



U.S. Department of Energy
Hanford Site

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April 7, 2021

21-ECD-001145

Apr 8, 2021

Department of Ecology
NWP - Richland

Mr. David Bowen, Program Manager
Nuclear Waste Program
Washington State Department of Ecology
3100 Port of Benton Boulevard
Richland, Washington 99354

Dear Mr. Bowen:

COMMENTS TO PROPOSED CLASS 3 PERMIT MODIFICATION 8C.2020.11D FOR THE
242-A EVAPORATOR

The attached comments are provided in response to the Washington State Department of Ecology letter 21-NWP-030, dated February 18, 2021, that provided the proposed permit modification 8C.2020.11D to Operating Unit Group 4, 242-A Evaporator, of the "Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, Revision 8C, for the Treatment, Storage and Disposal of Dangerous Waste." These comments are submitted as part of the 45-day comment period, which started February 22 and ends April 8, 2021.

If you have any questions, please contact us, or your staff may contact Chris Kemp, Director, Environmental Compliance Division, Office of River Protection, on (509) 373-0649.

Handwritten signature of Brian T. Vance.

Brian T. Vance
Manager
Office of River Protection

Handwritten signature of John R. Eschenberg.

John R. Eschenberg
President and Project Manager
Washington River Protection Solutions LLC

ECD:RLE

Attachment

cc: See page 2

cc w/attach:

J. Cantu, Ecology
D. McFadden, Ecology
^Operating Record (HMIS)
Administrative Record (T-2-6)
Environmental Portal
WRPS Correspondence

cc w/o attach:

J. Bell, NPT
R. Buck, Wanapum
A. S. Carlson, Ecology
L. Contreras, YN
S. L. Dahl, Ecology
D. Einan, EPA
J. L. Foster, WRPS
K. G. Hall, Ecology
J. T. Hamilton, WRPS
S. Lowe, Ecology
J. J. Lyon, Ecology
A. Mayenna, Ecology
N. Menard, Ecology
M. Murphy, CTUIR
A. G. Pomiak, Ecology
J. H. Temple, Ecology
S. A. Thompson, WRPS
E. J. Van Mason, WRPS
M. Woods, Oregon Energy

Attachment
21-ECD-001145

Comments to Proposed Class 3 Permit Modification 8C.2020.11D
for the 242-A Evaporator

(8 Pages Including Cover Sheet)

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Comment 1, Response to Comments. According to the response to comments O-2-8, the supporting documents contains a "Report on leak detection capability"; however, the report was not provided with the supporting documents. Did Ecology intend to provide *WTP/Evaporator Transfer System Hydraulic Analysis (RPP-CALC-62638)* with the supporting documents?

Comment 2, Response to Comments. Public Comments (1-4-1, I-4-2, I-5-1, I-7-1, I-8-1, O-1-4) commented to "Require Protective Leak Inspections: Ensure that the timing and rigor of leak detection inspections are not decreased by the permit modification."

The public commented on the frequency of inspections, and did not comment that additional leak detection equipment should be installed on the existing transfer line as suggested in Ecology's Response to these comments, which states: "*Ecology shares similar concerns with the public as to the adequacy of leak detection systems for the PC-5000/3"-WTP-002-M17 transfer lines.... The draft permit conditions were drafted in response to public comments and require USDOE to upgrade the leak detection systems for this line prior to use...."*

The assertion that additional leak detection equipment should be installed on these lines as a means to address public comments is a remedy that goes far beyond addressing the concerns expressed by the public.

Comment 3, Delete Proposed Permit Condition III.4.C.1: "The Permittees must upgrade the existing leak detection system for the PC-5000 and 3"-WTP-002-M17 lines to meet the requirements of Washington Administrative Code (WAC) 173-303-640(4)(c)(iii)."

This permit condition exceeds the scope of this permit modification (20-ECD-0032, July 8, 2020). The PC-5000 and 3"-WTP-002-M17 transfer line and associated leak detection system was determined to meet the requirements of WAC 173-303-640(4)(c)(iii), with Ecology issuance of the *Approval of the Proposed Class 2 Permit Modification 8C.2019.4F to the 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 4, 242-A Evaporator, WA 7890008967, (19-NWP-182*, November 12, 2019).

As stated in the Permit the 242-A Evaporator has used the PC-5000 transfer line to transfer process condensate to Liquid Effluent Retention Facility (LERF) Basin 43 since January 1998, during this time there have been no leaks to secondary containment or the environment to warrant installation of additional leak detection as proposed by this permit condition. Since 2007, the 242-A Evaporator Permit Chapter 4, Process Information contains a provision that allows use of an 'alternate' leak detection system consisting of visual observation of a sight glass at the end of the PC-5000 transfer line at LERF Catch Basin 242AI-43. The sight glass essentially provided for the same number of leak detectors as the single low-endpoint electronic detector; but with arguably less capability to detect a leak (the sight glass is only observed twice a day vs. the electronic detector that is monitored continuously). While this

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may not be a preferable method, the sight glass method is written into the Permit, and was deemed a compliant way of monitoring for leaks year after year by the compliance inspectors. The Permittees did not propose changes to this portion of the Permit for the PC-5000 transfer system, nor have the Permittees received a satisfactory explanation of Ecology's regulatory basis for why additional leak detection is needed for an established waste transfer system.

Restricting 242-A Evaporator process condensate transfers until upgrades to the PC-5000 leak detection is completed exceeds the scope of this modification (20-ECD-0032, July 8, 2020). The permit conditions should not go beyond what is considered to be an appropriate level of regulatory control. This level of control generally has been defined as that necessary to ensure compliance with applicable regulations and requirements. The PC-5000 transfer line between the 242-A Evaporator and LERF Catch Basin 242AL-43 has operated under the provisions Hanford Site-Wide Permit since January 1998, without incident. During this time there have been no leaks to secondary containment or a release to the environment from the PC-5000 transfer line. As such, the current 242-A Evaporator Permit is sufficient to protect human health and the environment.

The Permit and regulations include controls to insure the integrity of the combined PC-5000 and 3"-WTP-002-M17 waste transfer system and that it does not leak to be protective of human health and the environment. For example, WAC 173-303-640(3)(e) requires tightness testing prior to placing the combined PC-5000 and 3"-WTP-002-M17 waste transfer system in use. Permit Condition III.4.C.2, requires the test results to be submitted to the department as proof that the waste transfer system does not leak; and Permit Condition III.4.C.2.a, requires this tightness testing be performed every 10 years.

Nor does this proposed Permit condition give sufficient recognition for requirements in WAC 173-303-640(3) for written integrity assessments and Chapter 4, Section 4.1.5, which requires periodic tank system integrity assessments every 10 years. WAC 173-303-640(3) requires the written assessment, be reviewed and certified by an independent, qualified registered professional engineer, 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. Both the tightness testing of the primary and encasement lines, and integrity assessments provide assurance that PC-5000, 3"-WTP-002-M17 waste transfer system, and caisson MH-WTP-01 waste transfer system is structurally sound and does not leak.

While extensive communication has occurred between the Permittees and Ecology, the Permittees have not received a satisfactory explanation of Ecology's regulatory basis for stating the existing leak detection on this transfer line is not compliant with WAC 173-303-640. The Permittees understand WAC 173-303-640(4)(c)(iii) provides two alternative means to provide

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adequate leak detection. One is to show that a leak, of an unspecified de minimis leak rate, can be detected within 24 hours. The other option allows for a demonstration that site conditions or existing technologies allow for detection as soon as practicable if not detected within 24 hours. The Permittees have provided information showing a leak of approximately 1.6 gallons per hour can be detected within 24 hours. Additionally, the Permittees generated report RPP-RPT-61976, *Effluent Management Facility (EMF) to Liquid Effluent Retention Facility (LERF) Process Condensate Transfer Pipeline Leak Detection*, concluding the site conditions and nature of the already installed pipeline and available technologies could not be well adapted to install additional equipment that are also effective for leak detection and reliable for operation. The Permittees do not interpret WAC 173-303-640(4)(c)(iii) to be a mandate that drives development of new technology or adaptation of technologies for retrofit on a system for which they are not well adapted.

Furthermore, the Permit conditions must be consistent with the provisions of the Hanford Federal Facility Agreement and Consent Order (HFFACO). All schedules of compliance must be maintained and controlled in the HFFACO to ensure proper consistency and prioritization of work. The Permit conditions must not place the DOE, through its own actions, or those of its contractors, in a position where the conditions of the Permit only can be met by a violation of the HFFACO. This condition risks impact to the Consent Decree for Start LAW Cold Commissioning by 12/31/2022, and Complete LAW Hot Commissioning by 12/31/2023.

Upgrading the Permitted leak detection system could require significant modifications to the piping; thereby risking delays to the overall mission at Hanford and Direct Feed Low-Activity Waste (DFLAW). Delay of DFLAW would result in a violation of the HFFACO; and would be more harmful to human health and the environment than utilizing the existing Permitted leak detection system for the PC-5000 and 3"-WTP-002-M17 waste transfer systems, which is arguably in compliance with the regulatory requirements, since WAC 173-303-640(4)(c)(iii) does not specify an assumed leak rate, only that leaks must be detectable within 24 hours unless other criteria is met.

Key DFLAW HFFACO Milestones that could be impacted.

- Milestone M-062-54B, 12/31/2022, *Achieve Substantial Completion of LAW Pretreatment Capability Construction for DFLAW Initial Ops.*
- Milestone M-062-54, 4/30/2023, *Low Activity Waste Pretreatment Capability; Cold Commissioning Complete.*
- Milestone M-062-53, 8/15/2023, *Effluent Management Facility (EMF) Cold Commissioning Start.*
- Milestone M-062-52, 6/30/2023, *Achieve Substantial Completion of Secondary Waste Construction Necessary for LAW Hot Commissioning.*

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Comment 4, Delete Proposed Permit Condition III.4.C.1.a: “The upgrades must include the installation of additional leak detectors along the PC-5000 and 3”-WTP-002-M17 lines, and in the caisson MH-WTP-01.”

This permit condition exceeds the scope of this permit modification (20-ECD-0032, July 8, 2020). The PC-5000 and 3”-WTP-002-M17 lines, caisson MH-WTP-01, and associated leak detection system was determined to meet the requirements of WAC 173-303-640(4)(c)(iii), with issuance of the *Approval of the Proposed Class 2 Permit Modification 8C.2019.4F to the 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 4, 242-A Evaporator, WA 7890008967, (19-NWP-182*, November 12, 2019).

Permit conditions to provide a leak detection report considering alternate technologies and site conditions was added by Ecology in two separate permit modifications (20-NWP-079, *Final Class 3 Permit Modification 8C.2020.6F to the Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, Revision 8C, for the Treatment, Storage, and Disposal of Dangerous Waste, Part III, Operating Unit Group 3, Liquid Effluent Retention Facility (LERF) and 200 Area Effluent Treatment Facility (ETF), WA7890008967*; and 19-NWP-182). The Permittees did not propose changes to PC-5000 and 3”-WTP-002-M17 waste transfer system. The proposed change was to connect a transfer line from Basin 41 to the existing PC-5000 and 3”-WTP-002-M17 transfer line and add additional leak detection for the new transfer line from LERF Basin 41.

While extensive communication has occurred between the Permittees and Ecology, the Permittees have not received a satisfactory explanation of Ecology’s regulatory basis for stating the existing leak detection on this transfer line is not compliant with WAC 173-303-640. The Permittees understand WAC 173-303-640(4)(c)(iii) provides two alternative means to provide adequate leak detection. One is to show that a leak, of an unspecified de minimis leak rate, can be detected within 24 hours. The other option allows for a demonstration that site conditions or existing technologies allow for detection as soon as practicable if not detected within 24 hours. The Permittees have provided information showing a leak of approximately 1.6 gallons per hour can be detected within 24 hours. Additionally, the Permittees generated report RPP-RPT-61976, *Effluent Management Facility (EMF) to Liquid Effluent Retention Facility (LERF) Process Condensate Transfer Pipeline Leak Detection*, concluding the site conditions and nature of the already installed pipeline and available technologies could not be well adapted to install additional equipment that are also effective for leak detection and reliable for operation. The Permittees do not interpret WAC 173-303-640(4)(c)(iii) to be a mandate that drives development of new technology or adaptation of technologies for retrofit on a system for which they are not well adapted.

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The Permit conditions must be consistent with the provisions of the HFFACO. All schedules of compliance must be maintained and controlled in the HFFACO to ensure proper consistency and prioritization of work. The Permit conditions must not place the DOE, through its own actions, or those of its contractors, in a position where the conditions of the Permit only can be met by a violation of the HFFACO. This condition risks impact to the Consent Decree for Start LAW Cold Commissioning by 12/31/2022, and Complete LAW Hot Commissioning by 12/31/2023.

See Comment 3 for Key DFLAW HFFACO Milestones that could be impacted.

Comment 4, Delete Proposed Permit Condition III.4.C.1.b. “The Permittees must submit a permit modification for upgrades to the leak detection system for the PC-5000 and 3”-WTP-002-M17 lines. The permit modification must include the final design of the upgrades.”

This permit condition exceeds the scope of this permit modification (20-ECD-0032, July 8, 2020). The leak detection system for the PC-5000 and 3”-WTP-002-M17 lines were determined to meet the requirements of WAC 173-303-640(4)(c)(iii), with issuance of the *Approval of the Proposed Class 2 Permit Modification 8C.2019.4F to the 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 4, 242-A Evaporator, WA 7890008967, (19-NWP-182, November 12, 2019)*.

The Permit conditions must be consistent with the provisions of the HFFACO. All schedules of compliance must be maintained and controlled in the HFFACO to ensure proper consistency and prioritization of work. The Permit conditions must not place the DOE, through its own actions, or those of its contractors, in a position where the conditions of the Permit only can be met by a violation of the HFFACO. This condition risks impact to the Consent Decree for Start LAW Cold Commissioning by 12/31/2022, and Complete LAW Hot Commissioning by 12/31/2023.

See Comment 3 for Key DFLAW HFFACO Milestones that could be impacted.

Comment 5, Delete Proposed Permit Condition III.4.C.1.c: “The Permittees must submit a schedule to the Department of Ecology (Ecology) for completing the permit modification and the upgrades within 30 days of the effective date of this permit condition.”

Implementation of the required schedule relies on Ecology actions to assure completion; and therefore Permittee compliance, by the deadline provided in Permit Condition III.4.C.1.c. The permittees have no assurance of Ecology actions or the permit modification process will support the deadline imposed by Permit Condition III.4.C.1.d. Permittee reliance on Ecology to take actions on permit conditions that cannot be made enforceable for Ecology in order for the permittees to achieve permit compliance is not a reasonable proposition.

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In order to undertake design, permitting, and installation of additional leak detection equipment, the permittees must have certainty that the new equipment will operate as designed, without false alarms or other issues that would be a detriment to 242-A Evaporator and DFLAW operations. Doing so requires development or adaptation of technologies to unique circumstances of current installed line; a significant challenge that will take a significant time commitment. Ecology has repeatedly stated they believe current technologies could be implemented on this line; however, as the design authority and operators of this line, the Permittees can assure Ecology that such design and installation is not as feasible as Ecology seems to expect.

The permittees request additional time to implement Permit Conditions III.4.C.1 through III.4.C.1.d, if the conditions must remain, and the 242-A Evaporator and WTP EMF transfers be allowed to proceed so as to not interfere with 242-A Evaporator and DFLAW operation. The relative low hazard of 242-A Evaporator and EMF liquids and reliable end point leak detection support this approach.

Comment 6, Delete Proposed Permit Condition III.4.C.1.d: “The upgraded leak detection system must be operational prior to waste transfers from 242-A Evaporator or the Waste Treatment and Immobilization Plant (WTP) to the Liquid Effluent Retention Facility (LERF).”

This permit condition exceeds the scope of this permit modification (20-ECD-0032, July 8, 2020). The leak detection system for PC-5000 and 3”-WTP-002-M17 lines, and caisson MH-WTP-01 waste transfer system was approved with issuance of the *Approval of the Proposed Class 2 Permit Modification 8C.2019.4F to the 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 4, 242-A Evaporator, WA 7890008967, (19-NWP-182, November 12, 2019)*.

In addition, requiring an upgraded leak detection system to be operational prior to waste transfers from 242-A Evaporator and WTP-EMF to the LERF would delay DFLAW and startup of WTP operations. This proposed permit condition does not take into consideration that Permit Condition III.4.C.2, requires the Permittees to submit the tightness test for the combined PC-5000/3”-WTP-002-M17 waste transfer system to the department prior to receipt of dangerous waste in accordance with WAC 173-303-640(3)(e); and Permit Condition II.4.C.2.a that requires this tightness test be performed for these transfer lines at a frequency of every 10 years. Furthermore, the 242-A Evaporator Permit requires the Permittees to conduct periodic integrity assessments every 10 years, the integrity assessments are certified by an Independent Qualified Registered Professional Engineer. The tightness testing of the combined PC-5000 and 3”-WTP-002-M17 primary and encasement lines is a control in place to ensure the pipelines do not leak, in addition to the integrity assessments performed by an IQRPE who certifies that this transfer line is structurally sound and does not leak.

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The Permit conditions must be consistent with the provisions of the HFFACO. All schedules of compliance must be maintained and controlled in the HFFACO to ensure proper consistency and prioritization of work. The Permit conditions must not place the DOE, through its own actions, or those of its contractors, in a position where the conditions of the Permit only can be met by a violation of the HFFACO. This condition risks impact to the Consent Decree for Start LAW Cold Commissioning by 12/31/2022, and Complete LAW Hot Commissioning by 12/31/2023.

See Comment 3 for Key DFLAW HFFACO Milestones that could be impacted.