

Supplemental Information
Class 3 Modification
325 Hazardous Waste Treatment Units (HWTUs)

Purpose of This Document

Washington Administrative Code (WAC) 173-303-830(4)(c)(i) requires that a Class 3 permit modification must contain certain specific information. This document contains information required by WAC 173-303-830(4)(c)(i) that is not generally made enforceable in a permit through inclusion in one of the Addenda to the operating unit group-specific Chapter of the Hanford RCRA Permit. This information is included in order to provide a complete modification request.

Since the present Class 3 modification simply adds other existing portions of the Radiochemical Processing Laboratory facility (RPL, also known as the 325 Building) to the 325 HWTUs, many informational elements of the original application (DOE/RL-92-35, "325/3100 Hazardous Waste Treatment Unit Dangerous Waste Permit Application", June 1992) remain unchanged and are not repeated here.

Description of Change to the Permit Conditions and Supporting Documents [WAC 173-303-830(4)(c)(i)(A)]

This modification is intended to add three new dangerous waste management units to the 325 HWTUs in order to enhance the capability to manage waste in larger containers. Permitted space is needed in order to package drum-quantity wastes for shipment and disposal. For example, certain wastes managed at the 325 HWTUs must be packaged in boxes (e.g. 4'x4'x8' in size) and voids filled with grout prior to shipment for disposal. The resulting containers are heavy, exceeding floor loading limitations in the existing 325 HWTUs units and presenting materials handling challenges. The concrete added must be allowed a period of time to cure prior to sealing the boxes. Once the boxes are sealed, they are staged for shipment to the disposal facility. The units being added provide the capability to package even heavy drums into boxes and fill the void spaces in the box with grout. They then can allow the concrete to cure and store the resulting heavy boxes pending shipment.

In order to acquire this capability at the 325 HWTUs, three units are being added. Each provides a portion of the overall process described above. The units are:

- The Cask Handling Area (CHA), a portion of Rooms 603 and 604A in the RPL. These two rooms are part of the High Level Radiochemistry Facility (HLRF), the hot cell facility located on the east end of the RPL. The HLRF (historically known as the 325-A building) was added to RPL in 1960. The CHA is at the north end of the main floor of the HLRF. The CHA has a heavy-duty 30-ton crane to allow heavy drums to be safely lifted and placed in boxes already holding the first "lift" (base) of concrete. These boxes can then be transported through the loading door located in the CHA. Room 604A also has a fume hood that can be used to store and treat waste in the same manner as is currently performed in the existing portions of the 325 HWTUs.
- The Truck Lock, Room 610 in the RPL. This room is also part of the HLRF. It was constructed after the original HLRF as a weather-sheltered load-in and -out facility and is on the east side of the HLRF. The Truck Lock has easy truck access and was built with heavy-duty concrete on grade, so even heavy boxes being stored may be easily accommodated. It also offers a larger

space for easy maneuvering and handling of larger containers (e.g. boxes). PNNL expects to use the Truck Lock to allow trucks to deliver the grout needed to stabilize the boxes containing previously containerized waste, and allow that grout to cure prior to sealing the box. Some container storage may also take place.

- The 3714 Pad is the concrete foundation slab for the former 3714 Building just northeast of the RPL facility. The 3714 building was built in 1955 and was demolished in August 2011. Due to the presence of active underground utilities nearby, the foundation was not removed. The pad is approximately 50'x24'. It will be used to store waste that is being scheduled for shipment from the other 325 HWTUs units and possibly other PNNL generators. One of the significant uses of the 3714 pad will be to store the grouted and sealed boxes created in the CHA and Truck Lock pending shipment to disposal. Since the waste will be sealed in its inner containers, covered with grout and enclosed in a box, outdoor storage is safe and preferable to indoor storage. It not only moves the waste out of the path of other HLRF operations, but it is easier to load the boxes onto the transport vehicle and inspections are convenient.

The addition of the capability to grout waste containers in large (e.g. 4'x4'x8' box) containers results in a significant increase in the treatment and storage capacity of the 325 HWTUs. Storage capacity in containers is increased from 12,000 liters to 50,360 liters, and treatment in containers is increased from 1,514 liters per day to 39,874 liters per day. These increases are directly related to the addition of the capability to place waste containers in larger containers and boxes and grouting them prior to shipment. For instance, two four-liter paint cans of waste may be placed in a 208-liter drum. The drum is then placed in a 4x4x8 box (~3622 liters) for disposal and the box void filled due to disposal facility requirements. This results in an approximately 453-fold increase in storage and treatment volume, even though the waste volume (as generated) did not change and the waste itself was not modified. PNNL does not plan to significantly increase the amount of waste it generates and subsequently manages in the 325 HWTUs.

Along with the addition of the units, several minor changes to the existing permit are proposed. The most significant changes revise the 325 HWTUs closure plan to allow for partial closure. The previous approach had a closure plan for each unit. The revised approach views all the units in terms of container storage and includes a single plan for closure of such units. The revised approach also calls out the Shielded Analytical Laboratory (SAL) hot cells and tank system as a separate closure and ties them together for purposes of determining when closure is to begin. This is necessary since the only way to introduce waste to the SAL tank is through the hot cells; all other drains have been sealed. Similarly, the only way to retrieve liquids from the tank is to draw it into the hot cells and treat/package it for disposal.

Other changes are typically to update the permit and addendum language, and to reflect current regulatory and permitting language and practice. All changes to the existing permit are noted in a redline/strikeout version being provided to Ecology in this package, along with "comments" noting the rationale for the change and the class and specific modification reference from WAC 173-303-830, Appendix I.

Identification of Modification Class [WAC 173-303-830(4)(c)(i)(B)]

This modification is identified as a Class 3 (major) modification, as it increases the overall waste management capacity of the 325 HWTUs by more than 25%. [WAC 173-303-830 Appendix I, F.1.a]

Certain other modifications are Class 1 (minor) modifications, some of which require Ecology's prior approval.

Explanation of Why Modification is Needed [WAC 173-303-830(4)(c)(i)(C)]

This modification is needed because the 325 HWTUs occasionally manage dangerous wastes (usually mixed wastes) requiring special handling and packaging prior to disposal. In the instant case, two one-gallon paint cans of highly radioactive mixed waste must be placed in a specially adapted 55-gallon drum with radioactive shielding, and the lid permanently attached to the drum by melting the polyethylene liner using a proprietary system. This is mandated by a site-specific variance issued by Ecology pursuant to 40 CFR 268. The polyethylene-lined drum cannot be disposed of at Hanford (as also specified in Ecology's site-specific variance) without being placed in a 4x4x8 box and then the box filled with grout (cement). The box and grouting is necessary pursuant to Hanford waste acceptance criteria regarding subsidence following disposal, which is mandated by the Hanford RCRA Permit. In order to fulfill the regulatory requirements for disposal, therefore, PNNL must have permitted space to conduct this activity and similar ones in the future.

The use of three units to perform this function is necessary since the CHA supports the activities of the entire HLRF, not just the 325 HWTUs operation. It is not possible or practicable to utilize only the CHA. The Truck Lock does not have a crane to assist personnel in lifting or moving heavy objects, so it likewise cannot be utilized by itself. Use of the 3714 Pad would not be possible to perform the initial placement of drums in boxes or filling the box voids with grout, as the grout must cure for a specified time before the box can be sealed. Weather events could interfere with the mandated curing cycle. However, use of the 3714 Pad is highly advisable with regard to storage prior to shipment, as it moves the waste away from staff work areas, makes loading of the transporter easier through easy access by heavy lifting equipment, and allows for convenient periodic inspections required by the Permit.

Other permit modifications are necessitated by recent EPA and Ecology interpretations regarding unit closures, and other changes to relevant regulations, permits, and guidance. Explanation of each individual change is contained in the redline/strikeout version of the permit conditions and addenda in this package.

Prior to 2013, Ecology allowed PNNL to utilize portions of the HLRF, including the CHA, for repackaging and staging for shipment on a case-by-case basis. This has been done several times. In 2013, Ecology informed PNNL that it would no longer allow this to be done, and if the capability was necessary, the necessary portions of the HLRF should be added to the 325 HWTUs permit. This permit modification seeks to do just that.

For information purposes, PNNL has attempted to identify numerous other means to manage this waste short of permitting the CHA, Truck Lock, and 3714 Pad. These have included use of T-Plant, the Perma-Fix Northwest facility, and acquiring a variance to dispose of the waste without grouting in a box. All of these have been determined to be unacceptable alternatives. Note that PNNL expects to need this capability into the future, so one-time alternatives to treat the waste on hand would have to be replicated for each future waste requiring such treatment. Establishing treatment capability at the 325 HWTUs for waste requiring treatment to meet LDRs and Hanford disposal requirements is consistent with the requirements set forth in Hanford Site acceptance criteria that only LDR-compliant waste is to be accepted without use of the variance process.

Applicable Information Required by WAC 173-303-805 through -808 [WAC 173-303-830(4)(c)(i)(D)]

The following updates to information provided in the 325 HWTUs permit application, Rev. 1 (June 1997) are relevant to this modification.

Section 2.1.3, "Liquid Waste Drainage Systems"

Both the Retention Process Sewer (RPS) and Radioactive Liquid Waste System (RLWS) mentioned in this section are now retired and out of service. The Radioactive Liquid Waste Tank mentioned as a replacement for the RLWS has also been procedurally closed. As noted in the procedural closure documentation for the Radioactive Liquid Waste Tank, all former RLWS connections have been blanked and/or locked. As noted in Addendum C, radioactive liquid waste entering the SAL tank is pumped back up to the SAL hot cells for subsequent treatment and packaging for disposal.

In the place of the RPS, PNNL has installed a retention tank in the basement of the RPL into which the liquid effluents discharged to facility sink drains (including those in the 325 HWTUs) are collected and tested. The collected effluent, once confirmed to meet discharge criteria, is discharged to the City of Richland sewer system pursuant to the industrial discharge permit issued to the Department of Energy, Richland Operations Office (RL).

Section 2.1.4, "Other Environmental Permits", and Section 13.0, "Other Relevant Laws"

Other environmental permits relevant to the 325 HWTUs are now reflected in Section X of the Part A form found in Addendum A.

Section 2.2, "Topographic Map"

The current topographic map is attached to Addendum A.

Section 2.5, "Release from Solid Waste Management Units"

This information is maintained pursuant to the Tri-Party Agreement. Location of SWMUs and the nature of any releases from those units are found in the WIDS database maintained by RL.

Section 10.0, "Waste Minimization"

The correct citation for waste minimization certification is now WAC 173-303-380(1)(q).

Section 12.0, "Reporting and Recordkeeping"

This information is now found in Permit Attachment 6, "Reports and Records".

Section 14.0, "Certification"

An updated certification statement appears on the following pages.

U.S. Department of Energy, Richland Operations Office Certification

The following certification statement is provided for the submittal of the Class 3 permit modification package and temporary authorization request for the 325 Hazardous Waste Treatment Units, dated May 2014.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Doug S. Shoop, Acting Manager
U.S. Department of Energy
Richland Operations Office

Date

Pacific Northwest National Laboratory (PNNL) Certification

The following certification statement is provided for the submittal of the Class 3 permit modification package and temporary authorization request for the 325 Hazardous Waste Treatment Units, dated May 2014.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Cameron M. Andersen, Director
Environment, Health, Safety and Security
Pacific Northwest National Laboratory

Date