INTEGRATED DISPOSAL FACILITY
ADDENDUM K
POST-CLOSURE

CHANGE CONTROL LOG

Change Control Logs ensure that changes to this unit are performed in a methodical, controlled, coordinated, and transparent manner. Each unit addendum will have its own change control log with a modification history table. The "**Modification Number**" represents Ecology's method for tracking the different versions of the permit. This log will serve as an up to date record of modifications and version history of the unit.

Modification History Table

Modification Date	Modification Number
05/30/2023	8C.2023.1F

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INTEGRATED DISPOSAL FACILITY
ADDENDUM K
POST-CLOSURE PLAN

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ADDENDUM K
POST-CLOSURE PLAN

TABLE OF CONTENTS

K.1 Introduction 7
K.2 Post-Closure Use of Property 7
K.3 Post-Closure Activities 7
K.3.1 Groundwater Monitoring and Reporting 7
K.3.2 Leachate Monitoring and Reporting 7
K.3.3 Inspections and Maintenance 8
K.3.3.1 Final Cover Inspection and Maintenance 8
K.3.3.2 Groundwater Monitoring, Well Inspection, and Maintenance 9
K.3.3.3 Leachate System Inspection and Maintenance 9
K.3.4 Post-Closure Security 9
K.4 Survey Plat and Notice in Deed 9
K.5 Certification of Completion of Post-Closure Care 10
K.6 Contact Information 10
K.7 Amendment of the Plan 10
K.8 References 10

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ACRONYMS

ALR	Action Leakage Rate
DOE-RL	U.S. Department of Energy Richland Operations Office
DWMU	Dangerous Waste Management Unit
Ecology	Washington State Department of Ecology
IDF	Integrated Disposal Facility
LCRS	Leachate Collection and Removal System
LDS	Leak Detection System
RCRA	*Resource Conservation and Recovery Act of 1976*

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K.1 INTRODUCTION

This addendum discusses post-closure activities for the Integrated Disposal Facility (IDF) dangerous waste management units (DWMUs) that comprise Operating Unit Group 11 of WA7890008967, Hanford Facility Resource Conservation and Recovery Act (RCRA) Permit (hereinafter referred to as the Hanford Facility RCRA Permit). The IDF provides storage, treatment, and disposal of waste from Hanford onsite generators. The IDF consists of four DWMUs: a storage pad, a treatment pad, and two disposal cells. Drawings showing the DWMU locations within the IDF are provided in Addendum A, "Part A Form."

This addendum complies with the requirements of Washington Administrative Code (WAC) 173-303-610, *Closure and post-closure*, Sections (7)-(11), as well as the applicable post-closure requirements specified in WAC 173-303-665, *Landfills*.

As identified in Addendum H, "Closure Plan," the IDF storage pad and treatment pad will be clean closed. IDF disposal cells 1 and 2 will be closed as a landfill with a final cover consistent with the closure requirements specified in WAC 173-303-665(6) and WAC 173-303-610.

K.2 POST-CLOSURE USE OF PROPERTY

As required by WAC 173-303-610(7)(d), the integrity of the final cover and liners, and the function of monitoring systems will not be disturbed during the post-closure period, unless the Washington State Department of Ecology (Ecology) finds that such disturbance is necessary to the proposed use of the property, and will not increase the potential hazard to human health or the environment; or is necessary to reduce a threat to human health or the environment. Post-closure use of the property is not anticipated.

K.3 POST-CLOSURE ACTIVITIES

Post-closure activities are not required for the storage pad and the treatment pad. Post-closure activities for the disposal cells include the following:

- Groundwater monitoring and reporting requirements.
- Leachate monitoring and reporting.
- Periodic inspections and maintenance (final cover, groundwater wells, and Leachate Collection and Removal System [LCRS]).
- Continued security of the landfill area.

The post-closure activities will continue for 30 years following closure of the disposal cells, in accordance with WAC 173-303-610(7)(a). This post-closure care period may be modified with approval of Ecology in accordance with the requirements in WAC 173-303-610(7)(b).

K.3.1 Groundwater Monitoring and Reporting

Groundwater monitoring will continue during the post-closure period. Groundwater monitoring and reporting requirements are addressed in Addendum D, "Groundwater Monitoring Plan." The Hanford Facility groundwater monitoring reports provide annual results and interpretations of groundwater monitoring. Sampling data are placed in the Hanford Environmental Information System database.

K.3.2 Leachate Monitoring and Reporting

During post-closure, the LCRS will continue to be operated in a manner that ensures that the leachate depth over the liner does not exceed 30.5 cm (12 in.) in accordance with WAC 173-303-665(2)(h)(ii). The LCRS is designed to minimize clogging in accordance with WAC 173-303-665(2)(h)(iii)(D). Information regarding operation of the LCRS is detailed in Addendum C, "Process Information." Such operations will continue during post-closure until leachate is no longer detected or the post-closure period has concluded, and Ecology has approved the discontinuation of LCRS monitoring.

After the final cover is installed, the amount of leachate removed from each Leak Detection System (LDS) sump must be recorded and documented in the facility operating record at least monthly during the post-closure period, as required in WAC 173-303-665(4)(c)(ii). If the liquid level in the sump stays below the pump operating level for two consecutive months, the frequency of leachate collection and removal will be reduced to quarterly. If after two consecutive quarters the liquid level in the sump has remained below the pump operating level, collection of liquids in the sumps will be reduced to semi-annually. If at any time during the post-closure care period the pump operating level is exceeded on quarterly or semiannual recordings, the frequency of leachate removal will return to monthly until the liquid level again stays below the pump operating level for two consecutive months. The frequency may then be reduced as described.

The pump operating level was determined by engineering designs and operational limits in accordance with the regulatory requirements of WAC 173-303-665(4)(c)(iii). For post-closure monitoring, the pump operating level is defined as 30.5 cm (12 in.) above the LCRS sump floor in accordance with Hanford Facility RCRA Permit Condition III.11.F.9.g.i [WAC 173-303-665(2)(h)(ii)]. The amount of leachate removed is also used to determine if the action leakage rate (ALR) has been exceeded. The ALR is a value that is set higher than normally expected leakage rates to serve as an indicator that the primary lining system is not functioning as expected. The ALR for each IDF disposal cell is calculated as 780 L (206 gal) per acre per day. Addendum C contains the supporting analysis for the pump operating level and ALR.

K.3.3 Inspections and Maintenance

Periodic inspections and maintenance will be performed throughout the post-closure period. Maintenance will be performed in a timely manner to ensure compliance with post-closure requirements for final cover, leachate collection, and groundwater monitoring [WAC 173-303-665(6)(b)]. Inspections will evaluate the following:

- Final cover integrity.
- Groundwater monitoring system integrity.
- LCRS integrity.

As required by WAC 173-303-610(8)(b)(ii), this section also describes maintenance of the final cover, groundwater monitoring system, and LCRS throughout the post-closure period. Maintenance is based on observations made during inspections and monitoring activities.

K.3.3.1 Final Cover Inspection and Maintenance

Cover integrity inspections will evaluate the final cover for breaches in the surface, depressions caused by settling or compression, subsidence, erosion, or other disruptions to the cover that would cause a reduction in performance. The inspection will be performed every 5 years through aerial photography and elevation surveys. Control points marked around the perimeter and at critical points on the cover will be used to determine changes in cover elevation. Depressions, or other surface layer disturbances that may affect the integrity of the cover, will be filled using topsoil with pea gravel and then re-vegetated as necessary.

Maintenance of the final cover prevents run-on and runoff from eroding or damaging the final cover. The Modified RCRA Subtitle C Barrier is designed such that surface water run-on and runoff control, collection, and discharge devices are not needed. Layer 1 (topsoil) incorporates pea gravel into the soil to reduce susceptibility to wind erosion. Vegetation planted on the topsoil layer will further reduce wind and precipitation runoff erosion. The topsoil will be sloped at 2 percent, which is steep enough to provide drainage of runoff from the cover and shallow enough to limit surface exposure leading to wind erosion. The topsoil layer is sufficiently thick to provide performance margins against long-term wind erosion and climate change.

Survey benchmarks used to define the IDF disposal cells may be disturbed or buried during the construction of the final cover. Those benchmarks that are disturbed or buried will be replaced. Benchmarks will be surrounded by steel posts, bollards, or jersey barriers as needed to signal their presence and provide protection. Benchmarks will be inspected annually and resurveyed or repaired, if necessary, as required by WAC 173-303-665(6)(b)(vi).

K.3.3.2 Groundwater Monitoring, Well Inspection, and Maintenance

Post-closure inspection and maintenance of the monitoring well system will be performed in accordance with Hanford Facility RCRA Permit Attachment 8, *Inspection and Training Plan for Groundwater Monitoring Wells*.

K.3.3.3 Leachate System Inspection and Maintenance

Periodic inspections of the LCRS during post-closure will be performed in accordance with Section K.3.2. Issues identified during the inspections will be corrected in a timely manner, and the LCRS will be maintained to ensure continued compliance with leachate collection required in WAC 173-303-665(4)(c)(ii).

K.3.4 Post-Closure Security

During the post-closure period, the 24-hour security requirements outlined in Addendum E, "Security," will continue.

K.4 SURVEY PLAT AND NOTICE IN DEED

A survey plat will be submitted by the U.S. Department of Energy, Richland Operations Office (DOE-RL) to Ecology and to the Benton County Planning Department no later than the submission of the certification of closure of each dangerous waste disposal unit. The survey plat will indicate the location and dimensions of landfill cells or other dangerous waste disposal units with respect to permanently surveyed benchmarks. The plat will be prepared and certified by a professional land surveyor. The plat filed with the Benton County Planning Department will contain a note, prominently displayed, which states the owner or operator's obligation to restrict disturbance of the dangerous waste disposal unit in accordance with WAC 173-303-610(7)(d).

No later than 60 days after certification of closure of each dangerous waste disposal unit, a record of the type, location, and quantity of dangerous wastes disposed of within each cell or other disposal unit will be submitted by DOE-RL to Ecology and to the Benton County Planning Department. A notice in deed to the facility property will be submitted by DOE-RL to the Auditor of Benton County no later than 60 days after certification of closure of the first and last dangerous waste disposal unit at the Hanford Facility in accordance with WAC 173-303-610(10)(b). After submitting this notice, a certification signed by DOE-RL will be submitted to Ecology stating that the notice has been recorded in accordance with WAC 173-303-610(10)(b)(i), along with a copy of the notice in deed.

If DOE-RL or any subsequent owner of the land upon which a DWMU was located wishes to remove dangerous wastes and dangerous waste residues, the liner, or contaminated soils, a modification to the post-closure plan will be requested in accordance with the modification procedures specified in the Permit. The modification request will include a demonstration that the removal of dangerous wastes will satisfy the criteria in WAC 173-303-610(7)(d). If Ecology approves the permit modification request or otherwise grants approval to conduct such removal activities, DOE-RL or the subsequent owner may request Ecology approve either the removal of the notation on the deed to the facility property; or the addition of a notation to the deed indicating the removal of the dangerous waste.

K.5 CERTIFICATION OF COMPLETION OF POST-CLOSURE CARE

No later than 60 days after completion of the established post-closure care period for each dangerous waste disposal unit, DOE-RL will submit to Ecology, by registered mail or other means that establish proof of receipt (including applicable electronic means), a certification that the post-closure care period for the dangerous waste disposal unit was performed in accordance with the specifications in the approved post-closure plan. The certification will be signed by DOE-RL and an Independent Qualified Registered Professional Engineer (IQRPE). Documentation supporting the IQRPE's certification will be furnished to Ecology upon request.

K.6 CONTACT INFORMATION

DOE-RL is the official contact for IDF during the post-closure period at the following address:

U.S. Department of Energy
Richland Operations Office
P.O. Box 550
Richland, WA 99352

After final closure of IDF has been certified, the person or office specified above will keep the approved post-closure plan during the remainder of the post-closure period. Post-closure documents, including this addendum, will be maintained in accordance with Hanford Facility RCRA Permit Condition I.H, Documents to be Maintained at Facility Site.

K.7 AMENDMENT OF THE PLAN

DOE-RL must submit a written notification of or request for a permit modification to authorize a change in the approved post-closure plan in accordance with the applicable requirements of WAC 173-303-800, *Permit requirements for dangerous waste management facilities*, through WAC 173-303-840, *Procedures for decision making*. The written notification or request must include a copy of the amended post-closure plan for review or approval by Ecology.

K.8 REFERENCES

Resource Conservation and Recovery Act of 1976, 42 U.S.C. 6901, et seq. Pub. L. 94-580, 90 Stat. 2795. Available at: https://www.epa.gov/laws-regulations/summary-resource-conservation-and-recovery-act.

WA7890008967, Hanford Facility Resource Conservation and Recovery Act Permit, as amended, Washington State Department of Ecology, Richland, Washington. Available at: https://fortress.wa.gov/ecy/nwp/permitting/hdwp/rev/8c/index.html.

WAC 173-303, *Dangerous Waste Regulations*, Washington Administrative Code, Olympia, Washington. Available at: http://apps.leg.wa.gov/WAC/default.aspx?cite=173-303.

303-610, *Closure and post-closure*.

303-665, *Landfills*.

303-800, *Permit requirements for dangerous waste management facilities*.

303-840, *Procedures for decision making*.