STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
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May 10, 2017 17-NWP-053

Mr. Doug S. Shoop, Manager
Richland Operations Office
United States Department of Energy
PO Box 550, MSIN: A7-50
Richland, Washington 99352

Mr. Ty Blackford, President and CEO
CH2M HILL Plateau Remediation Company
PO Box 1600, MSIN: H7-30
Richland, Washington 99352

Re: Administrative Order

Order Docket #	14156
Site Location	United States Department of Energy – Hanford Site – PUREX Tunnel 1
EPA/State ID #	WA7890008967

Dear Mr. Shoop and Mr. Blackford:

The Department of Ecology (Ecology) has issued the enclosed Administrative Order requiring United States Department of Energy – Richland Operations Office and CH2M HILL Plateau Remediation Company 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 Resource Conservation and Recovery Act Permit, Dangerous Waste Portion Revision 8C WA 7890008967.

If you have questions regarding this order please contact Ron Skinnarland, Waste Management Section Manager, at (509) 372-7924 or ron.skinnarland@ecy.wa.gov.

Sincerely,

Alexandra K. Smith
Program Manager
Nuclear Waste Program

Enclosures: Administrative Order
By certified mail
cc: See Page 2

cc electronic w/enc:

Dave Bartus, EPA
Sheryl Bilbrey, EPA
Jack Boller, EPA
Lucy Edmondson, EPA
Dennis Faulk, EPA
Emy Laija, EPA
Mark Macintyre, EPA
Kim Ogle, EPA
Kevin Schanilec, EPA
Cheryl Williams, EPA
Duane Carter, USDOE
Cliff Clark, USDOE
Al Farabee, USDOE
Tony McKarns, USDOE
Julie Reddick, USDOE
Allison Wright, USDOE
Moses Jaraysi, CHPRC
David Richards, CHPRC
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Ken Niles, ODOE
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Kathy Conaway, Ecology
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Jared Mathey, Ecology
John Price, Ecology
Darin Rice, Ecology
Ron Skinnarland, Ecology
Alexandra Smith, Ecology
Cheryl Whalen, Ecology
CHPRC Correspondence Control
Environmental Portal
Hanford Facility Operating Record
USDOE-RL Correspondence Control

cc w/enc:

Rod Skeen, CTUIR
Gabriel Bohnee, NPT
Russell Jim, YN
Susan Leckband, HAB
Administrative Record
NWP Central File

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

IN THE MATTER OF AN ADMINISTRATIVE ORDER AGAINST UNITED STATES DEPARTMENT OF ENERGY AND CH2M HILL PLATEAU REMEDIATION COMPANY	))))	ADMINISTRATIVE ORDER DOCKET # 14156

To:
To: Mr. Doug S. Shoop, Manager
Richland Operations Office
United States Department of Energy
PO Box 550, MSIN: A7-50
Richland, Washington 99352

Mr. Ty Blackford, President and CEO
CH2M HILL Plateau Remediation Company
PO Box 1600, MSIN: H7-30
Richland, Washington 99352

Order Docket #	14156
Site Location	United States Department of Energy – Hanford Site – PUREX Tunnel 1
EPA/State ID #	WA7890008967

The Department of Ecology (Ecology) has issued this Administrative Order (Order) requiring Department of Energy – Richland Operations Office (USDOE-RL) and CH2M HILL Plateau Remediation Company (CHPRC) 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 Resource Conservation and Recovery Act Permit, Dangerous Waste Portion Revision 8C WA 7890008967.

Chapter 70.105 RCW and the Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion Revision 8C - Condition II.Y.2.d, authorizes the Department of Ecology (Ecology) to issue Orders requiring compliance whenever it determines that a person has violated any provision of Chapter 70.105 RCW, or that one or more of the circumstances described in Condition II.Y.2.d exist.

DETERMINATION OF VIOLATION(S) AND ORDER TO COMPLY

Ecology has determined that one or more violations have occurred, and that at least one of the circumstances described in Condition II.Y.2.d exists, based on the facts provided below.

For these reasons, and in accordance with RCW 70.105.095 and the Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion Revision 8C - Condition II.Y.2.d, it is ordered USDOE-RL and CHPRC take the corrective actions listed after each violation or circumstance. These corrective actions are required at the location known as Plutonium Uranium Extraction (PUREX) Tunnel 1 and 2 at the United States Department of Energy Hanford Site.

Background:

The PUREX Storage Tunnels, which are "miscellaneous units" under Washington's Dangerous Waste Regulations, are used for storage of mixed waste subject to the requirements of WAC 173-303-680. The two tunnels store waste from the PUREX Plant and other onsite sources. Since being placed into service, mixed waste has been stored in the tunnels on railcars, although not all material stored in the tunnels contains mixed waste.

The construction of PUREX Tunnel Number 1 was completed in 1956. The tunnel is approximately 19 feet wide by 22 feet high by 358 feet long and provides storage space for eight railcars.

Between June 1960 and January 1965 all eight railcar positions were filled and the tunnel subsequently was sealed. The combined volume of the equipment stored on the eight railcars presently in Tunnel Number 1 is approximately 780 cubic yards.

The waste stored in the tunnels could include barium (D005), cadmium (D006), chromium (D007), lead (D008), mercury (D009), selenium (D010), silver (D011), and light mineral oil (WT02, state-only, toxic, dangerous waste) contained in oil absorption material. The silver is predominately in the form of salts and is considered ignitable (D001) because of the presence of silver nitrate (AgNO3). Cadmium also could be considered state-only, toxic, dangerous waste (WT02).

According to "An Evaluation of the Structural Integrity of PUREX Storage Tunnel 1, submitted by Westinghouse Hanford Company in May 1991, "In September 1990, a dangerous waste permit application for the PUREX Storage Tunnels (DOE, 1990) was submitted to Washington State Department of Ecology by the United States Department of Energy – Richland Operations Office."

The evaluation further states, "On February 5, 1991, the State of Washington, Department of Ecology, issued a Notice of Deficiency (NOD) for the PUREX Tunnels Dangerous Waste Permit Application (Nord, 1991). In the NOD, the Department of Ecology questioned the advisability of leaving dangerous waste stored in the Tunnel 1 in light of statement made by Silvan (1980) about the structural integrity of Tunnel 1."

To address the NOD, Westinghouse Hanford Company, the operating contractor responsible for the PUREX Storage Tunnel, requested Los Alamos Technical Associates to make an independent evaluation of the structural integrity of PUREX Storage Tunnel 1. The conclusions of the independent study were in part as follows:

- Because of the interaction and dependency on other disposal actions taking place throughout the Hanford Site, none of the options studied can be accomplished in the near term. Disposal options included retrieving the waste for treatment and disposal and constructing a new facility for retrieving gamma processing and treatment of the waste for disposal.

- The study determined that the rate of loss of strength due to gamma radiation is diminishing with time so that even by the year 2001, the timber will still have 60% of its original strength. Therefore it was recommended that the dangerous waste in the tunnel remain as is and that if a decision for final disposition is not made by the year 2001, that the structural integrity again be evaluated in light of any then available information including any further tests on wood preservation that may have been completed at that time.

As part of the Central Plateau Milestone Negotiations in summer of 2016 between the Tri-Party Agencies, a new milestone was created in response to public comment and State interest for Department of Energy to prepare a plan to address structural integrity of both PUREX Storage Tunnels 1 and 2.

Milestone: M-085-80A
Lead Regulatory Agency: Ecology
Milestone: Submit to Ecology as a secondary document a data quality objectives report to assess the structural integrity of the PUREX storage tunnels 1 and 2.
Due Date: 09/30/2017

As of May 10, 2017 Ecology has provided comments to United States Department Energy on the draft Data Quality Objectives summaries for resolution.

Based on the violations and circumstances described in this Order, Ecology is exercising its rights reserved under HFFACO Article XLVI, Paragraph 136, to require the Corrective Actions described below.

Violations and Circumstances:

Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion Revision 8C - Condition II.L.1 Design and Construction of the Facility.

> "The Permittees will design, construct, maintain, and operate the Facility to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous substances to air, soil, ground water, or surface water, which could threaten human health, or the environment."

Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion Revision 8C - Condition I.E.6 Duty to Mitigate.

> "In the event of noncompliance with the Permit, the Permittees will take all reasonable steps to minimize releases to the environment, and will carry out such measures as are reasonable to minimize or correct adverse impacts on human health and the environment."

Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion Revision 8C - Condition I.E.7, Proper Operation and Maintenance

> "The Permittees will at all times properly operate and maintain all facilities and systems of treatment and control, which are installed or used by the Permittees, to achieve compliance with the Conditions of this Permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance/quality control procedures. This provision requires the operation of backup or auxiliary facilities, or similar systems only when necessary to achieve compliance with the Conditions of the Permit."

Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion Revision 8C - Condition II.Y.2.d

> "Notwithstanding any other condition in this Permit, Ecology may directly exercise any administrative or judicial remedy under the following circumstances":
>
> "Any discharge or release of dangerous waste, or dangerous constituents, which are not addressed by the HFFACO, as amended."
>
> "Discovery of new information regarding dangerous constituents or dangerous waste management, including but not limited to, information about releases of dangerous waste or dangerous constituents which are not addressed under the HFFACO, as amended."
>
> "A determination that action beyond the terms of the HFFACO, as amended, is necessary to abate an imminent and substantial endangerment to the public health, or welfare, or to the environment."

Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion Revision 8C – Process Section 4.2.3, Extremely Hazardous Waste in Containers

> "The present amount of mixed waste stored in the PUREX Storage Tunnels is sufficient to characterize this material as extremely hazardous waste. Because the PUREX Storage Tunnels are enclosed totally, protective covering from the elements and from run-on is provided for the storage of extremely hazardous waste. Periodic inspection of the equipment stored in the PUREX Storage Tunnels is not feasible and cannot be justified under ALARA guidelines. Safe management of this waste is based on the following considerations.
>
> - The operation of the PUREX Storage Tunnels is passive, i.e., once a storage position is filled, the storage position remains undisturbed until closure."

Observations of Violations and Circumstances:

USDOE and CHPRC have not properly operated and maintained the PUREX Storage Tunnel 1 to achieve compliance with the Conditions of the Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion Revision 8C. USDOE and CHPRC have failed to keep the operation of the PUREX Storage Tunnel 1 undisturbed until closure of the dangerous waste management unit and failed to keep it totally enclosed with a protective covering from the elements and from run-on.

USDOE and CHPRC have failed to maintain and operate the PUREX Storage Tunnel 1 to minimize the possibility of an unplanned sudden or non-sudden release of hazardous substances to air, soil, ground water, or surface water, which could threaten human health, or the environment.

On the morning of Tuesday May 9, 2017, during routine work activities in the vicinity of the PUREX Tunnels (200E), a partial subsidence was observed on the south side of PUREX Tunnel 1 at 8:06 a.m.

At 8:09 am, an incident was declared and the Incident Command Post was populated with Mark Tews identified as the Building Emergency Director. The Facility Emergency Response Organization was assembled at 8:09 a.m.

A precautionary take cover was announced at 8:11 a.m. Inquiries were made and all staff were accounted for and there were no injuries. The area (N and S gates) were secured at 8:19 a.m.

An initial informational notification was made to Ecology (Schleif) at 8:57 a.m. Although no release had been currently identified, the RCRA Contingency Plan was implemented at 10:45a.m.

A bridge from the Incident Command Post to the Emergency Operations Center was requested and an Alert Classification was declared at 8:26 a.m. Ventilation was shut off in building MO294 for the take cover.

The Plutonium Finishing Plant shift office was notified for use of Talon robot to obtain photos and dose rate readings. Data indicated that there was not a release. The initial derived air concentration values represented the amount of radon related particles present in the sampled air. When they were counted later, the results fell below the instrument detection levels which is indicative that no release of radioactivity from Tunnel 1 occurred.

A continuous monitoring plan is planned to be established for the surrounding area using the appropriate monitoring equipment.

Visual observations, via photos, determined that there was a breach in the tunnel caused by failure of the internal structure. This breach left a 15-20 foot opening in the tunnel. CHPRC Engineering evaluated the options below for stabilizing the event:

- Covering the breach with a tarp
- Building a structure over the breach
- Planned engineered filling of the hole with an undetermined amount of sand

It was decided that the initial approach would be to fill the hole with sand and provide continuous monitoring.

As of May 10, 2017, crews began filling the collapsed section of the tunnel. The hole is being filled with soil using heavy equipment. Approximately 50 truckloads of soil is expected to provide an additional level of protection against any potential contamination release. Radiological monitoring continues to be performed with no indication of release reported thus far. It is unknown how long it will take to complete the work, but it is expected to continue for several shifts.

Corrective Action 1:

Starting immediately, determine the cause of breach in PUREX Storage Tunnel 1 and assess if there is an immediate risk of further failures in PUREX Storage Tunnels 1 and 2. By July 1, 2017, submit to the Department of Ecology, Nuclear Waste Program a structural integrity evaluation for both PUREX Storage Tunnels 1 and 2.

Corrective Action 2:

Starting immediately, develop corrective actions to ensure the safe storage of the waste in the PUREX Storage Tunnels 1 and 2 in light of the above described failure in PUREX Storage Tunnel 1, until a decision on permanent disposition of the PUREX Storage Tunnels 1 and 2 is determined as part of closure under the Dangerous Waste Regulations.

By August 1, 2017, submit a draft report detailing the corrective actions to ensure the safe storage of the waste in the PUREX Storage Tunnels 1 and 2 to the Department of Ecology, Nuclear Waste Program for comment and approval.

Corrective Action 3:

By October 1, 2017, submit a draft permit modification to the Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion Revision 8C to modify the permit to do the following:

- Update Preparedness and Prevention Addendum to ensure the control and mitigation of run-on onto PUREX Storage Tunnel 1 and 2.
- Update Process Information Addendum to include information required under Corrective Action 2 to demonstrate the ongoing ability of PUREX Storage Tunnel 1 to continue to safely store mixed waste until closure. This includes submitting as a part of the modification, the structural integrity evaluation supporting safe operation of PUREX Storage Tunnel 1.
- Update the Closure Addendum to include any interim actions needed for safe storage of waste in PUREX Storage Tunnel 1.
- Update the Closure Addendum to address final closure under the Dangerous Waste Regulations coordinated with the future CERCLA remedial decisions.

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, administrative and/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

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

CONTACT INFORMATION

Please direct all questions about this Order to:

Ron Skinnarland
Department of Ecology
Nuclear Waste Program
3100 Port of Benton Blvd.
Richland, WA 99354
(509) 372-7924
rski461@ecy.wa.gov

MORE INFORMATION

- **Pollution Control Hearings Board Website**
  www.eho.wa.gov/Boards_PCHB.aspx
- **Chapter 43.21B RCW – Environmental and Land Use Hearings Office – Pollution Control Hearings Board**
  http://app.leg.wa.gov/RCW/default.aspx?cite=43.21B
- **Chapter 371-08 WAC – Practice and Procedure**
  http://app.leg.wa.gov/WAC/default.aspx?cite=371-08
- **Chapter 34.05 RCW - Administrative Procedure Act**
  http://app.leg.wa.gov/RCW/default.aspx?cite=34.05
- **Chapter 70.105 RCW – Hazardous Waste Management**
  http://app.leg.wa.gov/RCW/default.aspx?cite=70.105
- **Chapter 173-303 WAC – Dangerous Waste Regulations**
  www.ecy.wa.gov/biblio/wac173303.html

SIGNATURE

Alexandra K. Smith
Program Manager
Nuclear Waste Program

5/10/17
Date