

**STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY**

IN THE MATTER OF AN )  
ADMINISTRATIVE ORDER ) ADMINISTRATIVE ORDER  
AGAINST ) DOCKET #10156

United States Department of Energy  
Mr. Kevin Smith, Program Manager  
Office of River Protection  
PO Box 450, MSIN: H6-60  
Richland, Washington 99352

Washington River Protection Solutions  
Mr. L. David Olson, President & Project Manager  
PO Box 850, MSIN: H6-04  
Richland, Washington 99352

<b>Order Docket #</b>	10156
<b>Site Location</b>	The Hanford Site within Benton, Franklin, and Grant Counties of Washington
<b>EPA ID</b>	#WA 7890008967

The Washington State Department of Ecology (Ecology) issues this Administrative Order (Order) requiring the U.S. Department of Energy (USDOE) and Washington River Protection Solutions (WRPS) to comply with:

- Chapter 70.105 Revised Code of Washington (RCW) Hazardous Waste Management Act.
- Chapter 173-303 Washington Administrative Code (WAC) Dangerous Waste Regulations.
- Hanford Facility Dangerous Waste Permit, No. WAD WA7890008967 (Permit).

**AUTHORITY**

Ecology is authorized under RCW 70.105.095 to issue an administrative order requiring compliance upon determining that a person has violated, or is about to violate, any provision of Chapter 70.105 RCW.

RCW 70.105.130 authorizes Ecology to implement the federal Resource Conservation and Recovery Act (RCRA), and establish a permit system for owners or operators of facilities that treat, store, or dispose of dangerous waste. The permit system is established in the Dangerous Waste Regulations, Chapter 173-303 WAC.

Ecology issued Permit No. WAD WA7890008967 (Permit) for USDOE's Hanford Dangerous Waste Facility (Facility), effective August 1994. Revision 8c of the Permit currently applies to the operation of and corrective actions taken, or to be taken, at, this Facility.

Pursuant to Part I.A of the Permit, Revision 8c, the standards used to evaluate compliance for this enforcement are the interim status facility standards in WAC 173-303-400 and the regulations incorporated into the interim status standards by reference.

## **FACTUAL FINDINGS**

Ecology's determination that a violation has occurred is based on the following facts:

1. Tank 241-AY-102 is one of two one-million gallon tanks in the 241-AY Tank Farm (AY Farm) located in the southeast portion of the 200 East Area of the Hanford Dangerous Waste Facility. The 241-AY-102 system includes:
  - Primary tank and secondary tank structure
  - Concrete shell, insulating pad (refractory), and foundation
  - Central pump pit
  - Sluice pits
  - Annulus pump pit
  - Leak detection pit (and well)
  - Air lift circulators
  - Monitoring and alarm systems

The primary steel tank rests inside the secondary steel tank and is supported by the refractory on the floor of the secondary tank. An annular space of 2.5 feet is formed between the primary tank and secondary tank.

2. In August 2012, an accumulation of material was discovered at two locations on the floor of the 241-AY-102 annulus that separates the primary tank from the secondary tank.  
  
The accumulation of material was discovered during a routine video inspection. None of this material was present during the last visual inspection of the annulus, taken in 2006 - 2007. USDOE and WRPS conducted further investigation and sampling, and determined that the accumulated material was leaking from the primary tank.
3. On October 22, 2012, USDOE notified Ecology that Tank 241-AY-102 was leaking waste into the tank's secondary containment.

4. Hazardous and highly radioactive waste material cascaded from refractory slots to the floor of the annulus in two locations – near Riser 90 and near Riser 83. The flow near Riser 90 has shown no changes since the notification. The flow near Riser 83 shows a continuing leak. As of November 15, 2012, the amount of hazardous and radioactive waste material that has leaked from both areas was approximately 520 gallons.
5. On March 5, 2014, USDOE notified Ecology that a third leak had been discovered from Riser 77. The volume of this leak is unknown at this time.
6. Through a series of meetings and other interactions from October 2012 through the date of this Order, Ecology has given USDOE and WRPS opportunities to voluntarily comply with applicable regulations.

During this period, Ecology stated numerous times, both orally and in written form, that the leak response requirements at 40 CFR 265.196 [incorporated by reference into interim status standards at WAC 173-303-400(3)]<sup>1</sup> apply and must be complied with. In particular, 40 CFR 265.196(b) requires removal of waste from the primary tank and secondary containment of a leaking tank system.

7. By email on October 23, 2012, Ecology told USDOE and WRPS that waste removal must begin immediately, and requested a detailed schedule for completing such removal. USDOE was told to immediately notify Ecology if it did not intend to comply with the requirements.
8. By email on December 3, 2012, Ecology again reminded USDOE and WRPS of the requirements to immediately pump Tank 241-AY-102 or provide a schedule and justification for completing this at the earliest practicable time.
9. On January 15, 2013, WRPS, along with USDOE, presented three options for coming into compliance with 40 CFR 265.196:
  - (1) Closure pursuant to the requirements of 40 CFR 265.196(e).
  - (2) Repair and recertification pursuant to the requirements of 40 CFR 265.196(e) and (f).
  - (3) Obtaining a secondary containment variance pursuant to the provisions for this at 40 CFR 265.193 (g) and (h).

Ecology informed WRPS and USDOE that these options did not meet the tank leak response requirements in 40 CFR 265.196. In particular, none of these options addressed the requirement to, within 24 hours, or if that is demonstrably not possible, at the earliest practicable time, remove as much of the waste as necessary to allow for tank system inspection.

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<sup>1</sup> For brevity purposes, for the remainder of the Order Ecology will only cite to 40 Code of Federal Regulations (CFR) 265.196. In all cases, however, the citation is to the federal regulation as it is incorporated by reference under WAC 173-303-400(3).

10. In multiple meetings and conversations since December 2012, Ecology requested that USDOE provide a response to the regulatory requirements and a plan to remove the waste from Tank 241-AY-102. Ecology reviewed and provided comments to USDOE on multiple versions of a draft letter intended to provide this information.
11. On May 6, 2013, USDOE provided a letter to Ecology that:
  - (1) Provided a regulatory basis for not pumping the tank within 24 hours.
  - (2) Indicated that the tank was not isolated from waste additions.
  - (3) Indicated that the ability of the secondary tank to maintain integrity, once waste entered it, was still under evaluation.
  - (4) Committed to provide to Ecology a pumping plan specific to Tank 241-AY-102 by June 14, 2013.
12. On May 24, 2013, Ecology issued a letter to USDOE and WRPS documenting its expectations for the June 14, 2013, pumping plan submittal. The letter conveyed the following expectations:
  - The pumping plan must provide a schedule for removing waste from the primary tank. [40 CFR 265.196(b)(1)]
  - The pumping plan must provide a schedule for removing waste from the secondary containment, demonstrating that such removal is in as timely a manner as is possible to prevent harm to human health and the environment. [40 CFR 265.196(b)(2)]
  - The pumping plan must provide a schedule for isolating the 241-AY-02A pit, which could provide a path to allow waste into Tank 241-AY-102.
  - The pumping plan must provide a schedule to revise the January 2006 evaluation of the integrity of the secondary containment.
  - The pumping plan must document technical challenges that may affect the schedule, separate from limitations on funding. Funding may not be a factor in determining “earliest practicable time” or “as timely as possible.” [40 CFR 265.196(b)]
  - The pumping plan must document readiness to pump, within a specific and reasonable timeframe, from both the primary tank and secondary containment, if the leak worsens.
  - An earlier-prepared Emergency Pumping Guide must be immediately revised because it did not fulfill the goal of allowing pumping of a double-shelled tank (DST) within 10 days if a leak occurred, determined through previous compliance actions to address 40 CFR 265.196(b).

Ecology conveyed this expectation because USDOE had documented its belief that the earlier Emergency Pumping Guide does not apply to a leak from the bottom of a tank.

13. On June 14, 2013, USDOE delivered the "241-AY-102 Pumping Plan," RPP-PLAN-55220, Rev. A, (Pumping Plan) to Ecology. Through this Pumping Plan and its accompanying letter, USDOE:
  - Declined to remove any waste from the primary tank unless conditions change, stating that "removal of waste from the primary tank is not practicable, nor is it necessary to prevent release to the environment."
  - Laid out a schedule of approximately 19 months for "planning, procurement and installation of the out-of-tank equipment that will be needed to allow for pumping of the solids in the primary tank."
  - Declined to schedule installation of in-tank pumping equipment necessary for solids removal during the 19 months of planning, procurement, and installation of equipment.
  - Indicated that waste removal, if initiated, would take 14 months to complete, after which the tank would be evaluated for repair or closure.
  - Expressly assumed that "the secondary containment will remain intact until waste from tank AY-102 can be removed and the 'repair or close' decision made."
  - Commits to completing a study on the structural integrity of secondary containment by April 2014.
14. The impact of the waste in the Tank 241-AY-102 annulus on the integrity of the secondary liner is unknown at this time.
15. USDOE has taken no action to mitigate the leak into the secondary containment. As of the date of this Order, USDOE has taken no action to prevent the flow of dangerous waste into Tank 241-AY-102 or stop the flow of waste into its secondary containment.
16. The Defense Nuclear Facilities Safety Board (DNFSB) reviewed USDOE report RPP-RPT-53901, Rev. 2, "Management of Supernatant Level in Tank 241-AY-102." On October 24, 2013, the DNFSB released a staff issue report on the subject of "Integrity Implications of Decanting Liquid from Hanford Tank 241-AY-102."

The report recommends:

- Continued visual inspection of the tank annulus and close monitoring for variations in the waste temperature.
- Monitor for signs of increased leakage and blockage of the insulating refractory slots that distribute cooling air to the tank bottom.
- Develop a more rigorous multi-dimensional, transient thermal analysis model to aid in understanding the safety significance of any observed changes in tank conditions subsequent to decanting.

17. On January 9, 2014, Ecology issued a letter to USDOE and WRPS with comments on the 241-AY-102 Pumping Plan, Rev. A (RPP-PLAN-55220). Ecology found the Pumping Plan unacceptable because the plan expressly declined to meet USDOE's and WRPS's regulatory obligation to remove the waste from Tank AY-102 at the earliest practicable time. Ecology's letter requested a workable plan for pumping waste from Tank AY-102 no later than February 15, 2014
18. On February 4, 2014, USDOE issued a letter to Ecology asking for an extension for submittal of the revised 241-AY-102 Pumping Plan to March 7, 2014
19. On February 11, 2014, Ecology issued a letter to USDOE approving the extension to March 7, 2014.
20. On March 7 USDOE submitted Rev C of the Revised 241-AY-102 Pumping Plan (revised Pumping Plan). The plan announces that it "has been revised to proceed with the planning, engineering and design, procurement, and installation of out of tank equipment." However, it does not contain a plan for conducting these activities. Its only schedule is an estimated timeframe of approximately two years for conducting only the preparatory activities.

The revised Pumping Plan indicates this estimated timeframe may be subject to change for various reasons. The plan does not attempt to show that this two-year timeframe satisfies the requirement of "earliest practicable time." It does not provide any plan or schedule for actually removing the waste from Tank 241-AY-102.

## DETERMINATION OF VIOLATIONS

Ecology has determined that the following violations have occurred based on the facts provided above.

### **Violation 1 - Failure to stop the flow of hazardous waste into secondary containment**

*40 CFR 265.196(a) requires the owner or operator of the tank to immediately stop the flow of hazardous waste into the secondary containment system.*

As of the date of this Order, USDOE and WRPS have not stopped the flow of waste into the secondary containment of 241-AY-102.

**Violation 2 - Failure to inspect the tank to determine the cause of the release**

*40 CFR 265.196(a) requires the owner or operator of the tank to inspect the tank to determine the cause of the release.*

As of the date of this Order, USDOE and WRPS have not inspected the tank to determine the cause of the release. USDOE states in the revised Pumping Plan that Tank 241-AY-102 will have to be emptied to determine the cause of the release. USDOE has not emptied the tank and has submitted a plan according to which waste removal will not be authorized, nor a removal schedule determined, before March 4, 2016. The revised plan does not demonstrate that an initial pumping date sometime after March 4, 2016 is the earliest practicable time to begin waste removal.

**Violation 3 - Failure to remove, at the earliest practicable time, as much of the waste as is necessary to prevent further release of hazardous waste to the environment and to allow inspection and repair of the tank to be performed.**

*Where the release is from the tank system, as it is here, 40 CFR 265.196 (b) provides that "the owner or operator must, within 24 hours after detection of the leak or, if the owner or operator demonstrates that that is not possible, at the earliest practicable time remove as much of the waste as is necessary to prevent further release of hazardous waste to the environment and to allow inspection and repair of the tank system to be performed."*

As of the date of this Order, USDOE and WRPS have failed to remove, or take any actions to begin removing, as much of the waste as is necessary to prevent further release to the environment and to allow for inspection and repair of the tank system to be performed.

USDOE states in its revised Pumping Plan that removing the contents of the tank will not be authorized before March 4, 2016. USDOE has not demonstrated that March 4, 2016, or later would be the "earliest practicable time" to begin removing the waste.

**Violation 4 - Failure to remove all released materials from the secondary containment system within 24 hours or in as timely a manner as is possible to prevent harm to human health and the environment**

*40 CFR 40 CFR 265.196 (b)(2) requires that, if the release was to a secondary containment system, all released materials must be removed within 24 hours or in as timely a manner as is possible to prevent harm to human health and the environment.*

As of the date of this Order, USDOE and WRPS have failed to remove any of the released materials from the secondary containment. The revised plan indicates that the released materials will be removed only after waste is removed from the primary tank.

## ORDER TO COMPLY

Based on the factual findings and the determinations of violations, as stated above, IT IS ORDERED THAT USDOE and WRPS take the actions described below.

Immediately upon receipt of this Order and continuously thereafter USDOE and WRPS must:

1. Provide to Ecology, upon publication, the results of any modeling that USDOE or WRPS conducts in accordance with recommendations of the DNFSB staff report, "Integrity Implications of Decanting Liquid from Hanford Tank 241-AY-102" (October 24, 2013).
2. Complete isolation of Tank 241-AY-102 by August 15, 2014.
3. After the 241-AY-02A pump pit has been isolated, and no later than September 1, 2014, begin pumping the supernatant from Tank 241-AY-102. Remove all supernatant, except as necessary to maintain the minimum height of supernatant above the maximum solids level prescribed in RPP-RPT-53901 (prescribing 96 inches above solids level), or as prescribed in other USDOE documents regulating safety in Tank 241-AY-102.
4. Complete installation of sludge removal equipment and initiate waste removal in Tank 241-AY-102 no later than December 1, 2015. This will include all activities that USDOE will need to complete for authorization to initiate and complete all waste transfers.
5. Complete waste removal to a level sufficient for inspection to determine the cause of the leaks, no later than December 1, 2016.
6. Immediately inform Ecology of any safety issues that arise after pumping has begun and provide a detailed description of the specific safety issue. If the solution to an immediate concern is to cease pumping, provide a recovery plan within 30 days. The recovery plan must include a schedule for correcting and restarting pumping at the earliest practicable time.
7. Within 60 days of the effective date of this Order, submit to Ecology for approval:
  - a. Monitoring plans for annulus inspection, waste temperature monitoring and annulus ventilation monitoring including a schedule for calibration of the continuous air monitor (CAM) and Enraf-Nonius Series 854 (ENRAF). The monitoring plans must provide clear, immediate actions for maintaining annulus ventilation.
  - b. A contingency plan for safely managing any worsening conditions indicated by inspections and monitoring. Such indications include suspected increased leak rate or blockage on the ventilation channels causing increases in waste temperatures.  
  
Any other new issues not identified in the contingency plan such as those that arise as a result of construction or waste transfer activities, must be identified and evaluated, with a recovery plan and schedule provided to Ecology within 30 days.



8. Within 90 days of the effective date of this Order, submit a report that evaluates the integrity of the secondary containment system including, but not limited to, the impacts of the waste that is currently in the annulus.
9. Within 120 days of the effective date of this Order, submit a detailed waste retrieval work plan to Ecology for removing the remaining waste from Tank 241-AY-102. The waste retrieval work plan shall include, but is not limited to, detailed descriptions of:
  - a. The engineering design and the steps taken to procure equipment, including those steps already undertaken, with a schedule for the procurement of each piece of equipment, showing that these activities either have been or will be completed at the earliest practicable time.
  - b. The steps necessary for installation of all needed out-of-tank equipment and in-tank equipment for removing the waste from Tank 241-AY-102.
  - c. The number and schedule of 242-A Evaporator runs, including support activities needed.
  - d. The schedule for installation and start-up of equipment needed to support transfers to other DSTs.
10. Officially submit all supporting documentation that justifies the schedule for the above requirements.
11. To address the potential leak to the environment, sample the liquid from the Tank 241-AY-102 annulus leak detection pit monthly, starting within five days of the effective date of this Order. At a minimum, using inductively coupled plasma/mass spectrometry (ICP/MS), analyze this sample for metals, radionuclides, and pH, and report the results to Ecology within 15 days of taking the sample.
12. Conduct monthly video inspections of the entire annulus and weekly video inspections on the current leaks and weekly video inspections of any future leaks into the annulus.
13. Provide Ecology with monthly reports on the results of the visual and video annulus inspections, annulus ventilation performance and status, CAM readings, ENRAF readings, CAM and ENRAF calibration results, sample analysis results, waste heat monitoring results, including any interpretations and conclusions based on the results.
14. Officially submit to Ecology, within 10 working days of the effective date of the Order, copies of:
  - a. All documents listed in the revised Pumping Plan, Attachment A, that were not previously officially submitted to Ecology
  - b. All Technical Safety Requirements and all Safety Basis evaluations used to determine the requirements to control flammable gas levels and impacts to operational limits for waste storage (OSD-T-151-00007), as referenced in the revised Pumping Plan, Section 1.1, that were not previously officially submitted to Ecology

### **EFFECTIVE DATE**

This Order is to be considered effective 30 days from the day of issuance.

### **ELIGIBILITY FOR PAPERWORK VIOLATION WAIVER AND OPPORTUNITY TO CORRECT**

Under RCW 34.05.110, small businesses are eligible for a waiver of a first-time paperwork violation and an opportunity to correct other violations.

Ecology has determined the requirements of RCW 34.05.110 do not apply to the violation(s) described in this Order because you are not a small business as defined in RCW 34.05.110 (9).

### **FAILURE TO COMPLY WITH THIS ORDER**

Failure to comply with this Order may result in the issuance of civil penalties or other actions, whether administrative or judicial, to enforce the terms of this Order.

### **YOUR RIGHT TO APPEAL**

You have a right to appeal this Order to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this Order. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do both of the following within 30 days of the date of receipt of this Order:

- File your appeal and a copy of this Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this Order on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

### **• ADDRESS AND LOCATION INFORMATION**

<b>Street Addresses</b>	<b>Mailing Addresses</b>
<b>Department of Ecology</b> Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, Washington 98503	<b>Department of Ecology</b> Attn: Appeals Processing Desk PO Box 47608 Olympia WA 98504-7608
<b>Pollution Control Hearings Board</b> 1111 Israel Road SW, Suite 301 Tumwater, Washington 98501	<b>Pollution Control Hearings Board</b> PO Box 40903 Olympia WA 98504-0903

### CONTACT INFORMATION


Please direct all questions about this Order to:

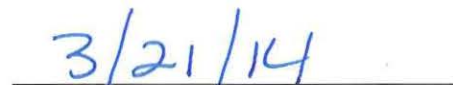
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### MORE INFORMATION

- **Pollution Control Hearings Board**  
[www.cho.wa.gov/Boards\\_PCHB.aspx](http://www.cho.wa.gov/Boards_PCHB.aspx)
- **Chapter 43.21B RCW - Environmental and Land Use Hearings Office – Pollution Control Hearings Board**  
<http://apps.leg.wa.gov/RCW/default.aspx?cite=43.21B>
- **Chapter 371-08 WAC – Practice and Procedure**  
<http://apps.leg.wa.gov/wac/default.aspx?cite=371-08>
- **Chapter 34.05 RCW – Administrative Procedure Act**  
<http://apps.leg.wa.gov/RCW/default.aspx?cite=34.05>
- **Chapter 70.105 RCW – Hazardous Waste Management**  
<http://apps.leg.wa.gov/rcw/default.aspx?cite=70.105>
- **Chapter 173-303 WAC – Dangerous Waste Regulations**  
<http://apps.leg.wa.gov/wac/default.aspx?cite=173-303>

### SIGNATURE

  
Maia D. Bellon  
Director

  
Date