) 539-3490.

Sincerely,

Stephanie Schleif

Stephanie Schleif
Deputy Program Manager
Nuclear Waste Program

dm/ag
Enclosure

cc: See page 4

References:

1. Email dated August 25, 2021, from D. Carter to R. Bullock and S. Dahl, Subject: "IDF LCT Liner Replacement Work"
2. Email dated April 19, 2021, from R. Havenor to G. Bishop, D. Carter, S. Dahl, F. Carleo, M. Jones, M. Kamal, G. Pyles, B. Stetter, S. Trine, and N. Ware, Subject: "Leachate Tank Liner Test Results"

cc electronic w/enc:

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Nina Menard, Ecology
John Price, Ecology
Stephanie Schleif, Ecology
Dan Thompson, Ecology
Nancy Ware, Ecology
Jerry Yokel, Ecology
Environmental Portal
Hanford Administrative Record
Hanford Facility Operating Record
CPCCo Correspondence Control
EPA Region 10 Hanford Field Office, Correspondence Control
HMIS Correspondence Control
USDOE-ORP Correspondence Control
USDOE-RL Correspondence Control

IDF Permit Conditions Relating to the Design and Construction of the Leachate Collection Tanks:

III.11.C.2 Design Reports

III.11.C.2.a New Tank Design Assessment Report

Permittees shall generate a written report in accordance with WAC 173-303-640(3)(a), providing the results of the LCT system design assessment. The report shall be reviewed and certified by an Independent Qualified Registered Professional Engineer (IQRPE)[1] in accordance with WAC-173-303-810(13)(a).

III.11.C.2.b Compliance Schedule

Permittees shall submit the LCT design assessment report to Ecology along with the IQRPE certification, prior to construction of any part of the tank system including ancillary equipment.

The requirements of the assessment report required by Permit Condition III.11.C.2.a are defined in WAC 173-303-640(3)(a).

Owners or operators of new tank systems or components must obtain (and for facilities that are pursuing or have obtained a final status permit, submit to the department, at time of submittal of Part B information) a written assessment, reviewed and certified by an independent, qualified registered professional engineer, in accordance with WAC 173-303-810 (13)(a), attesting that the tank system has sufficient structural integrity and is acceptable for the storing and treating of dangerous waste. The assessment must show that the foundation, structural support, seams, connections, and pressure controls (if applicable) are adequately designed and that the tank system has sufficient structural strength, compatibility with the waste(s) to be stored or treated, and corrosion protection to ensure that it will not collapse, rupture, or fail. This assessment (which will be used by the department to review and approve or disapprove the acceptability of the tank system design at facilities which are pursuing or have obtained a final status permit) must include, at a minimum, the following information:

(i) Design standard(s) according to which tank system(s) are constructed;

(ii) Dangerous characteristics of the waste(s) to be handled;

(iii) For new tank systems or components in which the external shell of a metal tank or any external metal component of the tank system will be in contact with the soil or with water, a determination by a corrosion expert of:

(A) Factors affecting the potential for corrosion, including but not limited to:

(I) Soil moisture content;

(II) Soil pH;

(III) Soil sulfides level;

(IV) Soil resistivity;

(V) Structure to soil potential;

(VI) Influence of nearby underground metal structures (e.g., piping);

(VII) Existence of stray electric current;

(VIII) Existing corrosion-protection measures (e.g., coating, cathodic protection); and

(B) The type and degree of external corrosion protection that are needed to ensure the integrity of the tank system during the use of the tank system or component, consisting of one or more of the following:

(I) Corrosion-resistant materials of construction such as special alloys, fiberglass reinforced plastic, etc.;

(II) Corrosion-resistant coating (such as epoxy, fiberglass, etc.,) with cathodic protection (e.g., impressed current or sacrificial anodes); and

(III) Electrical isolation devices such as insulating joints, flanges, etc.

Note: The practices described in the National Association of Corrosion Engineers (NACE) standard, "Recommended Practice (RP-02-85)—Control of External Corrosion on Metallic Buried, Partially Buried, or Submerged Liquid Storage Systems," and the American Petroleum Institute (API) Publication 1632, "Cathodic Protection of Underground Petroleum Storage Tanks and Piping Systems," may be used, where applicable, as guidelines in providing corrosion protection for tank systems.

(iv) For underground tank system components that are likely to be adversely affected by vehicular traffic, a determination of design or operational measures that will protect the tank system against potential damage; and

(v) Design considerations to ensure that:

(A) Tank foundations will maintain the load of a full tank;

(B) Tank systems will be anchored to prevent flotation or dislodgment where the tank system is either placed in a saturated zone, or is located less than five hundred feet from a fault which has had displacement in Holocene times; and

(C) Tank systems will withstand the effects of frost heave.

III.11.D.1.c Construction Inspection Reports

Permittees shall submit a report documenting the results of the leachate tank installation inspection. This report must be prepared by an independent, qualified installation inspector or a professional IQRPE either of whom is trained and experienced in the proper installation of tank systems or components. The Permittees will remedy all discrepancies before the tank system is placed in use. This report shall be submitted to Ecology 90 days prior to IDF operation and be included in the IDF Operating Record. [WAC 173-303-640(3)(h)].